2024 NATIONAL SENIOR CERTIFICATE (NSC)

DIAGNOSTIC REPORT

BOOK 1

Empowering Education Through Solidarity, Championing Equality, and Building a Sustainable Future Together.

basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

MTN

Read to Lead
A Reading Nation is a Leading Nation

2030 NDP

CONTENTS – PART 1

Foreword by the Minister		1
Chapter 1	Introduction	4
Chapter 2	Accounting	15
Chapter 3	Agricultural Sciences	39
Chapter 4	Business Studies	60
Chapter 5	Economics	91
Chapter 6	Geography	115
Chapter 7	History	155
Chapter 8	Life Sciences	176
Chapter 9	Mathematical Literacy	200
Chapter 10	Mathematics	217
Chapter 11	Physical Sciences	244

CHAPTER 1

INTRODUCTION

FOREWORD

It is with great pride and immense joy that I present the 2024 National Senior Certificate (NSC) Diagnostic Report. The results of the October/November 2024 examinations mark a significant milestone, reflecting not only the culmination of years of hard work, perseverance, and resilience by our learners, but also the steadfast commitment of teachers, parents, and communities across the nation. In a year that presented its own unique challenges, the 2024 cohort demonstrated extraordinary strength, adaptability, and determination.

As we reflect on the achievements encapsulated in this diagnostic report, we are reminded of the significance of education in shaping the future of our youth and, by extension, our country. The NSC is not just a certificate; it is a gateway to opportunities that empowers our young people to pursue further education, enter the workforce, and contribute to the socio-economic development of South Africa.

The 2024 NSC results are being released against a backdrop of significant developments in South Africa's education system. Three important benchmarking reports relating to the performance of the education system in the General Education and Training (GET) band were received in December 2024 and these included the Trends in International Mathematics and Science Study (TIMSS), the Southern and East Africa Consortium for Monitoring Educational Quality (SEACMEQ) assessment, and, for the first time, the South African Systematic Evaluation (SASE) study. We now have our own national evaluation study of Mathematics and Languages at the Grade 3, 6 and 9 levels and these results will be evaluated in the context of our international performance. Over the last two years the Department of Basic Education has also focussed on improving access to quality Early Childhood Development (ECD) programmes and this attests to the Department's commitment to addressing the educational challenges across the entire continuum of education delivery. The promotion of Mother-tongue Bilingual-based Education (MTBbE) promises to be a strategic driver in ensuring access to quality learning for all learners and thus building a more equitable educational landscape. These efforts, along with the

commitment to protect and optimise the education budget, underscore the Department's unwavering resolve to improve learning outcomes for all South African learners, laying the foundation for sustained progress in the years to come.

In his State of the Nation Address on 18 July 2024, President Cyril Ramaphosa reminded us of the profound words of the Father of our Nation, former President Nelson Mandela: "What brings us together is the overriding commitment to a joint national effort to reconcile our nation and improve its well-being." These words resonate deeply as we reflect on the achievements of the Class of 2024 in the National Senior Certificate (NSC) examinations. These results represent the collective efforts of educators, learners, parents, and communities across South Africa that will allow this cohort of young adults to take up their rightful places in society and thus build a brighter and more prosperous future for all. The progress made by the Class of 2024 stands as a testament to the power of unity and the continuous national effort to overcome challenges and elevate the quality of education in our country. Together, we are forging a path towards a more inclusive and equitable education system for generations to come.

As an education system we continuously evaluate our progress in terms of the social justice principles of access, redress, equity, quality, efficiency and inclusivity. In this examination 615 429 candidates obtained the National Senior Certificate and can now access further education opportunities and enter the world of work. In terms of quality, 337 158 learners have obtained admission to Bachelor studies and of that number 214 500, learners come from no-fee schools which reflects our disadvantaged communities. Reasonable strides have been made in addressing the educational needs of persons with disabilities and learners who experience barriers to learning. The South African Sign Language Home Language (SASL HL) examination is now in its 7th year of being offered in the National Senior Certificate (NSC) examinations. In addition, 3 321 learners with special needs have obtained admission to bachelor studies in this examination. These are tangible gains reflected in the National Senior Certificate examinations of 2024.

Over the next five years, the DBE will strengthen the Curriculum and Assessment Policy Statements (CAPS) to ensure the infusion of 21st-century skills into the education system. The revised curriculum will prioritise the development of essential skills and competencies required for success in the modern world, with a focus on deeper learning rather than simply covering extensive content. Key components of this strengthened curriculum will include an emphasis on

formative assessment approaches, alongside an increased focus on vocational and occupational education to equip learners with practical skills. The DBE remains committed to ensuring that critical thinking, creativity, and problem-solving are core to the educational agenda.

The NSC examinations stand as a reliable beacon of academic integrity, ensuring that learners' achievements are recognised and respected across various sectors, both locally and globally.

As we celebrate these remarkable results, we are reminded of the wisdom in the isiXhosa maxim, "Umntwana ukhula ngokufunda, ngokukhokelwa nokucetyiswa baphumelele,", which translates to, "A child grows through learning, and with guidance, they will thrive." This encapsulates the essence of our collective effort in shaping the future of our young people. Let us continue to build on these achievements and work together to ensure a bright and prosperous future for all learners in South Africa.

MS GWARUBE, MP
MINISTER OF BASIC EDUCATION
13 JANUARY 2025

1.1 INTRODUCTION, SCOPE AND PURPOSE

A diagnostic analysis of learner performance refers to a comprehensive assessment aimed at identifying the strengths and weaknesses in learner outcomes. This process involves not only assessing examination results but also understanding the underlying factors that contribute to performance trends. It highlights areas where learners excel and identifies the challenges that may hinder their academic progress. The goal is to provide a nuanced understanding of the challenges highlighted during the marking of the October/November 2024 examinations, which can then inform targeted support strategies to enhance learner achievement.

The 2024 Diagnostic Report on Learner Performance builds on the foundations laid by previous reports, including those from 2022 and 2023. This report offers an in-depth analysis of learner performance across key subjects with high enrolment, the 12 official home languages, the technologies, technical subjects, and Engineering Graphics and Design. The findings presented here are critical for teachers, subject advisors, curriculum planners, and other educational stakeholders, providing valuable insights into both the strengths and challenges within these subjects.

As with prior reports, the 2024 Diagnostic Report identifies areas of weakness within each subject or language and outlines the necessary remedial measures to be adopted at the school level to enhance learner performance. The data used to compile this report is derived from both qualitative and quantitative sources. Qualitative data comes from subject reports prepared by chief markers, internal moderators, and subject specialists, while quantitative data is collected from a random sample of 100 scripts per subject, per paper, across all provinces.

This National Diagnostic Report provides a comparative analysis of performance trends over the past five years for each subject, as well as detailed assessments of how learners performed in each question in the question papers. By identifying common errors, misinterpretations, and misconceptions, the report offers specific suggestions for improvement. The ongoing trend of poor-quality responses in certain subjects highlights persistent gaps in content coverage, teaching methodology, and the subject knowledge of some educators.

Part 1 of this report tracks the progress made in previously identified problematic areas. It assesses whether improvements have been made in these areas and highlights where further support may be necessary in 2024. This diagnostic analysis is not only intended for national-level use but also for implementation at provincial, district, and school levels, with the ultimate aim of institutionalising this practice within pedagogical methods across the education system.

1.2 METHODOLOGY

Each subject's diagnostic report begins with a presentation of comparative data on performance trends observed over a five-year period, from 2020 to 2024. The 2024 diagnostic report is based on qualitative analyses compiled by chief markers, internal moderators, and subject specialists following the marking of the NSC examinations. For the 10 key high-enrolment subjects, and English First Additional Language, quantitative data was gathered from the analysis of 100 scripts per question paper, per subject, randomly selected from each province. This combination of qualitative and quantitative data highlights areas of weakness in each subject and outlines the remedial measures that should be implemented at the school level to improve performance.

The report offers a detailed analysis per question and subquestion, structured under three main sections:

Section 1: Performance Trends (2020–2024)

This section presents a comparative analysis of learner performance over the past five years, focusing on the number of learners who sat for the examinations, the number and percentage of learners who achieved 30% and above, and the number and percentage of learners who attained 40% and above. These data are represented in tables and graphs, allowing for easier interpretation of trends, especially changes in performance over the medium term and between individual years.

Performance distribution curves are also included, which visually represent the distribution of learner scores across the last three years. Any improvement or decline in performance can be observed through the positioning of the 2024 graph in relation to the previous two years. If the 2024 graph shifts to the right, this suggests an improvement in performance, while a shift to the left would indicate a decline.

Section 2: Overview of Learner Performance

This section provides a broader overview of learner performance in the question paper, highlighting areas where learners performed well or struggled, and exploring possible reasons for these trends. It offers a holistic view of how learners engaged with the content and identifies any systemic issues that may have influenced their results.

Section 3: Diagnostic Question Analysis

This section includes the following:

- A graphical representation of the average percentage marks obtained per question;
- A detailed analysis of learner performance on each specific question, indicating whether the question was answered well or poorly, along with an explanation for the response patterns;
- Common errors and misconceptions identified in learner responses; and
- Recommendations for improvement in teaching and learning, content and methodology, subject advisory support, and the utilisation of Learning and Teaching Support Materials (LTSM).

The internal moderators' reports from all nine provinces for each question paper per subject have been consolidated, and the findings summarised in this report. It is recommended that this diagnostic report be read alongside the November 2024 NSC question papers, as it references specific questions within the respective question papers. This will allow educators to establish a baseline for the new cohort of Grade 12 learners in 2025, develop strategies for differentiated learning, and provide a framework for the design and implementation of school-based assessments throughout the year.

1.3 LIMITATIONS OF THE DIAGNOSTIC REPORT ON LEARNER PERFORMANCE

While the 2024 National Diagnostic Report on Learner Performance provides valuable insights into learner outcomes, it is important to acknowledge its limitations. These limitations should be considered when using the report as a tool for improving educational practice and guiding interventions.

1.3.1 Qualitative Focus

The primary focus of this report is qualitative rather than quantitative. The analysis primarily aims to provide a detailed examination of learner performance, identifying strengths and weaknesses in both content and instructional methods. The quantitative data included in the report is limited to performance trends within each subject and the average performance per question in the 2024 NSC question papers. While this quantitative information is useful for highlighting overall trends, it does not extend to a more granular level of analysis, such as individual test item development or the performance of specific learner cohorts. Further quantitative data could have provided additional insights, particularly for test development purposes, but this is not the intended scope of the current report.

1.3.2 Limited Subject Coverage

This report is restricted to the analysis of the 10 key subjects with high Grade 12 enrolment, including Afrikaans First Additional Language, English First Additional Language, the 12 official home languages, as well as the technologies and technical subjects. While these subjects are pivotal to understanding general trends in learner performance, it is important to note that this report does not encompass all subjects examined in the NSC. Other subjects will be addressed in separate reports compiled by provincial chief markers and internal moderators during the marking process. Therefore, the findings and recommendations presented here should be seen as focused on a specific subset of subjects, with additional reports available for other subject areas.

1.3.3 National-Level Overview

The diagnostic analysis provided in this report offers a national summary of areas of weakness observed in the key subjects. However, it is important to recognise that the areas of weakness identified may not be universally applicable across all districts and schools. Performance trends and challenges can vary significantly depending on regional and local factors, such as teaching methodologies, resource availability, and learner backgrounds. As such, the findings should be treated as a broad overview, rather than a precise reflection of weaknesses at a district or school level.

1.3.4 Need for District-Specific Reports

Given the variation in performance across districts, it is strongly recommended that district subject specialists take the initiative to develop district-specific diagnostic reports. These reports would allow for a more targeted analysis, addressing issues that are unique to specific regions and providing district-level insights that can inform local educational strategies and interventions. District reports would also facilitate more focused professional development for teachers based on the specific challenges and strengths within their region.

1.3.5 School-Level Specificity

While this report highlights general trends at the national level, it does not provide a detailed analysis of weaknesses at the individual school level. The unique context of each school, including teaching practices, learner demographics, and the availability of resources, means that the challenges and strengths at a local level may differ from the national summary. For more precise and actionable insights, it is essential for schools to develop their own diagnostic reports, which would focus specifically on the performance of their learners and the areas requiring

targeted improvement. Such school-level reports would serve as a crucial tool for developing tailored interventions that address the specific needs of learners.

1.3.6 Challenges in Data Representation

The nature of the data used in this report, particularly the random selection of scripts, means that some performance trends may not fully reflect the diversity of learners across different provinces or schools. While the sample size is significant, there may be limitations in how representative this data is of the broader learner population. Variations in marking standards and regional differences in examination conditions could also affect the consistency of the data, though efforts are made to mitigate these factors through standardised moderation processes.

1.3.7 Use of the Report

It is also important to note that while this report provides important insights, it is not a prescriptive tool for classroom practice. Rather, it offers a starting point for discussion and reflection on learner performance. Teachers, subject advisors, and curriculum implementers are encouraged to use the findings as part of a broader strategy for professional development, curriculum adaptation, and learner support, integrating them with other resources and localised data to best meet the needs of their learners.

1.4 OBSERVATIONS IN LEARNER PERFORMANCE

The 2024 diagnostic reports for the 10 key subjects covered in this publication (Part 1), indicate that the pass rate has improved in all of the key subjects at the 30% level, except in Physical Sciences. The pass rate for English First Additional Language increased at both the 30% and 40% levels. In all the home languages (Part 2) the pass rate improved. A general observation in the technologies and technical subjects is that performance shows a gradual improvement.

1.5 AREAS OF CONCERN

The marking of the NSC 2024 examinations revealed several recurring challenges that affected learner performance across various subjects. These challenges highlight areas where learners are struggling and require targeted interventions to improve their overall performance. Below are the major challenges observed, along with proposed solutions for addressing each one, including subject-specific examples.

1.5.1 Lack of Understanding of Instructional Verbs

Challenge: Many learners demonstrated a lack of understanding of the meaning of instructional verbs in questions, such as "explain," "analyse," or "compare."

Solution: It is essential to explicitly teach learners the meaning and requirements of common instructional verbs used in examinations. For example, in Economics, a question might ask learners to "analyse" the effects of inflation on a country's economy. Without understanding that "analyse" requires breaking down the topic into parts and evaluating each one, learners might provide a general description rather than a structured, detailed response. Teachers can create practice exercises that focus on these verbs, helping learners become familiar with their application in different contexts. Additionally, revision sessions could include exercises specifically targeting these skills to build better understanding.

1.5.2 Failure to Approach Follow-on Questions Effectively

Challenge: Some learners struggled with following through on questions that required sequential answers, indicating a lack of understanding of how to approach such questions.

Solution: Teachers can provide exercises that simulate question sequences, helping learners to understand how to break down a larger problem into smaller, manageable parts. For example, in Physical Sciences, a question may ask learners to first define the concept of energy, then apply it to a real-life scenario such as the conservation of mechanical energy. Learners should be taught how to approach these questions in steps. Additionally, learners can be taught strategies for linking ideas across different questions to maintain coherence in their responses.

1.5.3 Lack of Basic Numeracy Skills in Mathematical Subjects

Challenge: In subjects requiring mathematical proficiency, many learners lacked basic numeracy skills, which hindered their ability to solve mathematical problems accurately.

Solution: Support programmes focusing on basic numeracy skills should be implemented in earlier grades. In Physical Sciences, learners must be able to perform calculations such as converting units or calculating forces using Newton's laws. If learners struggle with basic arithmetic, they will find these calculations difficult, impacting their performance. Teachers could incorporate daily practice of foundational mathematical concepts and offer remedial classes for learners who struggle with basic skills. Regular quizzes and interactive exercises will also help reinforce numeracy skills.

1.5.4 Failure to Express Ideas Clearly and Concisely

Challenge: It was observed that some candidates were unable to express their ideas clearly and concisely, leading to poorly structured responses.

Solution: Teachers should focus on developing learners' writing skills, specifically encouraging clear and concise expression. For instance, in Life Sciences, learners may struggle to explain complex processes like meiosis or mitosis clearly. Teachers can guide them in structuring their answers, ensuring they focus on essential points. Writing workshops and peer review sessions where learners critique each other's work can help learners practise presenting their ideas logically and concisely.

1.5.5 Lack of Critical Analysis and Evaluation Skills

Challenge: Many candidates lacked the skill to analyse and evaluate information critically, which is vital for higher-order questions.

Solution: Critical thinking exercises should be integrated into all subjects, especially those that require analysis and evaluation. In Economics, a question might ask learners to evaluate the effectiveness of a government policy. Learners need to assess both the positive and negative impacts, considering various viewpoints and using relevant evidence. Teachers can include activities that encourage learners to assess different perspectives, evaluate sources of information, and justify their responses logically.

1.5.6 Poor Reading Comprehension Skills

Challenge: It was noted that many candidates lacked the skill to read with meaning, making it difficult for them to comprehend and respond to questions accurately.

Solution: Reading comprehension should be a focus in earlier grades, with regular exercises that challenge learners to analyse texts critically. For example, in English and other languages, learners may be asked to analyse a passage and identify literary devices such as metaphors or alliteration. Learners should practise reading such texts carefully, breaking down the content and interpreting it fully. In-class discussions and group activities that focus on understanding and interpreting reading material will help reinforce these skills.

1.5.7 Ineffective Use of Relevant Information in Responses

Challenge: Some candidates were unable to locate and use relevant information effectively in their responses, demonstrating a gap in research and information retrieval skills.

Solution: To address this, schools should focus on improving research skills by teaching learners how to gather, evaluate, and incorporate relevant information into their answers. In Physical Sciences, a question may ask learners to apply a principle like the law of conservation of energy to a practical situation. Learners need to locate and apply relevant formulae and scientific concepts in their answers. Practical exercises in sourcing and referencing information can improve their ability to use evidence effectively in their responses.

1.5.8 Disregard for Mark Allocation and Inadequate Responses

Challenge: In some instances, candidates disregarded the mark allocation of questions, resulting in overly brief or inadequate responses.

Solution: Teachers should stress the importance of mark allocation and the need to provide responses that align with the required level of detail. For instance, a question worth 4 marks requires a more detailed answer than a question worth 2 marks. Practice examinations should include an emphasis on matching the depth of the response to the marks allocated to each question. Teachers can also provide feedback on how to appropriately distribute time and effort across questions.

1.5.9 Over-Reliance on Past Papers

Challenge: It was noted that there was a heavy reliance on past papers, with many candidates expecting the examinations to follow predictable patterns. This hindered candidates' ability to apply subject content knowledge in unfamiliar contexts or scenarios.

Solution: It is crucial to encourage learners to go beyond past papers and develop a deeper understanding of the subject material. In Life Sciences, for example, learners may encounter a question on the human digestive system presented in a novel scenario, requiring them to apply their knowledge in a new context. Teachers should provide a variety of question types and scenarios to help learners become adaptable. Regular assessments with unfamiliar question formats will help learners be better prepared for diverse examination challenges.

1.6 KEY RECOMMENDATIONS TO IMPROVE THE QUALITY OF TEACHING AND LEARNING

The NSC 2024 examination performance has highlighted several areas for improvement in teaching and learning practices in various subjects. In response to these challenges, the following recommendations are proposed to enhance the quality of teaching and better equip learners for future assessments.

1.6.1 Integration of Artificial Intelligence (AI) in Teaching

The advent of Artificial Intelligence offers new opportunities to enhance teaching methods and provide personalised learning experiences. AI tools can help educators identify learning gaps and offer tailored interventions for individual learners. These technologies can also support the development of learners' critical thinking and problem-solving skills by providing instant feedback on tasks such as essay writing or mathematics exercises.

Recommendation: Teachers should explore the integration of AI-based learning platforms that offer adaptive learning paths for learners. For example, AI-driven educational apps in subjects such as Physical Sciences and Life Sciences could help learners visualise complex scientific phenomena, providing them with interactive simulations. Such tools would be beneficial in reinforcing theoretical concepts, particularly in subjects that require visualisation, such as chemistry.

1.6.2 Adoption of New Approaches to Learning

Traditional teaching methods must evolve to accommodate the changing needs of learners in an increasingly digital world. Collaborative learning, project-based assessments, and flipped classrooms are examples of innovative approaches that promote deeper engagement with the material. These methods encourage learners to take responsibility for their learning, work collaboratively, and apply theoretical knowledge to practical situations.

A flipped classroom is an innovative teaching approach where traditional learning structures are reversed. In this model, instead of spending class time introducing new content through 'chalk and talk', learners first engage with the material independently, often through pre-recorded videos, readings, or other online resources. This allows classroom time to be dedicated to more interactive, hands-on learning activities, such as discussions, problem-solving, group work, or applying the concepts learned.

Recommendation: Teachers should incorporate more active learning strategies into their lessons. For example, in Economics, learners could work in groups to analyse case studies of real-world economic issues, followed by presentations and debates on their findings. Such approaches promote critical thinking, teamwork, and effective communication, while also encouraging learners to approach problems from different angles.

1.6.3 Addressing Different Cognitive Levels and Learning Styles

Learners come from diverse backgrounds and possess varying cognitive abilities. The teaching and learning process must accommodate these differences to ensure that all learners can succeed. By addressing the range of cognitive levels and learning styles, teachers can help learners build on their strengths and address areas of weakness effectively.

Recommendation: Teachers should differentiate instruction to cater to the different cognitive levels of their learners. For instance, additional support materials can be provided to learners who are struggling with basic concepts. Incorporating varied learning activities, such as hands-on experiments, group discussions, and interactive multimedia, ensures that learners with different learning styles (visual, auditory, kinaesthetic) are effectively engaged.

1.6.4 Incorporating Higher-Order Thinking Skills in Assessments

It is essential to design assessments that encourage learners to think critically and analytically. This includes moving beyond rote memorisation to include tasks that require learners to evaluate, analyse, and synthesise information. By promoting higher-order thinking, teachers can prepare learners for complex problem-solving scenarios in both examinations and real-world contexts.

Recommendation: Assessment design should include a range of question types that test different cognitive levels. For example, language examinations should include tasks that ask learners to not only summarise a text or merely lift information but also critically analyse its themes, structure, and literary techniques. This will allow learners to demonstrate a deeper understanding of the material and strengthen their critical thinking skills. Teachers should ensure that questions at all levels of difficulty (from recall to synthesis) are well-represented, enabling learners to demonstrate their knowledge comprehensively.

1.6.5 Progressive Levels of Difficulty in Question Papers

It is crucial to design question papers and tasks for school-based assessment that progressively increase in difficulty, enabling learners to build confidence as they progress through the paper or task. A well-structured question paper should begin with easier questions that test foundational knowledge and gradually move to more challenging questions that assess the ability to apply, analyse, and evaluate information.

Recommendation: Teachers should collaborate to design question papers that follow a logical progression of difficulty. For example, in Physical Sciences, a question paper could begin with basic recall questions on the periodic table, followed by questions that require application (e.g. calculating chemical reactions), and culminate in higher-order questions that ask learners to critically evaluate the environmental impact of chemical processes. This approach ensures that learners are not overwhelmed and have the opportunity to demonstrate their full range of abilities.

1.6.6 Focus on Digital Literacy and Information Retrieval Skills

In today's digital age, learners must be equipped with the skills to effectively search for, evaluate, and use information from a variety of sources. This is particularly important for subjects such as Economics, where learners may need to research current events or analyse economic data from diverse sources.

Recommendation: A digital literacy should be a core focus in the classroom, with learners being taught how to use online databases, search engines, and academic resources for research. For instance, in Life Sciences, learners can be taught how to access and interpret scientific articles and databases to support their answers in examinations and projects. Teachers should incorporate information literacy tasks into their lessons, ensuring learners are proficient in finding and using relevant, credible sources.

1.6.7 Encouraging Learner Independence and Self-Directed Learning

Developing learner independence is essential for fostering a culture of lifelong learning. Self-directed learning encourages learners to take charge of their education, set goals, and seek out resources to achieve them. This is particularly important for learners preparing for examinations such as the NSC, where self-motivation and effective study habits can make a significant difference.

Recommendation: Teachers should promote self-directed learning by incorporating independent research projects, self-assessment activities, and opportunities for reflective learning into their teaching. In English and other languages, learners could be tasked with reading a range of texts independently and then completing a critical review or comparative essay, allowing them to demonstrate their ability to research and articulate their thoughts independently. Teachers should guide learners in developing effective study habits and time management skills, helping them to balance independent learning with classroom instruction.

1.7 RESPONSIBILITIES: MEDIATING THE 2024 DIAGNOSTIC REPORT

The successful implementation of the recommendations outlined in this diagnostic report depends on effective communication and mediation at various levels of the education system. It is crucial that the report is disseminated and utilised from the provincial level down to individual schools, with a focus on active involvement from subject specialists, district officials, and teachers.

1.7.1 Provincial Education Departments

This diagnostic report is intended for a broad audience, including teachers, learners, and education officials. As such, it is imperative that the report is cascaded systematically from the provincial level to the district and school levels. This process will ensure that the findings and recommendations reach the relevant stakeholders, allowing for the identification of areas of improvement and the implementation of targeted interventions. Provincial education departments should take responsibility for ensuring that the diagnostic report is shared with all schools within their jurisdiction, enabling the entire education system to benefit from the insights provided.

1.7.2 Subject Advisors and District Officials

Subject Advisors' Meetings and Workshops

Subject advisors play a key role in facilitating professional development and ensuring that the diagnostic report is effectively mediated. They should organise meetings or workshops where teachers can discuss the findings of the report and explore strategies for addressing the challenges identified. These sessions should focus on fostering collaboration among teachers, encouraging the sharing of best practices, and providing guidance on how to incorporate the recommendations into classroom teaching.

Monitoring Teacher Improvement Plans

It is essential that subject advisors monitor the improvement plans of teachers, ensuring that the recommendations in the diagnostic report are incorporated. This will help teachers to make the necessary adjustments in their teaching approaches, thereby improving learners' performance. Monitoring should focus on specific actions and strategies that align with the identified areas for improvement.

Curriculum Coverage Monitoring

District officials must ensure that the curriculum is being adequately covered in accordance with the Revised Annual Teaching Plan (ATP). This is particularly important to ensure that learners are fully prepared for the demands of the examinations. Incomplete or rushed curriculum coverage can leave critical gaps in learners' knowledge, hindering their ability to respond effectively to exam questions. Ensuring that all topics are adequately covered will provide learners with the necessary preparation to succeed in the NSC exams.

Monitoring SBA Quality and Standard

The monitoring process should also focus on the quality of the School-based Assessments (SBA). High-quality assessment tasks, aligned with the learning objectives and cognitive levels of the curriculum, are essential in preparing learners for the NSC examinations. District officials should ensure that SBA tasks are of a high standard, providing learners with the opportunity to develop and demonstrate their understanding of the content.

Enhancing Teaching Resources

Subject advisors should direct teachers to relevant online resources, educational websites, and digital tools that can enhance teaching and learning. These resources can provide teachers with access to updated content, innovative teaching strategies, and interactive activities to engage learners, ensuring that learners receive the most up-to-date and effective instruction.

1.7.3 Teachers

Providing Resources for Self-Regulated Learning

Teachers and schools must ensure that learners have access to adequate resources that enable self-regulated learning. This will empower learners to take ownership of their education, improving their ability to study independently. Teachers should guide learners in using textbooks, online resources, and supplementary materials to reinforce their understanding.

Creating Opportunities for Reflection, Analysis, and Evaluation

Teachers should prepare learners for the demands of the NSC examinations by creating opportunities for them to reflect on, analyse, and evaluate the content. This will foster deeper understanding and applied competence, helping learners develop critical thinking skills that are necessary for tackling complex exam questions.

Ensuring Comprehensive Curriculum Coverage

Teachers must ensure that they cover the entire curriculum and include a full range of cognitive levels in both teaching and assessment strategies. Simple recall-based tasks will not adequately prepare learners for the higher-order thinking required in the NSC exams. Teachers should focus on creating learning opportunities that encourage analysis, evaluation, and application of knowledge to ensure that learners are fully equipped to tackle a range of question types in the examinations.

CHAPTER 2

ACCOUNTING

The following report should be read in conjunction with the Accounting Paper 1 and Paper 2 final examination papers for the NSC November 2024 examinations.

The Accounting examination focuses on two Accounting disciplines:

- Paper 1: Financial Reporting and Evaluation
- Paper 2: Managerial Accounting, Internal Auditing and Control

2.1 PERFORMANCE TRENDS (2020–2024)

The number of candidates who wrote the Accounting examination in 2024 decreased by 3 338, compared to that of 2023.

There was a notable improvement in the pass rate this year. Candidates who passed at the 30% (Level 2) improved from 76,8% in 2023 to 81,2% in 2024. There was a corresponding improvement in the pass rate at the 40% (Level 3) over the past two years from 52,0% to 56,9%.

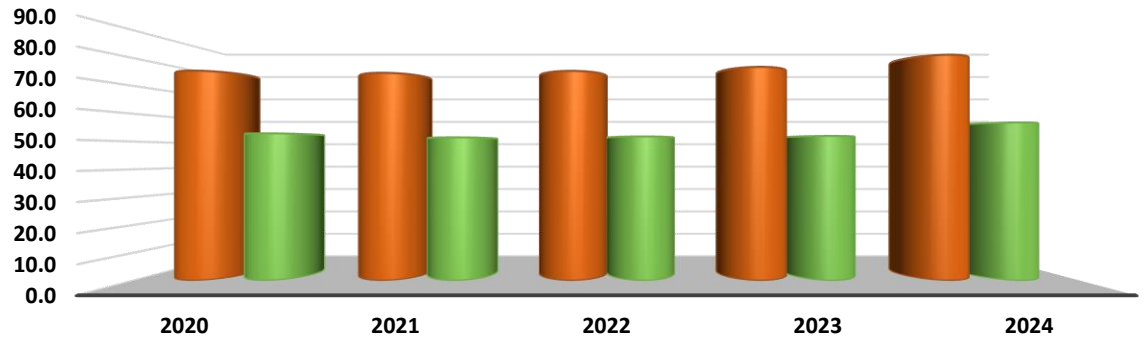
There was a marginal change in the percentage of distinctions, over 80% (Level 7), which increased from 5,6% in 2023 to 6,3% in 2024. Despite the decrease in the number of candidates in 2024, the total number of distinctions increased from 5 655 to 6 151.

The various commendable support programmes employed by teachers, subject advisors and provincial education departments were continued in 2024. The resourcefulness and diligence of the above-average candidates also contributed to the overall improvement in the subject.

Table 2.1.1 Overall achievement rates in Accounting

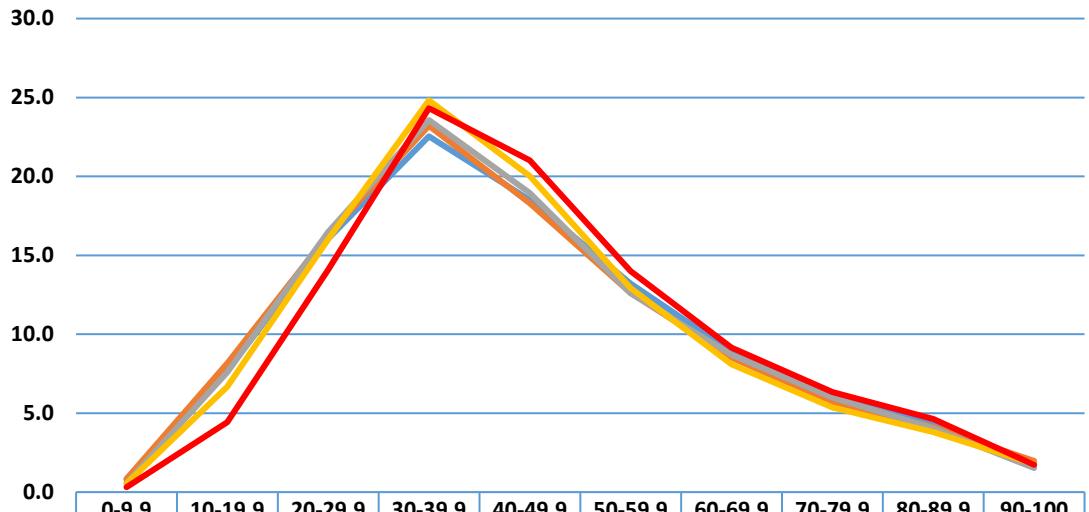
Year	No. wrote	No. achieved at 30% and above	% achieved at 30% and above	No. achieved at 40% and above	% achieved at 40% and above
2020	92 767	70 014	75,5	49 103	52,9
2021	105 894	79 093	74,7	54 518	51,5
2022	104 798	78 993	75,4	54 291	51,8
2023	100 974	77 572	76,8	52 509	52,0
2024	97 636	79 261	81,2	55 514	56,9

Graph 2.1.1 Overall achievement rates in Accounting (percentage)



	2020	2021	2022	2023	2024
% achieved at 30% and above	75.5	74.7	75.4	76.8	81.2
% achieved at 40% and above	52.9	51.5	51.8	52.0	56.9

Graph 2.1.2 Performance distribution curves in Accounting (percentage)



	0-9.9	10-19.9	20-29.9	30-39.9	40-49.9	50-59.9	60-69.9	70-79.9	80-89.9	90-100
2020	0.8	7.7	16.1	22.5	18.5	13.2	8.9	6.1	4.4	1.8
2021	0.8	8.2	16.3	23.2	18.3	12.6	8.5	5.7	4.1	2.0
2022	0.6	7.6	16.5	23.6	18.9	12.6	8.7	6.0	4.0	1.5
2023	0.5	6.7	16.0	24.8	20.0	12.9	8.1	5.4	3.8	1.8
2024	0.3	4.4	14.1	24.3	21.0	14.0	9.1	6.3	4.6	1.7

2.2 OVERVIEW OF CANDIDATES' PERFORMANCE: PAPERS 1 AND 2

It was evident that the 2024 cohort had generally prepared themselves well for these papers, resulting in improved quality of responses across most questions. Extensive intervention initiatives and the reintroduction of June examinations in certain provinces, appeared to have benefited the candidates in their preparation and examination-writing techniques.

Despite the positive trend, some candidates appeared not to have managed their time effectively and struggled to complete certain subsections. The wide achievement gap between capable and weaker groups of candidates is still noticeable. This is possibly influenced by the extent of access to appropriate resources.

The general comments in this report include issues that surfaced from a detailed analysis of the 2024 Accounting NSC papers. Teachers are advised to refer to comments in the *Diagnostic Reports* of recent years, as the underlying issues continue to require attention.

Accounting is a dynamic subject that requires regular practice, financial insight and general knowledge of current trends in the business world. Teachers are therefore expected to keep up with new trends in the subject. Teachers are also expected to productively use a variety of resources in supporting learners. These include the *CAPS,* revised teaching plans (*ATP*), the current *Examination Guidelines,* previous *Diagnostic Reports* and past NSC papers (particularly from 2015), in addition to study guides and online resources such as education websites, video presentations and updates from publishers.

Factors covered in previous *Diagnostic Reports* that still remain relevant:

- **Inability of weaker candidates to deal effectively with lower- and middle-order questions**: This limitation exposes weaknesses in the teaching and learning process as questions are structured to be accessible to all candidates, at least in part.
- **Ineffective formative assessment:** Regular formative tasks or tests must be skilfully used to build confidence in all topics. To be effective, these must be short, practical and aimed at achieving targeted outcomes. Feedback to learners is essential.
- **Lack of meaningful revision of relevant Grade 10 and 11 content:** Approximately 20% of an Accounting examination paper is devoted to integration of expected prior knowledge. In order to manage teaching time effectively, it is imperative that teachers factor revision of prior content into their teaching of Grade 12 topics.
- **Poor mathematical and arithmetical ability:** A thorough understanding of the logic of arithmetical calculations is a prerequisite for an Accounting learner. This skill includes the correct use of signs, rands and cents. Continued practice is the only solution to this issue.
- **Language barriers linked with poor comprehension skills:** These continue to be cited as a reason for poor performance of weaker candidates. This, and previous diagnostic reports, contain specific advice on preventing misinterpretation of question requirements and motivating learners to provide explanations or comments.
- **Inability to identify relevant information to answer specific subquestions:** Candidates are expected to engage with the information and extract what is needed to answer each subquestion. Weaker candidates find this challenging, and often use inappropriate information to support explanations.

Further recommendations to improve exam-writing skills in Accounting:

The following strategies can be time-consuming, but the benefits are very rewarding:

- **Interpreting questions and identifying evidence:**
  Questions often require figures or other evidence to be quoted from the information provided. This can be achieved by teachers analysing examination questions with learners at strategic times during the academic year, preferably after a topic or section. Learners should be advised to adopt this approach:
  1. Read the instructions (under 'Required') and identify or underline key words.
  2. Identify the relevant evidence in the source information provided.
  3. Verbally explain what must be done to answer the question, in line with the mark allocation.

  Such open forums will expose learners to views of others and assist in constructing valid responses to interpretive or open-ended questions.
- **Providing explanations**:
  Answering skills must focus on explanations being concise and to the point. Unnecessary repetition of specific requirements of questions often leads to poor or incorrect responses. Explanations may be presented in bullet-point form. Lengthy explanations are time-consuming and might not earn additional marks. However, depending on the mark

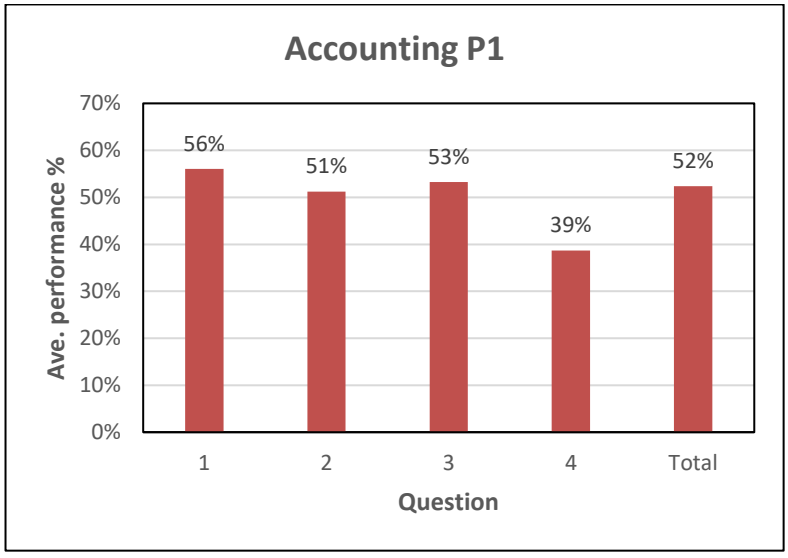
allocation, partial, simple or single-word responses may not always be sufficient. Learners should be cautioned that if several points are required, each point must be different and not a mere re-wording of previous items.

- **Use of the structured answer book**:
  Learners must be reminded that the answer book should not be relied upon to replicate the question paper and that the spaces provided suggest the expected length of responses. This will enable candidates to manage their time for each question more effectively.
- **Ensuring effective time management:**
  In the context of examinations, this remains a challenge for many learners. Learners must regularly practise the skill of adhering to the time allocations provided in the paper. A practical strategy is to divide past NSC papers into separate parts to be completed during a teaching period or under specific time constraints. Such activities, at regular intervals, should train learners to focus on the specific demands of each subquestion and to formulate efficient ways of expressing themselves without wasting time on unnecessary or irrelevant comments. Although teachers might advise learners to start with questions in which they feel most comfortable in accumulating marks, the process undertaken by the learner in deciding what sequence to follow must not create a time delay.

2.3 DIAGNOSTIC QUESTION ANALYSIS OF PAPER 1

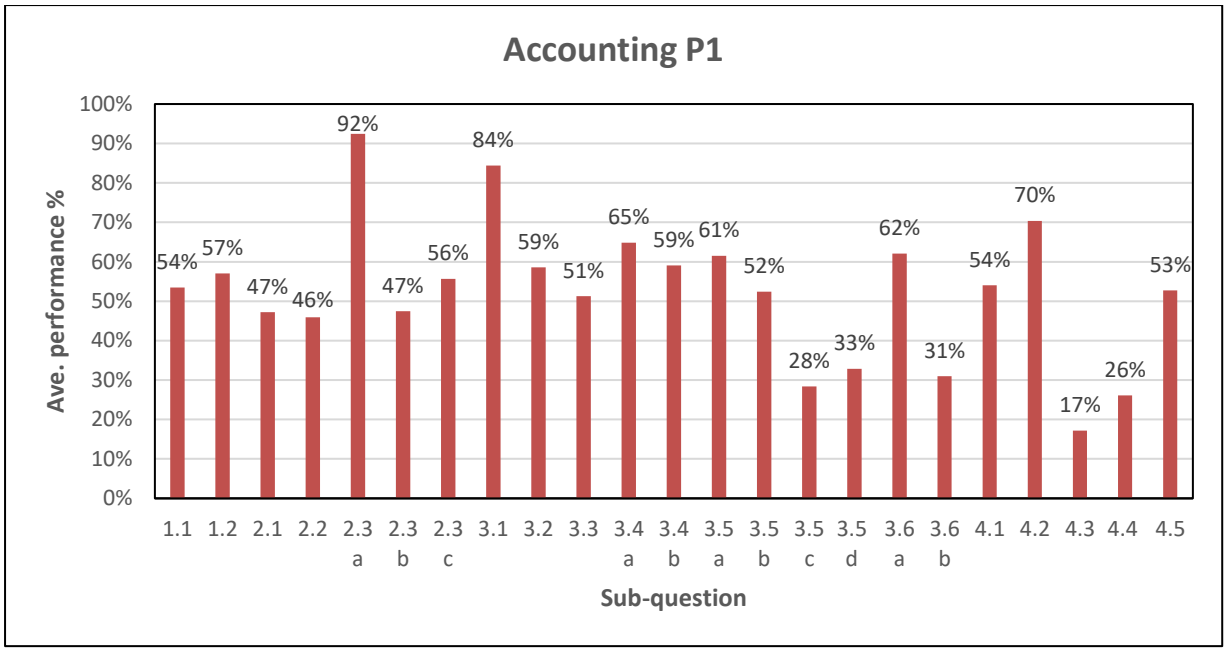
The graphs presented below are based on data from a random sample of candidates in the different provinces. They provide a clear picture of the general performance in each topic (Graph 2.3.1). This is useful in assessing the relative degrees of challenge of each question as experienced by candidates (Graph 2.3.2).

Graph 2.3.1 Average performance per question in Paper 1



Q	Topics
1	Company Financial Statements
2	Cash Flow Statement and Financial Indicators
3	Interpretation of Financial Information
4	Corporate Governance

Graph 2.3.2 Average performance per subquestion in Paper 1



SubQ	Topic	SubQ	Topic
1.1	Calculate: Fixed Assets	3.5(a)	Purchase of Rights Issue Shares
1.2	Statement of Comprehensive Income	3.5(b)	% Shareholding After Rights Issue
2.1	Retained Income	3.5(c)	Amount Spent by Shareholder
2.2	Cash Flow Statement	3.5(d)	Repurchase of Shares from Shareholder
2.3(a)	Calculate: % Operating Expense on Sales	3.6(a)	Role of the CEO
2.3(b)	Calculate: Stock Turnover Rate	3.6(b)	Management of the Company
2.3(c)	Calculate: Interim Dividends per share	4.1	Auditing: Role of Independent Auditor
3.1	Profitability	4.2	Independent Audit reports
3.2	Dividends Pay-out Rate	4.3	Audit Evidence
3.3	Earnings and Returns	4.4	Implications of Audit Report
3.4(a)	Financing of Fixed Assets	4.5	Consequences for the Independent Auditor
3.4(b)	Risk and Gearing		

There were general improvements in candidates' responses in Paper 1, and it was evident that most candidates had prepared thoroughly. However, certain questions were poorly answered, Above-average candidates demonstrated insight and were able to handle questions across all topics while weaker candidates managed to score part-marks on low order questions.

In Q2, which covered the Cash Flow Statement (CFS) and calculation of financial indicators, it was anticipated that candidates would perform well, but it proved that most centres were not well prepared to maximise marks. This was disappointing, considering that the structure of this question has been the same in past papers.

2.4 ANALYSIS OF LEARNER PERFORMANCE IN EACH QUESTION IN PAPER 1

QUESTION 1: COMPANY FINANCIAL STATEMENTS

This question covered the Statement of Comprehensive Income (SOCI) and calculations relating to fixed assets. Candidates generally performed well in the main part of the question which was preparing the SOCI (Q1.2; 39 marks). Most candidates were able to take advantage of the easily obtainable marks by showing pre-adjustment figures in their workings and

completing all subtotals appropriately. Candidates also generally earned method marks for transferring and processing figures correctly, however, many of them proved to be weak in calculating specific amounts relating to fixed assets that affect certain adjustments in the SOCI.

The majority of adjustments have been asked in previous NSC papers and some were taught as early as Grades 10 and 11. It was anticipated that candidates would be familiar with the adjustments, however, this assumption turned out to be the reverse. Some centres did not perform well in calculating specific amounts of certain adjustments.

It remains a concern that many weaker candidates seem to have a poor understanding of accounting for the movements in fixed assets, the format of SOCI and distinguishing between income and expenses. However, they were able to earn part-marks for pre-adjustment figures, and method marks for post-adjustment and balancing figures in the SOCI.

Common errors and misconceptions

(a) Q1.1 comprised the movements of fixed assets, which was part of the adjustment process. This reflected a challenge to some candidates. In the calculation of depreciation (Q1.1.1 and Q1.1.3; 7 marks), cost price of vehicles (Q1.1.2; 4 marks) and profit/loss on vehicle traded in (Q1.1.4; 5 marks), some candidates struggled to take advantage of scoring marks in the subquestions. The question was based on both Grade 10 and 11 content, therefore most candidates were supposed to take advantage of the marks on offer for this subquestion. Candidates lost marks due to errors in calculating the correct depreciation period. They did not realise that equipment did not have a depreciation rate in this case, and they were confused about how to use the trade-in value in calculating profit/loss on sale of an asset. Some candidates incorrectly used the trade-in amount in calculating the cost price of the vehicle instead of only focusing on using the original cost price when the vehicle was initially bought, as required by the historical cost concept of Generally Accepted Accounting Principles (GAAP).

(b) The structure of the SOCI in Q1.2 required candidates to demonstrate their thorough understanding of accounting principles. This content represents relatively predictable Grade 10 and Grade 11 topics that are repeated annually in the context of sole traders, partnerships, or companies. Candidates who performed well earned marks through demonstrating calculations for each adjustment given. Weaker candidates secured marks by calculating intermediate totals correctly or earning part-marks for their incorrect adjusting, however, the pre-adjustment figure needed to be correct. The majority of candidates handled the calculation well except for those who were unable to cope with bottom-up and top-down calculations to identify certain figures.

(c) In dealing with adjustment (ii), weaker candidates were unable to use the mark-up, especially in the reduction of goods sold to an internal employee. Some candidates did not subtract the amount of the reduced mark-up when calculating their final sales figure.

(d) Shortcomings of certain candidates in other calculations were also evident in the case of calculations which did not fit a simple arithmetical norm. For example, in adjustment (v) some candidates did not appreciate that if a figure was three months in advance, they would be required to multiply the amount paid by 15/12 to calculate the full amount for the financial year, or by 3/15 to calculate the additional excess amount. Similar reasoning would have been required in calculating income tax for the year by using a factor of 28/72, or by 100/72 to calculate the net profit before tax.

(e) Well-prepared candidates admirably addressed all the adjustments in this question. However, in preparing the SOCI, the following items challenged less capable candidates despite having been covered in previous grades and past papers:

- **Trading stock deficit:** Some candidates were unable to process this adjustment by simply subtracting the closing balance from the opening balance to determine whether it will be an income or expense.
- **Provision for bad debts adjustment**: Many candidates did not adjust for bad debts correctly before calculating the amount of the provision. Others neglected to subtract this amount from the opening provision to arrive at the decrease in provision for bad debts figure.
- **Insurance**: Some candidates had challenges with this adjustment, despite the same phrasing being used in past papers. This adjustment commonly appears in most textbooks and resource packs used by teachers; candidates were anticipated to earn full marks. Some shortcomings identified were candidates using the incorrect sign when calculating the adjusted figure which resulted in their losing marks.
- **Salaries and wages**: Although candidates were generally able to earn a mark for the pre-adjustment figure and the final answer, it appeared that most centres had difficulty with calculating the total deductions and contributions. It is evident that this content had not been effectively revised. This is a basic arithmetic calculation which is frequently examined. A fair percentage of candidates inappropriately multiplied by 35/100 instead of 35/65.
- **Directors' fees**: Many candidates did not appear to understand that the given figure was for the entire financial year for both directors, inclusive of the increased fee. As a result, they neglected to subtract the increased fee, in order to calculate the initial fee before increase.
- **Income tax for the year**: Weaker candidates used a top-down method even though this would have been impossible because interest income was the balancing figure. They did not realise that they should multiply by 28/72, or by 100/72.

Suggestions for improvement

(a) It was expected that the calculation of fixed asset note amounts would provide a realistic opportunity for relatively high marks to be achieved by the entire 2024 cohort. This topic is covered from Grade 10 and is covered in both papers. Teachers should do baseline assessment to check prior knowledge from previous grades. It is important that teachers integrate and revise this topic while teaching *Companies* in Grade 12. Short continuous formative assessments on this topic are advised as a possible solution to improve performance.

(b) The marking guideline for the SOCI (Q1.3.1; 39 marks) reflects 4 marks for entering pre-adjustment figures and 15 method marks for reflecting post-adjustment figures and subtotals. This indicates that 49% of the total of 39 marks on these subquestions are available to weak learners who experience difficulty in calculating any of the 9 adjustments correctly. Nine (9) of the 15 method marks could be scored easily for understanding the format of SOCI. The reasons for many weaker candidates not coming close to achieving full marks on this aspect needs to be seriously investigated by teachers so that they can understand the type of remediation that is required.

Preparing the financial statements will always form a major part of Paper 1, therefore, preparations must include a variety of examples from different resources, especially past NSC examination papers. Equal attention must be given to understanding and applying adjustments correctly, as well as knowing the format. Teachers must help

learners to appreciate different approaches and the treatment of different adjustments to ensure that they are equally ready for the examination. This approach will enhance accuracy when preparing financial statements.

There were 9 adjustments to cover part of the 55 marks for this question. Most of these adjustments involved working with fractions, ratios, percentages or solving for x in an equation. Apart from practising this skill in Accounting classes, learners should take advantage of the relevant knowledge garnered from subjects such as Mathematical Literacy and Mathematics. These subjects provide a strong foundation for dealing with the arithmetical part of Accounting, thereby enabling learners to be confident in solving adjustments accurately.

(c) Due to the predictable nature of questions, teachers must explore the different ways in which the questions could be framed and tested. For example, the fixed asset details could be asked in the form of a note/calculations or the SOCI could require a normal top-down/bottom-up operation in a Pre-Adjustment Trial Balance and a list of adjustments; completing a partially completed statement; using financial indicators; or correcting the net profit – taking into account errors and omissions. Each form would present different degrees of challenge, basically using similar information.

(d) The most obvious assumption based on evidence of actual scripts is that weaker candidates simply do not fully understand the logic and structure of the SOCI. This is probably due to their poor grasp of the *Trading Account* and *Profit and Loss* ledger accounts. Learners must be exposed to analysis of adjustments using the expanded *Accounting Equation.* This will assist them with being able to identify the impact of each adjustment on the various elements of the accounting equation including income and expenses which is crucial for understanding SOCI.

When revising past NSC papers with such learners, teachers may find it productive to give them the Trial Balance and require them to simply enter the figures in the SOCI in the appropriate places. This strategy could well impress upon weaker learners that easy marks in processing figures on the financial statements are within their reach. To enhance understanding, learners should also be required to verbalise the concepts in the *Accounting Equation* and to identify where they would be reflected in the financial statements.

(e) In building the confidence of weaker learners in revision classes, teachers are advised to focus on the calculation of each adjustment in isolation without compiling the financial statements.

(f) Additional points of advice on specific items in the question:

- Learners must be made aware that certain amounts might comprise missing figures which need to be calculated. In this case, the missing figure was Interest Income.
- In processing salary adjustments in a SOCI, learners must be aware that the *Salaries* line item should include gross salary before deductions, plus employer's contributions. Although the bookkeeping entries cover separate accounts for an employer's contributions, the principle of *materiality* should be applied in preparing financial statements. Using extra line items for contributions in the financial statements is not appropriate, particularly as it was stated in the list of balances that this was the case.

QUESTION 2: RETAINED INCOME, CASH FLOW STATEMENT (CFS) AND FINANCIAL INDICATORS

The content and recent trends in exams have made the presentation of this topic largely predictable. As a result, candidates who revised and practised past examination papers secured valuable marks. This was mainly due to the marks available in the Retained Income Note (Q2.1; 8 marks), Cash Flow Statement (Q2.2; 17 marks) and calculation of Financial Indicators (Q2.3; 10 marks).

These subquestions have been tested extensively over the years, and despite the abundant supply of resources, some candidates continued to show weaknesses in calculations and in the use of the formula sheet. These are perennial issues that have not been resolved over the past several years. Weaker candidates were able to score the 'easier' marks for the correct treatment of the given figures and the substitution of figures if the appropriate formula was applied. However, they struggled with some of the more advanced calculations.

Common errors and misconceptions

(a) The Retained Income Note (Q2.1; 8 marks) was generally not well answered by most candidates. It remains a serious concern that very few candidates were able to earn full marks. They were unable to calculate net profit after tax (NPAT) using the dividends pay-out rate of 40%. Most average candidates, at least, managed to score 5/8 marks which comprises 63% of this subquestion. This question was mainly a 'confidence boosting' question and candidates were expected to score full marks.

It was apparent that this financial indicator to determine the NPAT had not been practised in class regularly. Some high achieving candidates in certain centres used their initiative to create methods such as weighted-average method, which would also be valid in arriving at the correct answer and earning the full 3 marks. However, these complex methods were unnecessary as they would have demanded more time to complete what should have been a very simple calculation.

(b) In Q2.2 (17 marks) candidates were required to complete the CFS. Although this has been examined regularly in the past, inaccuracies in some calculations were noted from a number of centres. These included the inappropriate use of brackets/no brackets to indicate an outflow or inflow of cash and poor presentation of workings to indicate positive or negative amounts. A few candidates also did not transfer the repurchase of shares calculated in Q2.1 to the Financing Activities section.

The following basic errors were noted:

- **Income tax paid:** Some candidates did not recognise that the credit figure on SARS at the beginning of the year represented an underpayment of provisional tax which should be added in calculating the net payment to SARS. Others also incorrectly subtracted the amount refunded by SARS at the year-end.
- **Dividends paid:** Candidates did not perform well. As a result, it showed that many candidates still did not understand the concept of dividends. The addition of the final dividends declared at the end of previous year to the interim dividends paid on 1 September 2023 equalled the amount of the total dividends paid during the financial year. The challenge for many was that only the final dividends declared per share was provided and they had to use the 1 200 000 number of shares issued at the beginning of the year to find the amount. This increased the degree of challenge for this question.
- **Shares repurchased:** Many candidates were unable to identify the average share price from the figures given in the question. They also incorrectly used only the retained income repurchase of shares figure.

- **Loan repayment:** Some candidates still could not master the calculation of a loan repayment. The monthly instalment, including interest, confused some candidates, for no apparent reason. This adjustment has been taught in previous grades and similar adjustments and calculations have been asked in past papers.
- **Net change in cash and cash equivalents:** This should be a relatively simple calculation but, except for the high and average achievers, candidates were not able to achieve well in this question. The opening cash balance, which included an overdraft was not well answered and the use of brackets was not shown to indicate an outflow. Calculating the closing cash balance was correctly done because the change in cash and cash equivalents was given which allowed candidates to earn marks for the operation. Some candidates found it confusing because the closing balance of cash balance was not given.

  Misplaced items were a concern. Some candidates did not know the format, however, their calculations were marked.

(c) Three financial indicators were asked in Q2.3. Calculating the % operating expenses on sales and interim dividends per share were subquestions that have been examined frequently and most candidates calculated them correctly. However, the calculation of stock turnover rate was done poorly, with weaker candidates neglecting the formula sheet. The mistakes made by weaker candidates were as follows:

- **Stock turnover rate:** The provision of the formula sheet appeared not to be helpful to the majority of the weaker candidates. Many copied the formula incorrectly or they used *stockholding period* instead of *stock turnover rate formula*. They lost marks as per principle 11 on the marking guideline. It also appeared that there has been inadequate focus on this calculation in classrooms as several candidates did not answer this question. Others attempted to use the formula provided but swapped all the factors in the numerator or denominator or did not use the average to find the final answer. Some candidates calculated stockholding rate correctly but gave an incorrect classification in the answer.
- **Interim dividends per share (DPS):** In this question the change in the number of issued shares during the year created difficulty for most candidates. Some candidates divided by the number of issued shares at the beginning/end of the year. This is inappropriate as dividends are declared at discrete intervals.

Suggestions for improvement

(a) Teachers must ensure that they integrate related financial indicators when teaching financial statements. This will enable learners to earn full marks for such questions. Teachers must provide a variety of examples from different sources to ensure that learners acquire a clear understanding of the approach and how to do the calculations. Regular short formative tasks will help weaker learners in understanding adjustments relating to retained income (Q2.1) and the CFS (Q2.2).

(b) It will be easier for all learners if teachers provide regular practice in compiling a detailed CFS. Furthermore, questions that affect calculations of operating, investing, and financing operations in the CFS should be provided in the classroom. This will enable learners to see the similarities between a full CFS and part of the three operations when asked separately. Learners should be reminded that notes to the CFS can be asked separately and that some of the calculations that were not asked included purchases of assets, proceeds from assets sold and increase/decrease in fixed deposit.

(c) Q2.2 also required a calculation for the net change in cash and cash equivalents. Weaker candidates often find this concept confusing. It would therefore assist them if they drafted the three lines found at the bottom of the CFS, as an easy alternative, as follows:

Net change in cash & cash equivalents	Given figure →	**296 460**
Cash & cash equivalents at beginning of year	–142 680 + 44 675	(106 680)
Cash & cash equivalents at end of year		189 780

To enhance understanding it is, however, important to use the difference between the opening balance and the closing balance and a net inflow or outflow of cash. This can also be demonstrated by calculating the difference between interest paid for the year and yearly repayments inclusive of interest to illustrate a net outflow of cash.

(d) Weaker learners will need support in engaging with the financial indicators. It is important for learners to avoid rote learning as opposed to understanding the formula and its content. As a result, it should be easier for them to identify the correct formula. The extremely poor responses in calculating both stock turnover rate and interim DPS revealed a serious lack of understanding of the logic and purpose of these indicators.

(e) In the case of *stock turnover rate*, teachers must emphasise that it differs from the *stockholding period*. A key difference between the two is that one focuses on rate (how fast) and the other on period (length of time). Learners can use these principles to guide them, i.e.

Stock turnover rate = is about how fast the stock is sold
Stockholding period = is about how long stock is kept before being sold

This item is also covered in Paper 2 and at times candidates can be asked to use the closing stock. Learners should refer to past papers. Teachers must illustrate to learners how the two indicators relate to each other.

QUESTION 3: INTERPRETATION OF FINANCIAL INFORMATION

This question covered interpretation of financial information of one company with comparisons over two financial years. The information was consistent with that of past papers but was presented in a more summarised format of tables which included the extract from the notes and Statement of Financial Position (SOFP).

The question integrated three subquestions (12 marks) covering % shareholding, rights issue and share repurchased. Each subquestion had a stem, which was a guide for candidates. It is a concern that despite the guidance of these stems, average and below-average candidates still performed poorly.

The 33 marks of this question tested the candidate's ability to analyse data and interpret the results in a meaningful way. It is important that candidates know that they evaluate figures obtained from the financial statements, so that informed decisions can be taken in respect of profitability, liquidity, risk and gearing, returns and solvency.

Common errors and misconceptions

(a) The responses from candidates varied significantly; there was a gap between the above-average and weaker candidates. Weaker candidates largely found it challenging to deal with the interpretation or evaluation parts of the questions. They

also lost marks because they failed to analyse the data presented critically, and to link the financial indicator to the financial performance of the company. However, some of these candidates managed to earn part-marks by identifying the correct financial indicators in their responses.

(b) It was disappointing that some centres had candidates who could not earn full marks for the easy evaluative question on profitability in Q3.1 (4 marks). Some candidates misunderstood the question because they quoted only the financial indicators without showing the trend and figures, despite this being stipulated in the question. Furthermore, weaker candidates lost marks by inappropriately identifying the mark-up % as an indicator that reflected how well the company managed its expenses. They appeared to lack understanding that the mark-up % actually indicated the pricing policy of a company. It was, however, encouraging that many centres were able to correctly identify the % operating expense on sales, % operating profit on sales and % net profit before tax on sales.

(c) Although candidates were generally able to earn marks by citing figures for relevant financial indicators to support their opinions, they often neglected to provide the trends over the two years, despite this being a relatively simple task. It was also evident that a significant number of candidates who quoted financial indicators and trends often did not provide the necessary comment or explanation, which prevented them from earning full marks for this subquestion. Merely providing a figure and trend is, however, not regarded as an explanation of the impact of the indicator.

(d) In Q3.2 (3 marks) candidates lost marks for inappropriate comments on why the change in the dividends pay-out policy was a responsible one by the company. Candidates again did not mention the trend and simply copied the figures as they were from the data given. The overall question required candidates to realise that the company took a strategic decision to prioritise long-term growth over immediate returns to shareholders.

(e) Both the earnings per share (EPS) and the return on average shareholders' equity (ROSHE) were generally identified together with trends by most candidates in (Q3.3; 4 marks). However, they lost marks because they did not adequately explain why shareholders should be satisfied with the company's earnings and returns. Candidates who neglected to comment did not realise that an increased EPS suggested that the company had increased its profitability as indicated in Q3.1. This would have indicated that shareholders should be satisfied.

(f) Despite Q3.4(a) clearly indicating that the main source of funding should exceed R1m, many candidates struggled to identify the correct sources and figures. This indicates a lack of understanding of the question's requirements and suggests that they did not realise that they were supposed to check the financing activities to arrive at the correct answer.

This question has been asked in several past papers and candidates were expected to perform above average. Most candidates recognised the two financial indicators, namely debt equity ratio and % return on average capital employed (ROCE), but lost marks for not identifying the correct trend. Weaker candidates failed to recognise that the decreased debt equity reflects low risk and increased ROCE, which was higher than interest rate on loans, reflected a positive gearing.

(g) In Q3.5 (12 marks) whilst most candidates used the correct number of shares that Grant had before the rights issue, candidates lost marks for not using the correct proportion of additional shares offered to all existing shareholders. When calculating

additional shares, candidates made basic arithmetical mistakes by not applying the correct ratio. For example, some candidates did not divide by 50 as shareholders gained 10 shares for every 50 shares owned, which led to significant errors in their calculations.

Candidates should not have found this subquestion difficult. However, it was clear that most centres were not exposed to comparing repurchase price to either market price per share (MP) or net asset value per share (NAV). Candidates did not appreciate that the repurchase price was given, which would have made it easy to support board members who were against the idea of repurchasing shares at a price higher than MP and NAV.

(h) Q3.6 (4 marks) was an open-ended question and candidates were expected to think critically in providing a variety of answers related to the CEO being a good leader. Some candidates could not elaborate on the key characteristics that defined a good CEO. It was evident they did not appear to know that the CEO is the key decision maker in a company. For example, they merely stated that a good CEO should possess 'good skills' without providing a deeper explanation on how these skills would contribute to the company's success. This resulted in incomplete answers that did not fully address the question. Candidates had to think critically but a number of candidates provided only one-word responses. This indicates that that roles of different stakeholders were not emphasised in the classroom when introducing companies.

Suggestions for improvement

(a) Learners should be made aware of the importance of reading the preamble in the question which is a guide to how it should be answered. As mentioned in previous *Diagnostic Reports*, questions on interpretation of financial information usually require supporting evidence. It is important for teachers to emphasise the importance of reading the questions with understanding.

However, it is clear that teachers in many centres need to highlight the following points to learners in order to elevate the performance of all candidates:

- The importance of knowing how to calculate the financial indicator;
- Categorising and understanding the meaning of different financial indicators;
- Identifying key words to be used in the comments or explanation; and
- The importance of critically assessing the results of financial indicators comparing two years.

(b) Teachers should encourage group discussion and short questions on basic concepts and the different categories on financial indicators from Grade 10 as a logical step following the preparation of financial statements. If this topic is taught well from the lower grades, it will strengthen the learners' ability to think critically in evaluating financial indicators and provide valid responses in their explanations.

It is essential for learners to understand that explaining and commenting on the specific trends over the years is an important strategy in analysing financial information. In their responses learners should ensure that they quote relevant financial indicators and figures but also identify and explain the trends observed over the years. Failure to fulfil the requirements of the question will always result in a loss of marks.

(c) Learners should be able to explain the concept of profitability and identify the six financial indicators that assess it. They must also be able to distinguish between profitability indicators that demonstrate whether the expenses are being effectively

managed and those that indicate a strategic pricing method. This understanding will enable learners to provide accurate responses with valid justification.

(d) In responding to the dividend pay-out policy (Q3.2), learners should be aware of how it impacts on short-term cash flow and long-term future investment. Teachers must emphasise the relationship between the company's financial health, intended investment projects and how these affect shareholder returns. If learners grasp this content, they will understand the broader implications of changes in dividends per share.

(e) With regard to Q3.3, teachers need to highlight the following so that learners can understand earnings per share (EPS) and return on average shareholders' equity (ROSHE):

EPS	Provides information on how much profit each share generates.
ROSHE	Provides information of how effectively the company is using shareholders funds to generate profits.

When substituting the formula of the two financial indicators above, the numerator is identical, but the denominators are not. As a result, they both measure the ability of the company to generate profit although they serve various purposes for shareholders, such as in determining whether the shareholders should be satisfied or not. Learners should also note that there are other factors or figures that are relevant to earnings and returns. For example, ROSHE has to be compared to the interest income rate to earn full marks.

(f) Teachers are advised to conduct short class tests and discussion groups and allow learners to evaluate data given and comment on their findings. This will stimulate critical thinking and real-life situations for them to understand how financial data influence decisions of management in the company. Some questions such as risk and gearing have been assessed in past papers and learners should score maximum marks.

(g) Educators are urged to engage the *Diagnostic Report* 2023 in which the 'rights issue' was explained. This information would have made it easier for all learners to understand the concept in Q3.5. A new concept such as this should be regularly emphasised.

Learners should be reminded that some questions involve recurring figures within a question and incorrect prior calculations will be credited with method marks. For example, learners might calculate the number of shares incorrectly but they will earn marks by carrying the incorrect figure over to the new % holding of the shareholder. Similarly, if learners multiply the same incorrect number of shares by the price of shares, they will be rewarded.

(h) In creating revision packs, teachers should consider including more analysis and interpretation questions for the comparison of two financial years within one company and also for comparing two companies. It is vital for learners to attempt to master this topic as it supports an important part of the aims and objectives of the subject of Accounting. The revision pack should include open-ended questions which will allow learners to share different answers which will encourage in-depth discussion. Learners should also be reassured that if a marking guideline does not include a comment that is valid, it would be marked as correct.

QUESTION 4: CORPORATE GOVERNANCE

This was a corporate governance question which is highly relevant to the fundamental concept in the world of business, focusing on the structures, practices and processes that ensure a business operates with integrity, accountability and transparency. The 15-mark question provided candidates with an opportunity to explore critical principles which are essential for the ethical management and the success of a business. Corporate governance is integrated across all topics in the curriculum. This is a requirement as per *CAPS* policy, the *ATP* and *Examination Guidelines* also give guidance on the topic.

Q4.1 (2 marks) was a simple question which covered the role of an external auditor, while Q4.2 (2 marks) focused on choosing the correct audit report and giving its explanation. It is evident that the explanation of these questions was well covered by almost all candidates at different levels. Average- and below-average candidates were able to earn marks in Q4.4 for the impact on directors and shareholders.

The previous *Diagnostic Reports* raised the point that language terminology remains a problem for below-average candidates. This is evident based on their answers specifically on comments and explanations of open-ended questions. Past papers consist of different scenario questions that require candidates to think critically and creatively. Teachers should take the necessary steps to encourage classroom discussions to ensure that candidates are well prepared in answering these types of questions.

Common errors and misconceptions

(a) The majority of candidates were able to score maximum marks by explaining the role of an external auditor (Q4.1). However, in Q4.2, most candidates in certain centres chose the correct audit report but were unable to earn marks for the explanation of the report. Below-average candidates incorrectly considered qualified report as a clean report, which is evident that language is still a problem in some centres. These questions were intended as confidence-boosting easy questions that had been asked in past examination papers.

(b) Q4.3 required candidates to provide evidence that the independent auditor was required to verify the fixed assets of a company. This was poorly answered by a large number of candidates in certain centres. These candidates could not differentiate between different types of audit evidence and how, in this case, the evidence applied to fixed assets. It was evident that they had not been exposed to audit processes in class. Above-average candidates managed to earn at least part-marks for unclear answers but lost marks by not making comparisons to the fixed asset register.

(c) Candidates' responses to Q4.4 were unsatisfactory, this could be attributed to a lack of comprehension. This question was a follow-up to Q4.2. As a result, most candidates mistakenly responded to the roles and responsibilities of directors and shareholders within the company, rather than specifically responding to the implications of the audit report chosen in Q4.2. It is evident that this misinterpretation resulted in candidates struggling to connect the broader concept of the scenario, leading to answers that were not relevant to the question.

Suggestions for improvement

(a) It is important that teachers must clearly explain the basic concepts of corporate governance and the roles of different stakeholders within a company as well the importance of stakeholder accountability and application of good ethical conduct. Understanding of these basic points and structures should assist learners in providing

appropriate responses to governance questions. Teachers are urged to help learners by regularly facilitating group discussions around ethical dilemmas in business, possibly allowing learners to take on roles as directors, shareholders and auditors in debating corporate governance issues. Past papers contain different scenarios that allow open-ended discussions which will enable learners to analyse corporate governance scenarios and to identify key concepts relevant to the questions. Learners must be taught how to extract relevant information from the scenario, to ensure that they respond to the questions asked. This should be reinforced in class regularly and should not be taught in isolation. This would allow learners to understand how corporate governance impacts the day-to-day functioning of a business.

By implementing this strategy of allowing dialogue through group discussions, it will equip learners with the skill of identifying the problem easily and give them valuable thinking skills to make the correct decisions if they are in management positions in future.

(b) Teachers must also emphasise the connection between corporate governance and financial reporting, and they must administer formative assessment continuously. This will indicate if learners understand the topic. The school-based assessment tasks or projects provide an opportunity for reinforcing problem-solving questions that contain open-ended questions. These types of questions require critical thinking skills so that learners can develop responses based on their own experiences and understanding the scenario. This project should not focus on the application of financial statements which are featured in formal tests or examinations.

(c) Despite the challenges of numerous centres generally not answering this question, it is encouraging to see that a sizable number of learners are able to give responses beyond what was required.

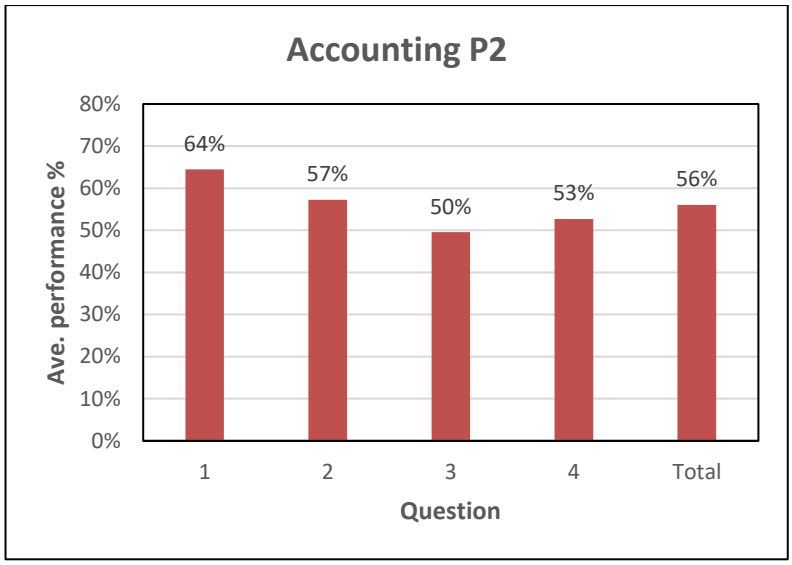
(d) Through published annual reports learners can read how positive corporate governance impacts on a company, society and the environment. It is evident that if good ethical behaviour and internal controls are well executed within a company, they will strengthen the company's future success. Positive governance ensures that the image of the company attracts potential investors, improves morale of employees and gains more loyalty from customers.

It is important that teachers make learners aware that negative governance has consequences to the long-term success of the company. And learners should be aware of the procedures to be taken in case a stakeholder takes part in acts of dishonesty. Poor decision making by stakeholders in a company can contribute to potential fraud, engagement into irregular contracts, unproductive employees, poor image, weak internal controls and loss of funds.

2.5 DIAGNOSTIC QUESTION ANALYSIS OF PAPER 2

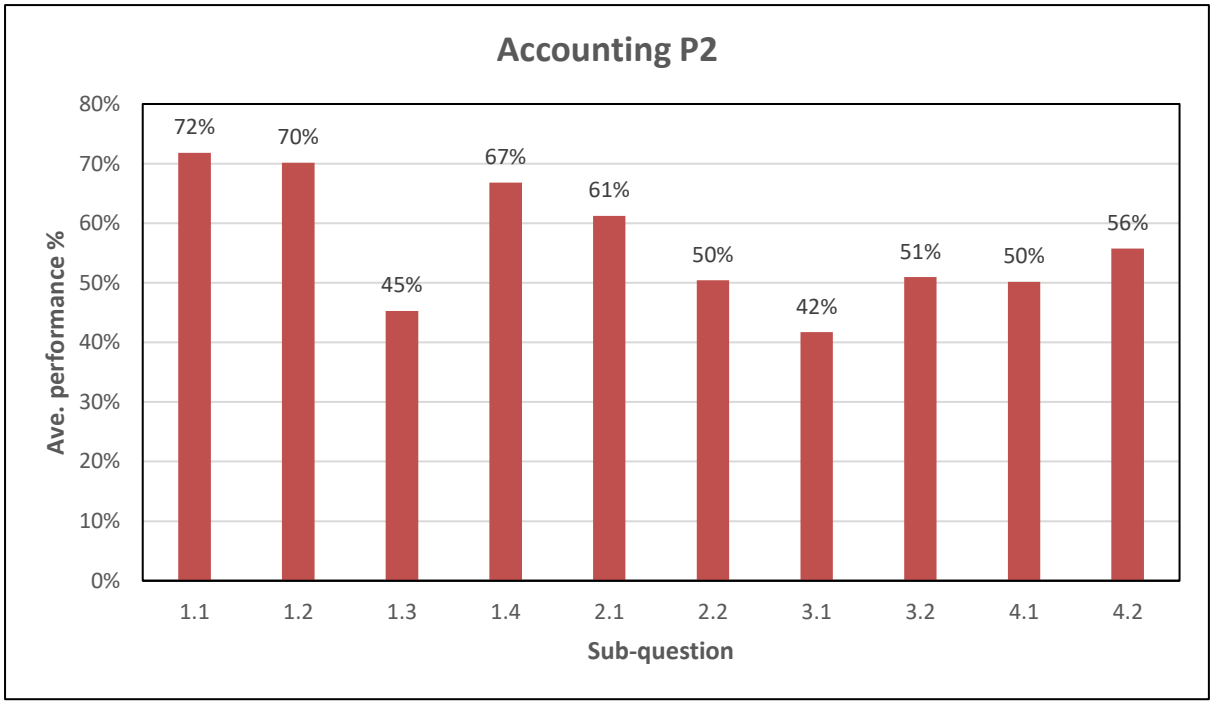
The following graph is based on data from a random sample of candidates. While this graph might not accurately reflect national averages, it is useful in assessing the relative degree of challenge of each question as experienced by candidates.

Graph 2.5.1 Average performance per question in Paper 2



Q	Topics
1	Debtors' Reconciliation, Age Analysis and VAT
2	Stock Valuation
3	Budgeting
4	Cost Accounting

Graph 2.5.2 Average performance per subquestion in Paper 2



Sub-Q	Topic	Sub-Q	Topic
1.1	Concepts	2.2	Problem Solving
1.2	Debtors Reconciliation	3.1	Budget vs Projected Statement of Comprehensive Income Items
1.3	Debtors Age Analysis and Internal Controls	3.2	Budgeting
1.4	VAT	4.1	Cost Accounting
2.1	Stock Valuation	4.2	Break-even and cost analysis

Most centres were able to focus on the specific topics that are examined in Paper 2 due to the predictable nature of the structure of the paper. The performance in Debtors' Reconciliation and Debtors' Age Analysis (Q1), proved that revision sessions conducted at various centres had a positive impact and provided candidates with an opportunity to perform well.

Weaker candidates continued to struggle with interpretation and evaluation questions as previous reports have indicated. They provided incomplete answers which prevented them from earning full marks. These candidates were unable to identify key words used in problem-solving questions, in formulating appropriate answers.

Budgeting (Q3) is taught from Grade 10, yet it continues to be poorly answered, especially when it is related to analysing and interpreting. However, candidates again had challenges using the correct key words in their responses. Responding to interpretative and evaluative questions requires candidates' ability to read data and draw conclusions from data provided.

2.6 ANALYSIS OF LEARNER PERFORMANCE IN EACH QUESTION IN PAPER 2

QUESTION 1: DEBTORS' RECONCILIATION, AGE ANALYSIS AND VAT

This question tested correcting the Debtors' Control account to reconcile with the Debtors' Ledger; Value-added Tax (Grade 10 and 11 curriculum) and interpretation of Debtors' Age Analysis on (Grade 12 curriculum). This question was pitched at an easy to moderate challenge.

Common errors and misconceptions

(a) Some candidates were unsure about whether output VAT is an asset or liability (Q1.1.2) and some were unsure on the effect of bad debts on the amount payable to SARS (Q1.1.3). This is work covered in Grade 11.

(b) Calculation of the correct Debtors' Control balance in Q1.2.1 (5 marks) was well answered. Many candidates lost the one method mark as 'superfluous entries' were included in the calculation of the final answer.

(c) Information B(iii) was interpreted as an increase in the Debtors' Control Account balance as candidates assumed that the word 'undercast' will imply such. As this figure was found on the credit side of the Debtors' Control Account, including it would lead to a decrease in the balance of the Debtors' Control Account.

(d) Preparation of the correct Debtors' List in Q1.2.2 (14 marks) was generally well answered. However, some candidates used incorrect signs, adding instead of subtracting and vice versa. This shows a lack of understanding of increases/ decreases in an asset account (Grade 10 content).

(e) When answering Q1.2.1 and Q1.2.2, most mistakes were made in interpreting Information B (iii), (v) and (vi). In each of these errors and omissions, the candidate was required to replace incorrect amounts with the correct one. Once again, poor understanding about whether the incorrect amount was entered as an increase or decrease led to candidates showing incorrect responses.

(f) The interpretation of information based on a Debtors' Age Analysis in Q1.3 (8 marks) traditionally required candidates to identify errant debtors and substantiate their choices with figures. In this paper, the questions were phrased differently. Candidates did not consider the information given in the preamble (credit terms of 60 days and at least 90% of debtors will adhere to this) in providing calculations required to answer Q1.3.1. As a result of the above, many calculations presented did not make sense because they did not relate to the percentage of debtors that adhered to the 60-days credit terms.

(g) In providing points of advice in Q1.3.2 (4 marks), candidates provided stereotyped answers of 'charge interest' and 'grant discounts' that was part of the preamble to this question. This showed that candidates were not reading the information before responding to questions.

(h) Q1.4 (7/10 marks) required candidates to calculate VAT amounts. A fair percentage of candidates were able to calculate the correct figures, but many were still challenged with the VAT exclusive (amount x 15/100) and VAT inclusive (amount x 15/115) calculations. The handling of zero-rated items and implementation of trade discount posed a challenge to many candidates. The 'Effect on VAT payable' was poorly interpreted by many candidates.

Suggestions for Improvement

(a) Debtors' Control Account to reconcile with the Debtors' List is work covered in the Grade 10 curriculum. In Grade 11, reconciliation procedures change to concentrate on Bank Reconciliations and Creditors' Reconciliations. As the Debtors' Age Analysis is introduced in the Grade 12 curriculum, teachers are cautioned not to take for granted that learners, by virtue of being in Grade 12, have mastered the work covered in previous grades. It is imperative that a baseline assessment is conducted, and revision is done before introducing/covering Grade 12 content.

(b) Teachers must make learners aware that VAT can be tested in different ways. The trend in past examination papers was to allocate an average of 15 marks to this topic. To perform well in this topic, irrespective of the manner in which it is tested, understanding the calculations using VAT exclusive and VAT inclusive and the difference between INPUT and OUTPUT VAT must be presented very clearly by teachers.

(c) Because some topics, including Debtors and VAT, have not been assessed in the past few years/or on a regular basis, it is possible that teachers do not teach these topics in Grade 12. Teachers must include these topics and revise them with the learners. A detailed copy of the *Annual Teaching Plan* is provided to teachers at the beginning of each academic year. An average of two weeks is allocated for Reconciliations (Term 2) and a further two weeks (Term 3) for VAT. Departmental heads and subject advisors must ensure that the *ATP* is followed by teachers. Supervision of teachers' portfolios must include monitoring the implementation of the *ATP* and ensuring that the teacher covers the different topics on Reconciliations and VAT in the classroom.

(d) Teachers and subject advisors are encouraged to source and adapt a variety of questions from past examination papers as well as study guides so that learners become familiar with the different ways in which this topic can be assessed. Teachers are also encouraged to develop their own resources by adapting questions from past papers/study guides.

(e) Informal assessments must be done by teachers on a regular basis. A file should be maintained by teachers in this respect as done for school-based assessment (SBA) tasks set by the teacher. It is important for departmental heads/subject advisors to supervise this aspect on an ongoing basis. If departmental heads/subject advisers only concentrate on whether the teachers have completed their tasks set out for SBA assessments, the learner in the class is disadvantaged and will not be adequately prepared for the end-of-year examinations.

(f) Internal control measures are relevant to all topics in Accounting. Teachers are advised to introduce and have discussions of these measures on a daily basis in the classroom rather than introduce it as a separate point in the daily lesson plans.

QUESTION 2: STOCK VALUATION

This question focused on the weighted-average stock valuation method (11 marks) and the first-in-first-out method (5 marks). Calculations also included mark-up % (3 marks) and stockholding period (4 marks). Candidates were able to score marks in the calculations (excluding stockholding period) but struggled with the interpretative aspects of this question. The interpretation/evaluation types of questions were pitched at the higher-order cognitive level and required a clear understanding of concepts and insight.

Common errors and misconceptions

(a) Q2.1.1 (5 marks) required candidates to calculate the weighted-average price of ONE pair of sunglasses. Many candidates misunderstood this instruction and calculated the value of the closing stock of sunglasses. This shows that candidates do not read the requirements of the question but simply provide a response based on past year papers or examples done in class. Weaker candidates lost marks as the calculations were allocated with 4 accuracy marks (2 for numerator and 2 for the denominator). Candidates did not notice that the returns were already subtracted in the table provided in Information C. This once again demonstrates that candidates simply repeat answers expected in past year papers, without considering the nuances of the information presented in the current question.

(b) It was pleasing to note that many candidates scored full marks in Q2.1.1(a). Weaker candidates lost marks for not subtracting the quantity of sales and closing stock in determining the final answer. However, candidates were unable to establish that Q2.1.1(b) was linked to the calculation required in Q2.1.1. Many candidates attempted to do a completely new calculation.

(c) Q2.1.3 (5 marks) required candidates to calculate the value of the closing stock using the FIFO method. It was disappointing to note that a fair percentage of candidates still struggled with these calculations and the presentation of the calculation, keeping in mind that this has been a regular question in most of the past papers. Candidates still struggled to only account for the 840 units of closing stock and had to subtract the return of 20 units from the purchase during November 2023. It is possible that candidates were unable to associate the return with the relevant batch using the cost price given.

(d) The scenario presented to answer Q2.1.4 (2 marks) seemed to have been misunderstood by candidates as their responses focused on measures to prevent theft (as examined in many past year papers) rather than providing evidence to prove that the theft had already occurred. Due to this misinterpretation, the response of 'install cameras' was common in many candidates' answers. Many candidates' responses to Q2.1.4 (b) were incorrect as they also considered Jack (supplier's delivery driver) to be an employee of the business (Sunglass City).

(e) Q2.2 (13 marks) included calculations of mark-up % and stockholding period. Candidates who were not able to get the correct mark-up % and stockholding period were challenged in responding appropriately to the follow-up subquestions in Q2.2.1 (2 marks) and Q2.2.3 (2 marks). The majority of the candidates used the formula on the formula sheet and multiplied by 365 days in their responses instead of multiplying

by 120 days as the new line of formal shirts were introduced and sold during the last four months of the financial year.

Suggestions for improvement

(a) Questions set on the stock valuation method are limited to one of the following methods: first-in-first-out; weighted average and specific identification. In each of these methods, the calculation of the closing stock is the distinctive factor. Teachers are advised to use methods commonly recommended in most textbooks/study guides/past examination marking guidelines. Other methods (using cost of sales) of calculating the value of the closing stock are also correct, but are lengthy and not necessary.

(b) Teachers need to place greater emphasis on improving reading comprehension prior to attempting to answer questions. Learners must be made aware that questions can be phrased differently to test deeper understanding of the topic. Usually past examination papers emphasised, amongst other things, the calculation of the value of the closing stock. The emphasis in this paper moved to determining the value of the missing stock – the same concept but now tested differently.

(c) Teachers must draw attention to the types of products used in the stock question as this may have an effect on the stockholding period of the product. Learners will be incorrect in assuming that a high stockholding period may be a disadvantage to the business as it is dependent on the type of product they are dealing with. Also, a learner indicating that the product may 'go out of fashion' as in the case of formal shirts will be incorrect.

(d) Determining/Verifying the value of the closing stock may be tested with other topics in the Grade 12 Accounting syllabus. This will include Financial Statements and Cost Accounting. Teachers need to be more creative and implement such integration in their presentation of these topics in the classroom.

(e) Learners must be exposed to short formative tests on the calculation of closing stock, gross profit, mark-up %, etc. This will help to improve mathematical skills of learners, especially the weaker ones.

(f) It is also important for teachers to expose learners to interpretive, evaluative and problem-solving questions on this topic. Class discussions and debates must be conducted to evaluate the responses of learners.

(g) Teachers are cautioned not to use past papers as a primary source for teaching and learning. Instead, past papers should be used for revision purposes. Subject advisers could structure their contact programme with teachers to include developing resource material on all topics to supplement their lessons in class.

QUESTION 3: BUDGETING

Unlike in the previous two years, this question proved to be a challenge for the majority of the candidates with an average score of 48% as per the Rasch Analysis. The question started with an 'appetiser' (6 marks) which was categorised as a lower-order thinking skill question. However, the majority of candidates performed very poorly with an average score of 40% and below achieved by the majority of the provinces in this subquestion as per Rasch Analysis. This shows that candidates are unable to differentiate between a Cash Budget and a Projected Statement of Comprehensive Income. While candidates were able to take advantage of the marks on offer for basic calculations in the Cash Budget, the inappropriate responses to the

interpretative subquestions indicated that this aspect of the topic was still not given enough attention during class time or revision, although such questions have appeared in the majority of the past papers.

Common errors and misconceptions

(a) In attempting Q3.1 (6 marks) many candidates managed to score marks only in Q3.1.1 (3 marks). It was disappointing to note that candidates were unable to classify the cash drawings to the Cash Budget in Q3.1.2 (1 mark). Q3.1.3 required candidates to separate a receipt (R246 600) and an income (R19 600) (2 marks). Many candidates were unable to do this separation. These calculations are based on the Grade 11 syllabus. It seemed that the calculations of figures in the Cash Budget were done independently from calculation of figures in the Projected Statement of Comprehensive Income in the classroom.

(b) Q3.2.1 (9 marks) focused on the calculation of total purchases and the preparation of the Creditors' Payment Schedule. Candidates expected the total sales for the month concerned to be given which is used to work out the total purchases. Candidates were unable to use the cash sales (60%) to determine the total sales (100%) and work from that point. Candidates have been exposed to the Debtors' Collection Schedule as this was tested in most past papers. Although the Creditors' Payment Schedule is based on the same interpretation, candidates were unable to apply their knowledge accordingly. This points to overreliance on past papers as the primary teaching resource.

(c) Of the calculations tested in Q3.2.2 (15 marks), candidates performed very well in the calculation of the rent expense for December (2 marks) as this calculation has appeared in most past papers. Candidates were unable to use the loan repayment and adjust the interest on loan (4 marks) proportionately, but candidates were able to score at least 50% in this calculation. Weaker candidates displayed a lack of mathematical skills and established that the total instalments paid on the new computers for 36 months would be 80% of the value of the new computers to be installed (3 marks). Hence, the remaining 20% would be the deposit. In calculating the insurance premium for December (3 marks) and salaries for November (3 marks), strong and average candidates responded well and earned full marks. Weaker candidates were able to score part and method marks as they again displayed a lack of mathematical skills.

(d) Many candidates found it difficult to explain the changes in the sales policy when answering Q3.2.2 (i) (2 marks) using percentages. Candidates commented on total sales instead of comparing the cash and credit sales. Q3.2.2 (ii) (4 marks) required candidates to comment of the results of October. Candidates lost marks as a comparison with September figures was included instead of only referring to October. Candidates answered Q3.2.2 (iii) (4 marks) very poorly. Candidates failed to make meaningful comparisons using percentages.

Suggestions for improvement

(a) Budgeting content (Cash Budget and Projected Statement of Comprehensive Income) is covered in Grade 11, while the Grade 12 curriculum is expected to focus more on analysis and interpretation. All aspects completed in Grade 11 must be revised by teachers before they go on to interpretation. Teachers should teach both aspects of budgeting (Cash Budget and Projected Statement of Comprehensive Income) simultaneously so that learners identify the similarities and differences between both

forms of Budgeting. Teachers should reinforce such similarities and differences in Grade 12.

(b) Teachers need to thoroughly complete calculations and show learners how to show their workings so that the mathematical skills of learners can be improved. Short tests can be developed to enhance these calculation skills.

(c) Teachers must emphasise that interpretative questions on the control of items of a budget no longer require a response on whether there is good control or not, just by comparing budget and actual expenditure. Payments such as delivery expenses and packing materials are proportionately linked to sales. Hence, to comment on whether these items are well controlled or not, there must be a focus on the amounts of budget allocated versus actual budget spent must be expressed as a percentage of sales. Teachers are expected to expose learners to these types of questions and to conduct class discussions so that learners are able to develop confidence to tackle these questions. Past examination papers provide a range of such examples.

QUESTION 4: COST ACCOUNTING

Firstly, this question focused on calculations of amounts for direct/raw materials cost, direct labour cost and factory overhead costs. Unlike previous papers, drawing up of the Production Cost Statement was not required. The majority of the candidates seemed to handle these calculations satisfactorily. Weaker candidates were able to score part and method marks as they again displayed the lack of mathematical skills. The second part of the question was based on the traditional interpretation of financial information and unit costs.

Subtle changes in context and different questioning styles lifted the challenge in some subquestions.

Common errors and misconceptions

(a) Candidates were able to correctly link the cost of raw materials based on the number of units produced and sold in Q4.1.1 (4 marks). A fair percentage of candidates omitted to add the 10% for wastage.

(b) In Q4.1.2 (7 marks) candidates were unable to calculate the hourly rate per worker and the number of hours worked by the worker who had resigned. Weaker candidates were able to score part and method marks as the answer book indicated the adjustments required. Candidates were also challenged in the calculation of the overtime amount for the three (3) workers as they were unable to calculate the hourly rate.

(c) In Q4.1.3 (8 marks) candidates were unable to calculate the portion of the clerk's salary to be allocated to the factory. Weaker candidates did not convert the monthly salary to an annual amount before apportioning 80% to the factory. To calculate the correction to the rent expense, the candidate was expected to do the same calculation twice, with different data, and process the difference as a correction of error. Average and weaker candidates were unable to complete this process.

(d) In commenting on the level of production and break-even point in Q4.2.1 (4 marks), candidates still compared BEP to BEP and production to production, instead of BEP to production level. As a result, candidates did not indicate whether the business was making a profit/loss. This comment has been asked for in most past papers. Therefore, it was disappointing to note that candidates still did not score full marks.

(e) Q4.2.2 (4 marks) was generally well answered by the majority of candidates as the question led candidates to the information from the question that needed to be quoted. However, the weaker candidates only commented on one part of the question, either the gross profit or the selling price.

(f) In commenting on Q4.2.3 (4 marks), the majority of candidates were able to identify the 'direct materials cost' and commented correctly on the reason for their choice, hence earning 2/4 marks. However, many candidates were unable to identify the 'total fixed cost' and 'selling and distribution cost'. Candidates mentioned the 'direct labour cost' although this cost had increased significantly and would have a negative impact on the selling price.

(g) Q4.2.4 (4 marks) was poorly answered by the majority of candidates. Candidates were unable to use the break-even formula to work out the selling price per unit.

Suggestions for improvement

(a) The information to calculate the direct materials and direct labour was presented differently to learners in this paper. It is therefore important for teachers to expose learners to different questioning styles to enhance their mathematical skills in calculating amounts. A variety of informal tests can be useful and these can be peer-marked and class discussions must follow.

(b) In correcting errors made in the calculation of factory overhead costs (rent expense in this paper), teachers are advised to reverse the error made (-) and replace the correct amount (+). Emphasising the calculation of the net amount only, may sometimes confuse learners. Teachers must also emphasise the importance of showing calculations in the space provided. In most instances, calculations carry part-marks which will lead to the method mark being allocated to the final answer.

(c) Teachers are advised to guide learners to improve their reading comprehension, prior to attempting to answer a question. Learners must carefully analyse what a question requires so that a full answer may be provided.

(d) Teachers must be able to clearly illustrate to learners the need for comparison of costs/unit costs over the past two financial years to determine costs that are well controlled and those that are not. The meaning of the concept of 'economies of scale' needs to be explained to learners by using different examples. Past papers are reliable resources of revision activities as they illustrate different ways changes in costs/unit cost can be commented on.

(e) Teachers must go beyond calculating the break-even point as per formula provided on the formula page. The formula provided can have other items as the unknown that learners must be able to work out. Teachers are encouraged to develop examples working the fixed cost/selling price per unit/variable cost per unit by giving the break-even point. Short tests can be developed to enhance these calculation skills.

CHAPTER 3

AGRICULTURAL SCIENCES

The following report should be read in conjunction with the Agricultural Sciences Paper 1 and Paper 2 question papers for the NSC November 2024 examinations.

3.1 PERFORMANCE TRENDS (2020–2024)

The number of candidates who wrote the Agricultural Sciences examinations in 2024 decreased by 1 633, compared to that of 2023.

There was a significant improvement in the pass rate this year. Candidates who passed at the 30% level improved from 80,5% in 2023 to 86,9% in 2024. There was a corresponding improvement in the pass rate at the 40% level over the past two years from 57,1% to 65,1%.

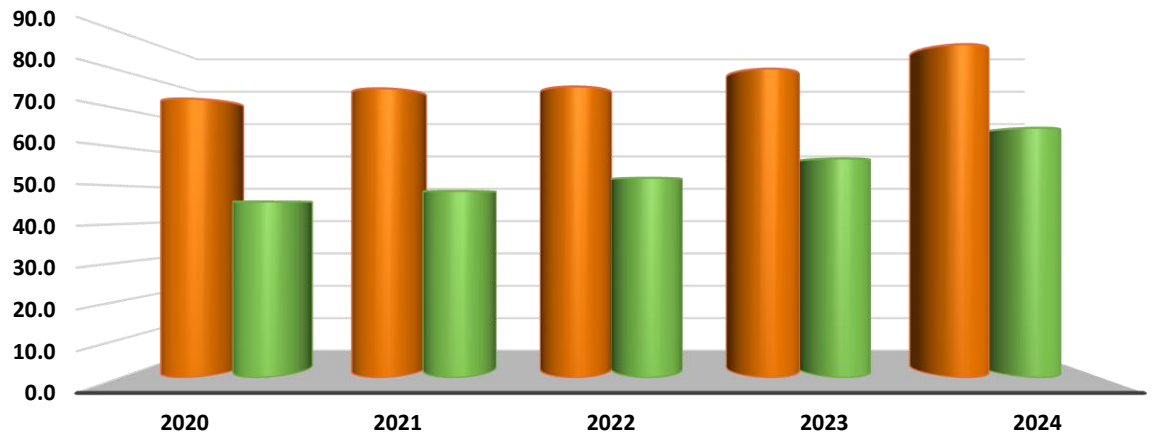
The percentage of distinctions over 80% improved from 2,5% in 2023 to 3,4% in 2024. Despite the decrease in the size of the 2024 cohort, this converts into an increase in the total number of distinctions from 2 897 to 3 885.

The various commendable support programmes employed by teachers, subject advisors and provincial education departments were continued in 2024. The resourcefulness and diligence of the above-average candidates also contributed to the overall improvement in the subject.

Table 3.1.1 Overall achievement rates in Agricultural Sciences

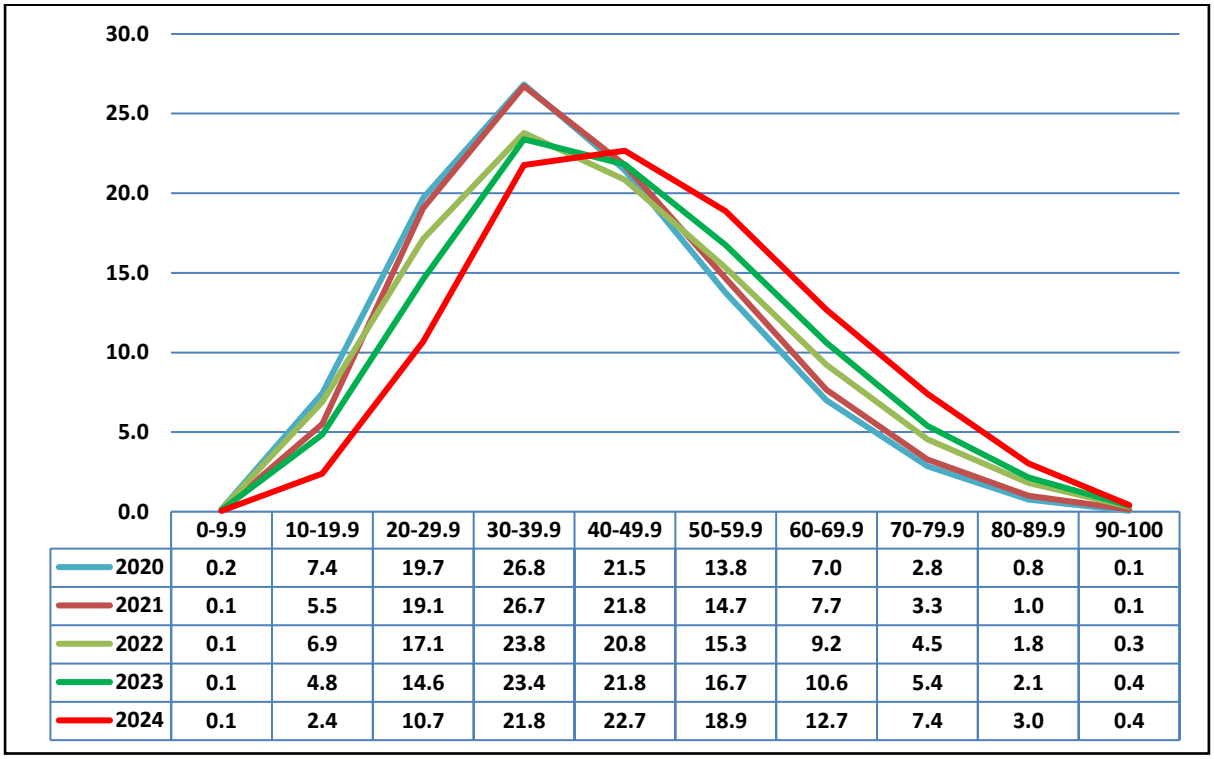
Year	No. wrote	No. achieved at 30% and above	% achieved at 30% and above	No. achieved at 40% and above	% achieved at 40% and above
2020	96 155	69 916	72,7	44 114	45,9
2021	123 990	93 447	75,4	60 308	48,6
2022	125 353	95 070	75,8	65 251	52,1
2023	115 894	93,279	80,5	66,175	57,1
2024	114 261	99 257	86,9	74 371	65,1

Graph 3.1.1 Overall achievement rates in Agricultural Sciences (percentage)



	2020	2021	2022	2023	2024
% achieved at 30% and above	72.7	75.4	75.8	80.5	86.9
% achieved at 40% and above	45.9	48.6	52.1	57.1	65.1

Graph 3.1.2 Performance distribution curves in Agricultural Sciences (percentage)



	0-9.9	10-19.9	20-29.9	30-39.9	40-49.9	50-59.9	60-69.9	70-79.9	80-89.9	90-100
2020	0.2	7.4	19.7	26.8	21.5	13.8	7.0	2.8	0.8	0.1
2021	0.1	5.5	19.1	26.7	21.8	14.7	7.7	3.3	1.0	0.1
2022	0.1	6.9	17.1	23.8	20.8	15.3	9.2	4.5	1.8	0.3
2023	0.1	4.8	14.6	23.4	21.8	16.7	10.6	5.4	2.1	0.4
2024	0.1	2.4	10.7	21.8	22.7	18.9	12.7	7.4	3.0	0.4

3.2 OVERVIEW OF CANDIDATE PERFORMANCE: PAPERS 1 AND 2

General comments

The 2024 cohort benefited greatly from a normal year of schooling, free from major issues that could have prevented them from accomplishing their goals. However, certain candidates performed below average, and a fair percentage were unable to address the requirements of the questions.

It should be noted that candidates were still unable to deal effectively with the demands of questions 1.3 and 1.4, which required basic subject terminology. Language barriers continued to pose a challenge, as candidates were unable to respond efficiently to questions that required comprehension skills.

Despite the subject-specific language used in Agricultural Sciences, weaker candidates continued to have trouble understanding the requirements of questions. They tended to provide incomplete or unclear responses to questions requiring explanations or comments, often relying on the commonly used responses from previous marking guidelines and using them inappropriately in different contexts. Some candidates even gave responses using concepts unrelated to the content topics in a specific paper.

Poor spelling continued to challenge most candidates where they tended to give responses that had no meaning and were far removed from the correct concept. Sometimes they wrote words that have different meanings, for example: *substance farming* instead of *subsistence farming, vas difference* instead of *vas deferens, bond tick instead of bont tick, crouching instead of crutching, genetics modification instead of genetic modification.*

Candidates were unable to analyse the relevant information provided in answering specific subquestions. This was especially relevant in Calculations of quantities in a Pearson Square,

Capital and Genetics sections of the papers. Only the more capable candidates were able to extract and respond to the relevant information, while weaker candidates found this process challenging, as they were often unable to comprehend and to respond as expected.

There was a slight improvement in candidates' ability to draw different graphs, which was evident in both Paper 1 and Paper 2, because most candidates could score at least four marks by successfully identifying the independent and dependent variables, the units and the heading in both papers.

General suggestions for improvement

Despite the improvement noticed in some questions, several factors need to be improved in both papers in 2025:

(a) **Basic concepts & terminology:** Learners need to be exposed to the basics of each topic for them to engage effectively with the content in that topic. The process of conceptualising and understanding these concepts is more than mere rote-learning of the definitions. Terminology should form an integral part of teaching and learning and needs to be emphasised regularly. Teachers are advised to make the teaching of terminology interesting by engaging learners in the identification of key concepts for each topic. The learners should then be taught to formulate shorter definitions, based on the context. Teachers can also make use of short question tests on these terms using previous examination papers.

Teachers are advised to use the following strategies to improve the teaching of basic concepts and terminology:

- Engage learners in the identification of new terms and finding explanations from the textbooks.
- Use new concepts and terms in sentences and in short scenarios to illustrate learners' understanding.
- Learners should be directed to first identify the new concepts for each topic and then to compile a glossary of terms in their notebooks on completion of the topic, with a brief but clear definition for each term or concept. Keep a separate notebook for this purpose. By the end of the year, all learners should have a comprehensive glossary of all the relevant terms and concepts pertaining to each topic.
- Agricultural Sciences terminology should be assessed frequently using different forms of informal activities.
- Challenging or confusing terminology could be explained by using illustrations and/or posters. These posters can be pinned on notice boards in the classroom so that learners are exposed to them on a regular basis.
- Spelling tests and word cards can be utilised to train learners on how to spell complicated terms.

(b) **The importance of formative and topic testing:** Tests should assess learning after every topic has been covered to provide remedial measures where necessary. Self-assessment and peer assessment, with immediate feedback on errors, provides learners with an opportunity to increase their understanding of the problem. They also become exposed to valid alternative responses and different, easier approaches to solving problems.

(c) **Enhancing learners' skills in accurately interpreting specific subquestions and using information that is relevant:** It is essential that learners have a good understanding of the instructional verbs, as emphasised in the *Examination Guidelines*. Teachers must explain the context in which key verbs such as 'deduce',

'justify', 'explain' and 'suggest' are used and the expected depth required by each question. The marking guidelines of past examination papers can be used to show how the responses to similar questions can differ because of the key verb used in the question. A variety of instructional verbs must be used in both informal and formal assessment tasks. It is recommended that these informal tasks lean mostly towards developing conceptual skills, as this will enable learners to develop a better understanding of the requirements of each question.

(d) **Skills to be assessed:** Assessment should be of such a nature that it challenges the learners' ability to think beyond what is presented in the textbooks or by the teacher. Learners need to be guided on how to process data presented in different forms, such as tables, graphs, calculations or scenarios. These areas have proven to be challenging for learners. Teachers need to sharpen their learners' analytical skills by exposing them to challenging informal and formal tasks.

(e) **Real-life scenarios:** Learners show serious deficiencies in the processing of application questions, and this is an indication of a lack in the depth of the practical side of the subject. Learners need to be exposed to more real-life agricultural situations through visits to sites of practice. Where a practical demonstration is not possible, the use of videos that simulate the actual practice is recommended to enhance intensive learning.

Teachers are advised to include sources such as pictures, scenarios, case studies and short statements in their informal and formal assessment tasks, and to demonstrate to learners such questions should be approached. These tasks should test the application of theoretical knowledge into real farming practices. This could be done by first reading and/or analysing the source, guiding learners on how to find clues and thereafter associate the key information discovered, before finally attempting to answer the actual questions. In some instances, learners can be requested to formulate their own questions based on the source. This practice will allow learners to analyse the source critically. Teachers can then develop follow-up questions to extend learners' understanding of the content.

(f) **Enhancing the interpretation of calculated values:** Agricultural Sciences examination papers contain some simple mathematical processes, e.g. drawing of graphs, calculating percentages, conversion of values, expression into relevant units, use of formulae and substitution of values. Learners lack understanding in giving the correct formulae and substituting using the formula. They mostly seem uncertain when they are to subtract a bigger value from a small value which is usually to show a deficit. They are also uncertain when to divide or multiply when showing magnitude of values, or percentages.

Teachers are advised to give regular informal tasks on calculations incorporating the different versions. Teachers should not assume that learners have successfully engaged with these skills in other subjects or that learners can successfully transfer these skills from other subjects to the study of Agricultural Sciences. Teachers are advised to first indicate the importance of the various calculations to farming to their learners before showing them the actual skill of performing the calculations by applying the information that is given. Moreover, teachers are also advised to mark such calculations accurately by emphasising the conversions, units, substitutions of values and formulae.

(g) **Use of past NSC papers:** Learners must have access to past examination papers, but they should also be alerted to their limitations. It should be noted that although questions in past papers may cover the same content, they may have different foci, e.g.

a question which asks for a *comment* requires a different response than a question which asks for *a justification* or *suggestion*. Teachers are advised not to engage in whole question paper revision; it is better to consolidate questions from various papers into a question bank for each topic and then engage with question revision.

(h) **Reference to the *CAPS*, *Examination Guidelines* and previous Diagnostic Reports:** Teaching and assessment must be informed by the content prescribed in the *CAPS* and the approach outlined in the *Examination Guidelines*. A holistic understanding of all topics is essential. It is also important that teachers use a variety of the prescribed textbooks to source information and then consolidate it for learners. It is imperative that teachers take cognisance of comments and recommendations made in previous diagnostic reports.

3.3 OVERVIEW OF CANDIDATES' PERFORMANCE IN PAPER 1

General comments

(a) There was a decline in candidates' performance in Paper 1 compared to 2023. The decline resulted from a general drop in performance in Q2, Q3 and Q4.

(b) Candidates experienced challenges with Q1.4 when they were expected to replace the incorrect underlined word with the correct word, and in Q2.2.2 many candidates could not present the requirements for the normal functioning of rumen micro-organisms or name the micro-organism that forms the least percentage of the population.

(c) Q1 was the only question to show improvement, while Q2 and Q4 were the most poorly answered questions, resulting in an overall drop of 3%.

(d) Questions on animal nutrition challenged the 2024 cohort, as the content covers a broad spectrum.

(e) As was the case in 2022 and 2023, most candidates appeared to have mastered the drawing of the graph but were still challenged by the criteria to be followed when drawing a graph. For example, some candidates struggled to provide both variables in the heading and the correct calibration of the Y-axis. Others could not distinguish between the dependent and independent variables and the importance of having equal intervals when calibrating the axis.

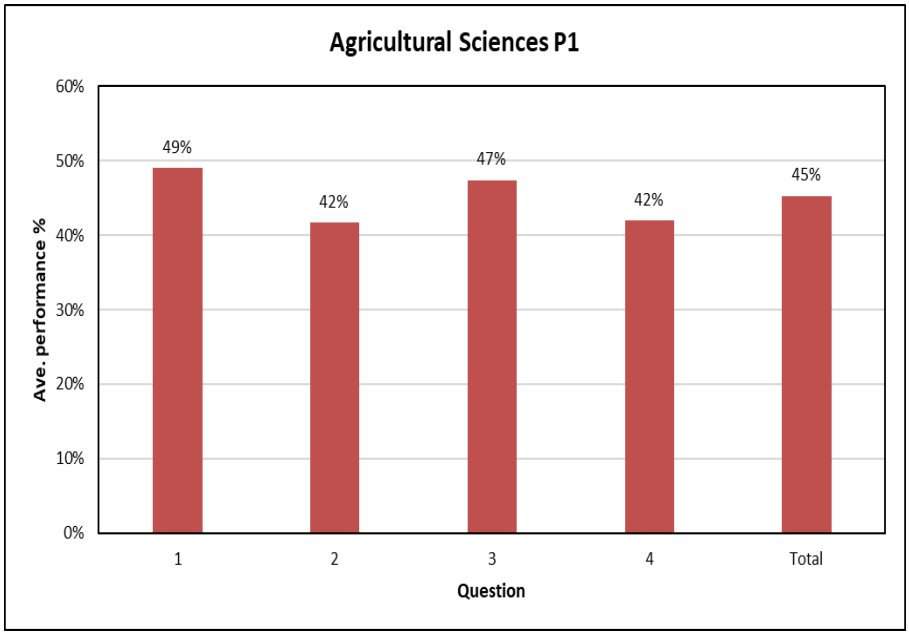
(f) As was the case in previous years, questions requiring reasoning, motivation, or justification were still poorly answered by most candidates. This is an indication that candidates had not been sufficiently exposed to these types of questions in the classroom.

(g) The language of learning and teaching remains a challenge for most candidates. They were not able to respond appropriately to the instructional verbs used in questions. They also had trouble with the spelling of terms or concepts.

3.4 DIAGNOSTIC QUESTION ANALYSIS FOR PAPER 1

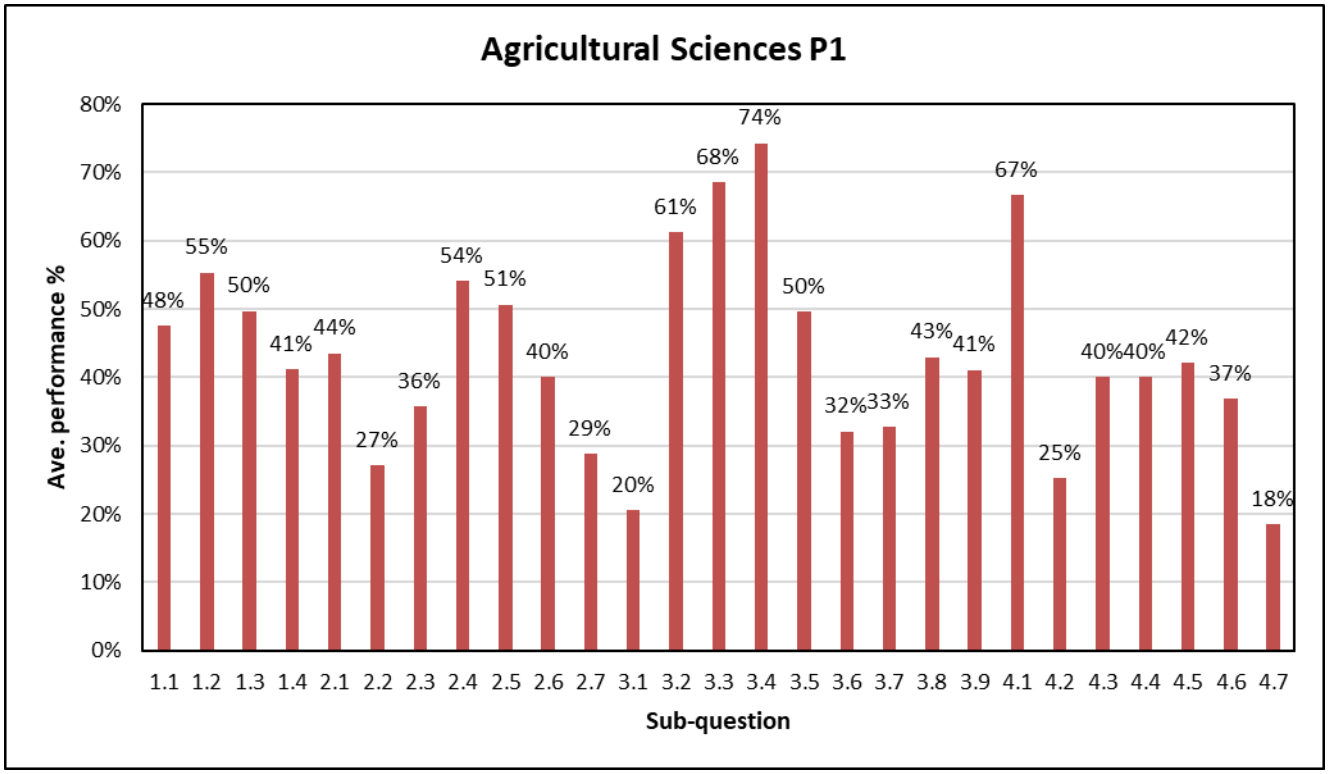
The following graph is based on data from a random sample of candidates. While this graph might not accurately reflect national averages, it is useful in assessing the relative degree of challenge of each question as experienced by candidates.

Graph 3.4.1 Average performance per question in Paper



Q	Topic
1	Short Questions
2	Animal Nutrition
3	Animal Production, Protection & Control
4	Animal Reproduction

Graph 3.4.2 Average performance per subquestion in Paper 1



Subq	Topic	Subq	Topic
1.1	Multiple Choice	3.2	Housing facilities
1.2	Matching Items	3.3	Structures, tools and apparatus for animal handling
1.3	Terminology	3.4	Graph on body temperature and pulse rate
1.4	Replacement of incorrect words	3.5	Methods to administer medication
2.1	Alimentary canal of a farm animal	3.6	Table on animal diseases
2.2	Rumen micro-organism	3.7	Internal parasites
2.3	Food absorption process	3.8	External parasites
2.4	Nutrient components of feeds	3.9	Treatment of parasites
2.5	Composition of feeds	4.1	Reproductive organs and processes
2.6	Energy flow of maize meal	4.2	Oestrus synchronisation, sterility and infertility in bulls
2.7	Calculation based on a Pearson square	4.3	Oestrus cycle
3.1	Intensive system	4.4	Artificial insemination
		4.5	Super ovulation
		4.6	Stages of parturition
		4.7	Milk synthesis and ejection

3.5 ANALYSIS OF CANDIDATE PERFORMANCE IN INDIVIDUAL QUESTIONS IN PAPER 1

QUESTION 1: SHORT QUESTIONS (ANIMAL SCIENCES)

Common errors and misconceptions

(a) In Q1.1.2, some candidates were not able to recognise that 64% was the appropriate option for digestible non-nitrogen substances. These candidates failed to understand that they only needed to subtract protein content (DP) from total digestible nutrients (TDN) to get non-protein nutrients (DNNS).

(b) In Q1.1.5, some learners wrote 'yellow body' instead of '*corpus luteum*' which indicated that candidates did not understand the question and therefore provided the description instead of the name of the part.

(c) In Q1.1.6, most candidates provided random answers. They failed to understand that the question was about handling sheep. 'Catching animals as high as possible' was the only correct option.

(d) In Q1.1.10, many candidates could not identify option B as the most correct response. They chose option A since it was about halving the chromosome number. These candidates did not realise that the question required an incorrect statement.

(e) In Q1.2.2, most candidates provided both A and B as an answer. These candidates erroneously concluded that both cud and chyme are regurgitated bolus in the mouth.

(f) In Q1.3.1, most candidates wrote 'villi' instead of 'papillae', indicating that this content was not well understood by candidates in general; hence these candidates could not distinguish between the two concepts. The question was about finger-like protrusions in the rumen, but not in the smaller intestines.

(g) In Q1.3.4, many candidates responded with 'blastula' instead of 'morula'. This indicates that they do not know the difference between these reproductive concepts. These

candidates failed to realise that morula is the sixteen-celled solid ball that forms after fertilisation.

(h) In Q1.4.3, many candidates provided 'chorion' as the correct answer for bringing blood of the mother and the foetus into close contact. They failed to recognise that 'the placenta' is the only correct answer.

(i) Q1.4.4, proved beyond doubt that many candidates could not differentiate between 'embryo transfer' and 'nuclear transfer'. They provided 'embryo transfer' for transferring the nucleus of a body cell to an enucleated unfertilised egg cell. They failed to provide 'nuclear transfer' as the correct answer.

Suggestions for improvement

(a) Teachers should provide additional practice on concepts and terms found in each content topic, and have learners create a word bank for each topic.

(b) Teachers should encourage learners to study and understand the glossary of terms. Regular assessment of subject terminology will improve the learners' performance.

(c) The use of interesting games, word puzzles and PowerPoint presentations for the teaching of key concepts and improving the spelling of these concepts should be prioritised. Spelling tests on concepts that are not easy to pronounce or write out should be incorporated into weekly activities.

(d) Integrating electronic technology, such as smart boards, the internet, and visual aids will be handy to generate enthusiasm for the subject. It is hoped that this will stimulate learners to explore other material pertaining to the subject.

(e) Learners must be trained on how to answer questions by guiding them on what responses are required to meet the demands of the question.

(f) As in previous years, teachers are advised to realign the content and integrate related content. This will allow the learners to draw parallels between similar/related topics.

(g) Teaching should be guided by the *CAPS* more than by textbooks. However, textbooks and other resources may be used for enrichment.

(h) Teachers are encouraged to do more in-depth research on various aspects in the *CAPS* so that they can further elaborate on the content with reference to current developments and practices in the subject.

(i) The use of various sources when preparing lessons is highly recommended to consolidate information and deepen understanding.

(j) Teachers should form a cohesive unit in their clusters. They can support one another by addressing challenging topics and by suggesting different strategies/methodologies to make such topics more interesting. These cluster units could also set common assessment tasks collectively.

(k) Provincial coordinators, together with subject advisors and teachers, need to prepare revision packs that cover all the topics. Teachers should use activities from these packs as informal tasks, in class revision sessions, and as a mock examination.

QUESTION 2: ANIMAL NUTRITION

Common errors and misconceptions

(a) In Q2.1.2, most candidates did not know the substance that is secreted by the liver. They provided the functions of the liver instead of the functions of bile as a substance that is secreted by the liver.

(b) In Q2.1.3, many candidates wrote 'duodenum' instead of 'duodenal gland'. Candidates concentrated on the part of the intestine instead of the gland in the intestine. They responded with the letter C instead of F in Q2.1.1(b). This showed that they lacked understanding of the parts and glands in the small intestines.

(c) In Q2.2.1 and 2.2.2, some candidates swapped the answers around. This is an indication that they could not distinguish between the requirements and functions of rumen micro-organisms.

(d) In Q2.2.3, many candidates struggled to name the micro-organism that forms the least in terms of the population of the rumen of cattle. They provided 'protozoa' or 'bacteria' as the correct answer instead of 'fungi', 'viruses', or 'archaea'. This indicates a lack of understanding of the rumen microflora. These candidates had trouble differentiating between the least and the most.

(e) In Q2.3.3, most candidates could not explain the process of active absorption of nutrients. They only indicated that it is the absorption of nutrients from a lower to a higher concentration. There was no mention of energy (ATP) needed. These candidates did not respond as required by the question. The response was incomplete; hence they could not be awarded the full complement of the allocated marks.

(f) In Q2.4.1, many candidates lost marks because they twisted the responses. They struggled to classify feed A as roughage and feed B as concentrate. They failed to extract the feed that improves the functioning of digestive system(roughage) and the feed which stimulates butterfat production in milk(roughage). Instead, they resorted to guessing.

(g) In Q2.5.1, some candidates failed to label the nutrient component. These candidates identified 'inorganic component' as a correct answer instead of 'organic component'. This was an indication that they could not interpret the schematic representation of components of feeds.

(h) In Q2.5.2, some candidates wrote 'water' instead of referring to the value of water which was '5 kg'. This indicated that candidates could not interpret questions that combined two subtopics. For example, Q2.5.2 was a combination of components of feed and digestibility coefficient.

(i) In Q2.6.1, some candidates lost marks because they provided the type of energy (digestible energy) instead of defining it. This was an indication that some candidates had not read the instructions.

(j) In Q2.7, many candidates drew a Pearson square instead of using the figures provided to calculate the quantity required. This was an indication that they could not interpret the question.

Suggestions for improvement

(a) Videos indicating the parts of the alimentary canals of different animals, as well as their functions, could be useful teaching tools to enhance learners' understanding of the functions of the parts of the alimentary canals together with the digestive glands. In addition, diagrams of the alimentary canals alongside the parts and functions would give learners the opportunity to associate parts of the alimentary canals with their functions.

(b) Practical work, such as dissection of a fowl, the purchase of a full ruminant alimentary canal from an abattoir, and identification of the digestive systems (including that of a piglet), can enhance the learners' understanding of the anatomies of different alimentary canals.

(c) Various resources and the dissection of real animals for observation of the parts could be used to familiarise learners with the roles of each part in digestion.

(d) Carefully planned practical investigations and questionnaires will assist learners in developing an in-depth understanding of the content.

(e) Exposing leaners to more assessments with different scenarios is imperative to teach them how to respond to questions.

(f) Teachers are encouraged to conduct regular informal assessments on calculations, providing guidance on the use of correct formulae and following the correct steps when substituting the formula with values. This will develop the learners' ability to use correct formulae in calculations.

(g) The criteria to be followed in drawing graphs should be explained to learners. This will enable them to have a better understanding of how to draw a graph.

QUESTION 3: ANIMAL PRODUCTION, PROTECTION AND CONTROL

Common errors and misconceptions

(a) In Q3.1.1, some candidates were not able to identify an intensive production system as illustrated by the picture. Instead, they provided 'extensive production system' as their answer. Candidates were expected to interpret the picture as showing high capital investment. The picture was also based on dairy production, which could never be extensive.

(b) In Q3.1.2, many candidates gave reasons for an ' extensive production system' instead of the reasons for an 'intensive production system'. These candidates misinterpreted the question.

(c) In Q3.2.2, most candidates failed to give the term for the material that covers the floor in PICTURE B, which acts as an insulator. The correct term was 'bedding' and not the type of material, for example 'sawdust', as provided by candidates as an answer. Candidates confused the name for the material with its examples.

(d) In Q3.4, most candidates appeared to have mastered the drawing of the graph; however, they were still challenged by the criteria to be followed for drawing a combined bar graph. These candidates could not differentiate between a bar graph, combined bar graph, and a histogram. They also struggled to provide both variables in

the heading and the correct calibration of both the X-axis and Y-axis. Certain candidates could not distinguish between the dependent and the independent variable.

(e) In Q3.5, many candidates could not provide methods to administer the type of medication; instead, they confused the method with instrument used. For instance, they wrote 'dosing gun' instead of 'dosing'.

(f) In Q3.7.4, some candidates lost all the marks because they wrote general economic implications of parasites instead of costs associated with the control of parasites; it was clear that instructions were not followed by the candidates.

(g) In Q3.8.2, it was completely clear that symptoms of mite infestation were required, although some candidates wrote general symptoms of parasite infestation. The responses provided by candidates showed that they were generally unfamiliar with symptoms of mite infestation.

Suggestions for improvement

(a) Teachers need to plan excursions to nearby farms and research stations to expose learners to production systems. This will enhance their understanding and ability to differentiate between these production systems. Furthermore, learners will be able to distinguish between different examples of intensive production systems.

(b) Teachers could play videos that would spark debates on recent trends and prospects of intensive production systems. This will help to eradicate misinterpretation.

(c) Learners should be encouraged to use other relevant resources to access information about the tools, equipment and facilities used in different farming enterprises.

(d) Videos, pictures, and illustrations on animal handling facilities are widely available on the internet and could be used to enhance learner understanding of the content.

(e) PowerPoint slides with pictures and videos of the facilities and tools could be prepared and used in the classroom to arouse the interest of the learners. This will assist learners with their understanding of the reasons for handling animals using the facilities.

(f) Collaboration with local extension officers from the Department of Agriculture could be useful in trying to mitigate the gap teachers and learners might have on various aspects of the content.

(g) Charts and videos should be used to enhance understanding of animal diseases and parasites. This will also help learners in comprehending basic principles of good health that can be applied to control parasites.

(l) Planned visits to research stations and institutions should be undertaken to assist learners in classifying parasites according to their life cycle.

(m) Examples of parasite infestation could be brought into the class by way of videos and pictures that must be accompanied by practical ways to control such parasites.

(n) Intensive revision of work using charts, scenarios and tables on diseases and parasites is necessary as the information is vast and likely to cause confusion.

QUESTION 4: ANIMAL REPRODUCTION

Common errors and misconceptions

(a) In Q4.1.2, many candidates failed to name 'spermatogenesis' as the process. They instead provided 'gametogenesis' which is a general process that includes both spermatogenesis and oogenesis. This was an indication that they could not differentiate between a specific process and a general process.

(b) In Q4.2.1, some candidates' responses indicated that they were unable to interpret the leading statement. They provided 'oestrus' as an answer instead of 'synchronisation of oestrus'. They did not read the full statement to establish that the oestrus was manipulated and just thought that 'coming on heat' meant 'oestrus'. It was also noted that some candidates simply wrote 'synchronisation' resulting in them losing the mark.

(c) In Q4.2.3, (a) some candidates provided 'nutrition' instead of 'malnutrition' as an answer. They failed to realise that the question required unbalanced ration. Nutrition can be balanced or unbalanced.

(d) In Q4.3.3, several candidates lost marks unnecessarily. They responded with 'signs of heat' instead of practical methods that dairy farmers can use to identify cows on heat. Learners also mentioned the tools to identify heat instead of the method, for example 'pedometer' instead of 'using a pedometer'.

(e) In Q4.4.2, most candidates were unable to provide the method of collecting semen represented in the demonstration. They gave 'artificial vagina' as an answer instead of 'use of an artificial vagina'. This seemed to be a challenging question for most candidates as they failed to differentiate between method and instrument.

(f) Most candidates were unable to give functions of substances in a semen dilutant in Q4.4.3, resulting in their failure to indicate the function of each substance in a dilutant.

(g) In Q 4.5.1, most candidates lost marks as they provided 'embryo transfer' as an answer. The question required candidates to define embryo transfer and not to identify embryo transfer.

(h) In Q4.5.3, most candidates provided general advantages of embryo transfer. The question required candidates to name the importance of a donor cow in the process of embryo transfer.

(i) In Q4.6, rearrangement of the stages of parturition was a challenge to many candidates. This was an indication that these candidates were not familiar with the sequence of the stages of parturition.

(j) In Q 4.7.1, many candidates misinterpreted the question. These candidates provided factors to stimulate the milk let-down process. The question required the role of the milker in the milk let-down process.

(k) In Q4.7.3, some candidates could not state the importance of dry period to lactating cows. Candidates provided responses like 'to rest the cow' and other related responses. The correct response was to indicate that the cow's glandular tissues of the udder have to recover.

(l) In Q4.7.4, most candidates failed to name the substance in the colostrum that provides immunity to the calf. They indicated 'antibiotics' instead of 'antibodies'.

Suggestions for improvement

(a) Teachers are encouraged to use videos and other resources on reproductive processes to enhance learners' understanding of these reproductive processes.

(b) Teachers need to make use of data response questions in assessment for learners to be equipped on how to respond to data response questions.

(c) In presenting the various processes such as *mating, cloning, artificial insemination, stages of pregnancy, embryo transfer, parturition* and other reproductive processes, teachers should use flow diagrams, schematic representations, projections, and videos to indicate the characteristics and the effects of various hormones in the different processes.

(d) Teachers are advised to source and play videos on embryo transfer and cloning. This will assist learners to note the differences and the importance of each.

(e) It is also suggested that teachers cover all the reproductive processes simultaneously to show the synergy between the processes. This will assist learners to understand these processes better.

(f) Enrichment and enhancement material should be sourced from various resources such as the slides from the ASAAE software.

(g) Quality-assured formal and informal tasks should be prepared, with the aim of raising the level of questioning to prepare the learners for questions that require analysis and reasoning.

(h) The importance of learning the subject terminology must be emphasised, and learners must practise the correct spelling of the terminology in the subject.

(i) Learners need to be taught the different reproductive techniques, and the processes involved in each technique.

3.6 OVERVIEW OF CANDIDATES' PERFORMANCE IN PAPER 2

General comments

(a) Generally, candidates' performance in this paper improved when compared to 2023 except for Q2 which showed a 3% decline.

(b) In 2024, candidates' responses indicated that most of them still struggled with questions that required application of knowledge, as well as questions based on sources.

(c) Most candidates struggled to answer Q1.3.1 (strategic risk management) and 1.3.5, where some candidates came up with unheard-of terms, such as 'genetically modified weeds'. Q1.4.1 (price determination) was another question in which the majority struggled to respond correctly.

(d) Although question 1.4.5 was fairly answered, some candidates still confused the process of genetic modification (GM) with genetically modified organisms (GMOs).

(e) In Q2.1, most candidates could not differentiate between the factors affecting demand or supply of products. They further confused the factors that resulted in price elasticity of demand in Q2.2. They did not realise that the underlying factor that influenced the demand was the price and were unable to select the factors that led to demand to be price elastic or inelastic.

(f) Legislation around marketing in Q2.6 challenged a fair percentage of candidates; most candidates preferred to respond with labour legislation

(g) Analysis and application questions were still a problem, for example in the case of interpretation of law of diminishing returns in Q3.2.2, some candidates failed to realise that there was a comparison of maize production in response to increased fertiliser application.

(h) Some candidates confused the income with expenses in the calculation of profit/loss in Q3.6.3 and decided to invert them after realising that the latter was more than the income.

(i) Even though Q4 was generally better answered than in previous years, there were still challenges noted with the interpretation of the pedigree diagram in Q4.6 and 4.7, where the candidates could not distinguish between the health risk of GM crops to environmental benefits.

General suggestions for improvement

The following suggestions for improvement are proposed to address the quality of performance of candidates:

(a) Teachers are encouraged to base their teaching on the *CAPS* to establish the expectations of learners.

(b) Teachers should expose learners to regular and consistent informal assessment tasks or activities that will improve their confidence in dealing with the subject content.

(c) Setting of high-quality tasks that are pitched at various levels of difficulty would assist learners to respond precisely to data response questions that require interpretation and application of knowledge.

(d) Learners still need to be exposed to dihybrid crossing and simple mathematical calculations on percentages in such crossings.

(e) It is recommended that all calculations commence with the correct formula/formulae, after which the correct substitution should be done, followed by the actual calculation and ultimately the correct answer.

(f) Although learners might have access to only one textbook, teachers should acquaint themselves with and use several available textbooks and other resources in their lesson preparation. Teachers and learners will thus be exposed to a wide range of possible content knowledge.

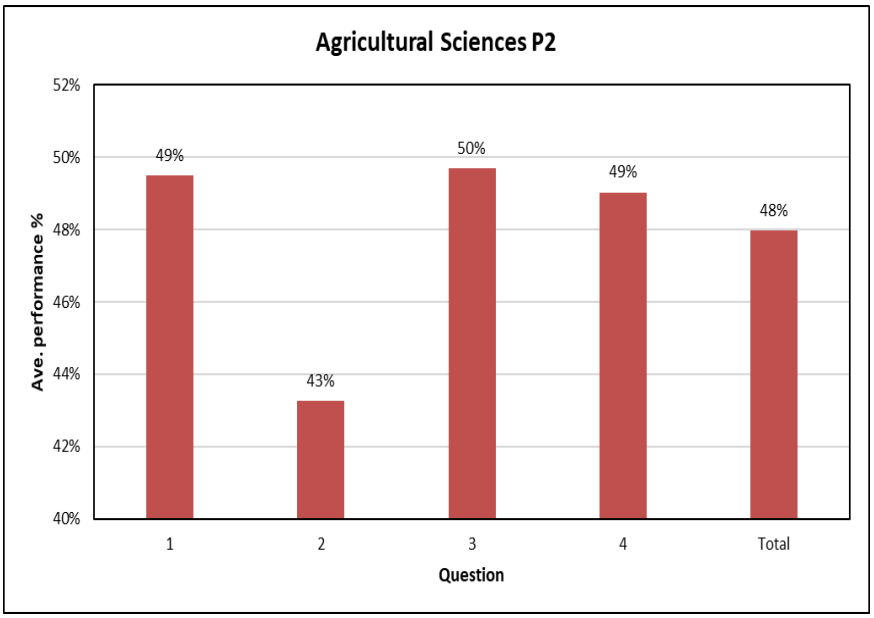
(g) Teachers need to broaden their knowledge and conduct more research on certain areas of the content. They are encouraged to register for courses on certain topic areas so that they can evaluate the information presented in the textbooks.

(h) Teachers should use various approaches to explain terminology and concepts to learners. They must ensure that learners are exposed to the language in which they will be writing the examination, as many learners struggle with reading, understanding, and interpreting questions. Such learners also find it challenging to express their responses correctly.

3.7 DIAGNOSTIC QUESTION ANALYSIS FOR PAPER 2

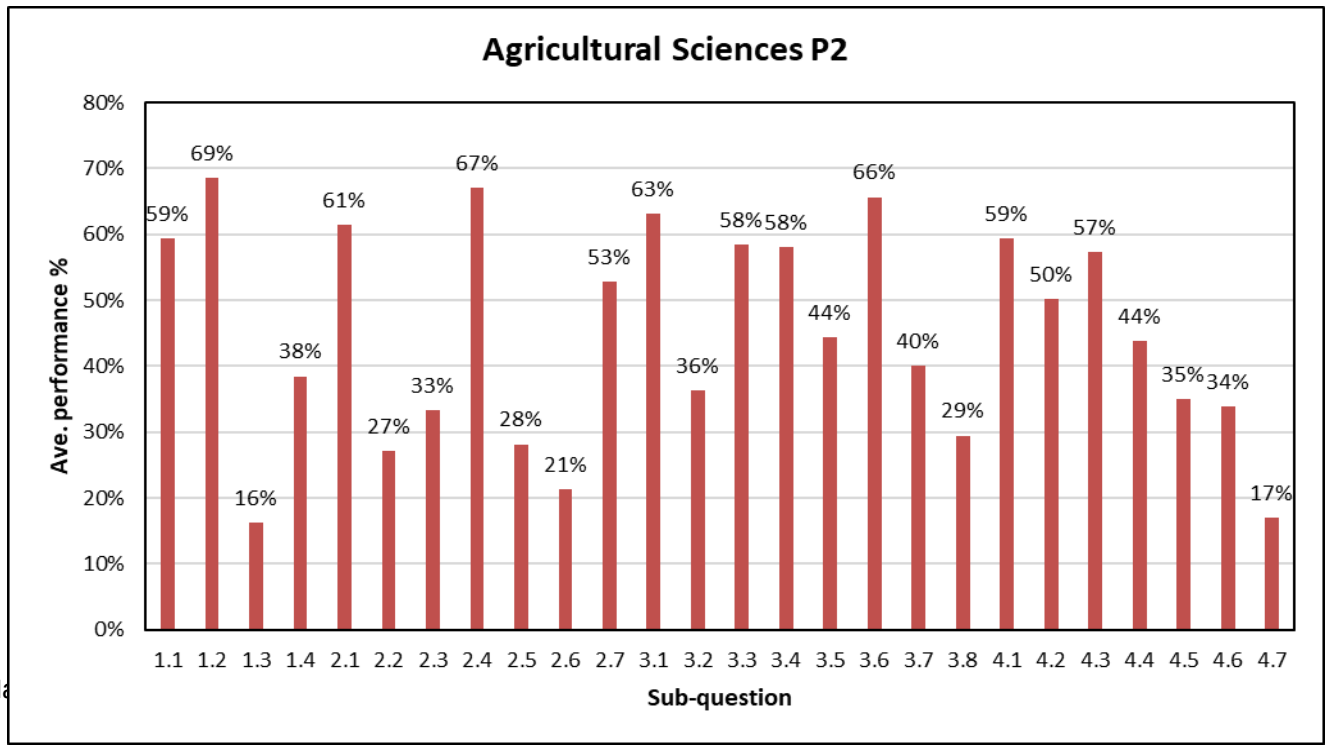
The following graph is based on data from a random sample of candidates. While this graph might not accurately reflect national averages, it is useful in assessing the relative degrees of challenge of each question as experienced by candidates.

Graph 3.7.1 Average performance per question in Paper 2



Q	Topic(s)
1	Short questions
2	Agricultural Management & Marketing
3	Production Factors
4	Agricultural Genetics

Graph 3.7.2 Average performance per subquestion in Paper 2



Na

1.2	Match columns	3.4	Labour legislation
1.3	Terminology	3.5	Types and sources of capital
1.4	Replacement of incorrect words	3.6	Profit/loss in a farming enterprise
2.1	Supply and demand	3.7	Problems of capital as production factor
2.2	Price elasticity of demand	3.8	Strategic risk management
2.3	Marketing system	4.1	Monohybrid cross
2.4	Entrepreneurship	4.2	Patterns of inheritance
2.5	Agricultural marketing chain	4.3	Qualitative and quantitative characteristics
2.6	Roles of legislation in agricultural marketing	4.4	Variation
2.7	Business plan	4.5	Dihybrid crossing
3.1	Land as a production factor	4.6	Pedigree diagram
3.2	Law of diminishing returns	4.7	Genetic modification technique
		4.8	Graph on GM and Non-GM yields

3.8 ANALYSIS OF CANDIDATES' PERFORMANCE IN INDIVIDUAL QUESTIONS IN PAPER 2

QUESTION 1: SHORT QUESTIONS (AGRICULTURAL MANAGEMENT AND GENETICS)

Common errors and misconceptions

(a) Q1.1.4, was a combination question; most candidates were unable to choose the statements which related to 'downward-sloping curve to the right in a market'. They opted for the statement referring to 'supply' remaining constant when the price increases, which was not applicable. It clearly showed that they did not know which curve slopes to the right or left hence they opted for a statement relating to a supply curve.

(b) Candidates confused sex-linked characteristics (X-linked and Y-linked) with sex chromosomes (XX and XY).

(c) In Q1.3.1, most candidates could not show an understanding of strategic risk management and in some instances did not include the key word 'risk' or 'strategic'. They wrote 'strategic management' or 'risk management' instead of 'strategic risk management'. This showed a lack of understanding of the key words 'long-term plan to minimise risk'.

(d) In Q1.3.2, candidates were required to give a term for a measure of output per unit of input. Most candidates gave incorrect responses such as 'labour' and 'production' instead of 'productivity' as the correct answer. This was an indication that candidates could not demonstrate application of production factors.

(e) In Q1.3.4, some candidates did not show an understanding of the use of statistics for analysing biological data. They wrote terms like 'biotechnology' instead of 'biometrics' as the correct answer.

(f) Many candidates could not apply the knowledge of the negative effects of genetically modified crops on the environment in Q1.3.5. They wrote 'GMO' as the answer instead of 'superweeds'. They demonstrated a total lack of knowledge of the concept 'superweeds'.

(g) In Q1.4.1, candidates were required to respond regarding the result of interaction between the supply and demand of goods and services. They were unable to link price formation to demand and supply; hence most wrote 'market equilibrium' instead of 'price determination'.

(h) Many candidates confused 'upgrading' with 'outcrossing' in Q1.4.4. This showed that they did not associate the mating of a purebred bull with inferior cows generation after generation as upgrading. This clearly shows a lack of understanding of breeding systems, which has been a problem for some time.

(i) In Q1.4.5, candidates were required to indicate a form of technology that involves highly advanced scientific techniques of inserting genes to obtain desirable characteristics. Most candidates wrote 'GMO' instead of 'GM'. They were unable to differentiate between the process and the product of the process and a language barrier came to play in this instance.

Suggestions for improvement

(a) Teachers should compile a list of concepts based on the *CAPS* document and present these concepts first whenever introducing a new topic.

(b) Teachers must encourage learners to compile a list of concepts and their meanings, applicable to the topic being taught, and assess them on a regular basis.

(c) Learners should be given regularly tasks where they list or define concepts in preparation for Q1.3, which has been problematic for years.

(d) Teachers should guide learners on how to answer Q1.4 on a regular basis, so that learners get used to the skill of replacing the underlined word instead of writing 'true' or 'false'.

(e) Learners need to be exposed to spelling exercises such as word puzzles, word banks and other terminology exercises to reinforce concept comprehension, and these should be followed by spelling tests.

QUESTION 2: AGRICULTURAL MANAGEMENT AND MARKETING

(a) Some candidates confused the law of demand with the law of supply in Q2.1.2. They were unable to interpret and attach meaning to the arrows and the key words 'price' and 'product purchased' in the illustration which implied the demand and not the supply.

(b) In Q2.1.3, a few candidates provided factors influencing 'demand' instead of factors influencing 'supply'. Illustration A indicated 'supply' because of the key phrase 'product availability' and the direction the arrow was facing in relation to increasing price. Some confused factors affecting 'supply' with those that affect 'demand'.

(c) In Q2.2.1, (a) and (b) most candidates confused 'price elastic' with 'elasticity of demand' and did not realise that whether demand is elastic or inelastic both are referred to as 'elasticity of demand'. Some also interchanged price elastic (a) with 'price inelastic' (b). They did not realise that the underlying factor that influenced the demand was the price, hence price 'elasticity of demand'.

(d) In Q2.2.2, most candidates failed to differentiate between the graph for price 'elastic'

and the one for 'price inelasticity demand'. Candidates also failed to give a reason explaining the 'price elastic', they wrote 'a huge change in price or in supply'. The whole concept of price elasticity is not well understood, even by the teachers, and that was evident during marking.

(e) In Q2.3.1, candidates were required to identify the marketing system represented in the picture. When some saw a cellphone they opted for 'internet marketing' which is not a marketing system instead of 'free marketing'. Furthermore, they could not differentiate between marketing systems and channels, hence they offered responses such as 'direct marketing'. Candidates did not analyse pictures or illustrations to look for clues which they should have linked to the question statement.

(f) Most candidates did not make a deduction on advantages of the marketing system for the buyer in Q2.3.2, but simply wrote what was presented in the picture without linking it to advantages to the buyer. Some even provided responses that were beneficial to the seller, for example 'payments are for cash' or 'can reach global markets'.

(g) Price fixing in Q2.3.3, a phenomenon in marketing, was poorly answered; a possibility is that it might have been an unfamiliar concept and has rarely been asked.

(h) In Q2.4, some candidates provided general responses based on their knowledge on entrepreneurship and did not align their responses with the case study.

(i) In Q2.6, many candidates were unable to differentiate between the roles of legislation for the effective marketing of agricultural products, and legislation in agriculture in general; some provided responses such as protection of workers against unfair labour practices.

Suggestions for improvement

(a) Teachers need to expose learners to various marketing systems practised by local communities. They may also visit local agricultural cooperatives to see how they operate. Learners should be encouraged to join the youth clubs involved in production of vegetables that are sold to public entities like schools, health centres, correctional services, etc. so that they understand how a free-market system works.

(b) Agricultural Sciences learners should be allowed to join classes for Economics during lessons on demand and supply so that they get better exposure to the fundamentals of supply and demand.

(c) The role of legislation in marketing of agricultural products should be addressed thoroughly, referring to applicable situations where relevant acts are applied. Learners should be encouraged to read about current market-related issues. They need to be engaged through debates on topics that affect imports and exports of agricultural products and be given assignments or activities to discuss.

(d) Teachers should align the content with real-life situations to convey more understanding of the topics in marketing by arousing interest and creating further opportunities for learning.

(e) Teacher content and methodology workshops should be conducted for challenging topics before such topics are handled in class.

QUESTION 3: PRODUCTION FACTORS

Common errors and misconceptions

(a) In Q3.2.2, (a) and (b) most candidates failed to interpret the 'law of diminishing returns' correctly. They only referred to an increase in yield without qualifying the rate of increase with increased fertiliser application in both focus points. They only referred to the yield increases but left out the key points that showed when the diminishing returns start, for example 'maize yield increased by 12 kg and 15 kg per every 5 kg fertiliser added and increased by 3 kg and 1 kg from 10 to 20 kg.

(b) Many candidates failed to correctly justify the type of temporary labour in Q3.3.2. The most common incorrect response provided was 'employed during peak period' while even casual labour is employed during peak time when there is a need. They did not realise that what differentiates seasonal from casual labour is the repetitiveness of the task. In most instances candidates opted to select the activities performed by the labourer directly from the scenario rather than explaining the type of labour.

(c) Instead of providing ways in which migration of labour can decrease production, candidates provided reasons for migration of farm workers in Q3.4.2.

(d) In Q3.5.1, candidates did not know what a feed silo was; as a result, they could not associate it to a fixed permanent facility like a building.

(e) Identification of the type of credit to use when acquiring the different capital forms in Q3.5.3 was a challenge since candidates were unable to identify the capital first. This was a scaffolded question from the identification of capital.

(f) In Q3.6.2, most candidates incorrectly identified the financial record as 'balance sheet 'or a 'budget', which showed that they had not been exposed to these documents.

(g) Working out the profit/loss in Q3.6.3 was a challenge to some candidates who could not write the formula correctly as they omitted profit/loss. In some instances, the formula for profit/loss was expressed in reverse (Profit/loss = Total expenditure – Total income), because they realised that the value for the expenditure was more than the value for the income. Some incorrectly wrote the formula as a net worth. In some instances, the substitution from the formula was inverted to get a positive answer. The issue with this calculation is rather troubling as it has been raised in so many reports.

(h) In Q3.7.1, many candidates could not relate the statements to the problem associated with capital; thus, they could not link 'not enough' with 'scarcity'; instead, they responded with 'undercapitalization', which showed that they did not understand that they were required to state the problem as to why the farm was undercapitalized.

(i) Q3.8.1 was an interpretation type question which required candidates to apply their knowledge. Most candidates could not link the examples in the scenario with the type of risks.

(j) Some candidates confused diversification with risk sharing even though the farmer introduced different enterprises to distribute the risk in the scenario.

Suggestions for improvement

(a) Learners should be exposed to questions that require interpretation of data from either tables, graphs or scenarios for them to be able to make correct deductions.

(b) Agricultural Sciences learners could join Economics and Accounting classes when they cover the related topics to gain more insight on their content.

(c) Regular informal assessment on calculations and how to write a correct formula is key to understanding and achieving full marks in the questions based on calculations.

(d) Case studies, diagrams and scenarios need to be included in assessment tasks at regular intervals during the school year, with the aim of exposing learners to activities that will improve their skills in answering these types of questions. Such interventions could assist learners by improving their reading and understanding skills, the application of knowledge and an awareness of how to follow instructions.

(e) Content gap bridging is vital. Teachers should enrich themselves by working together with other teachers managing related content like Accounting and Economics when addressing topics such as financial records and marketing.

QUESTION 4: BASIC AGRICULTURAL GENETICS

Common errors and misconceptions

(a) In Q4.1.1, some candidates wrote the genotype *'ss'* for dented seeds instead of the fraction. This clearly indicated that they misunderstood the meaning of the term fraction.

(b) In Q4.1.3, candidates were required to **determine the phenotypic ratio of the F1 generation,** but some wrote 3 : 1 without indicating the phenotype the 3 or 1 stood for.

(c) Some candidates could not distinguish between co- and partial dominance based on the flower colour patterns shown in the illustrations in Q4.2.2. Candidates could not apply their knowledge to justify an intermediate colour.

(d) It was clear in Q4.3 that candidates did not know which of the characteristics were polygenic and which were monogenic.

(e) In Q4.4.4, candidates confused the importance of variation in breeding with the advantages of a cross breed.

(f) Many candidates could not identify the characteristics in Q4.5.1 that needed to be improved and provided responses such as 'short', 'long', 'yellow and purple colour', instead of the characteristics that had recessive alleles meaning 'short leaf length and yellow seed colour'.

(g) In Q4.5.2, many candidates struggled with the dihybrid cross even though they were given the genotypes. Candidates could not form the correct gametes and could not determine the F_1 generation.

(h) Subsequently, they answered with reference to the law of segregation instead of law of independent assortment in Q4.5.3, meaning they did not understand the formation of gametes in a dihybrid cross.

(i) Many candidates were unable to interpret the pedigree diagram in Q4.6. They had a challenge specifically with Q4.6.1(b) and Q4.6.2 which required the correct

interpretation of the diagram to respond correctly on breeding systems depicted in the diagram

(j) In Q4.7.2, most candidates struggled to respond correctly to the question which required the potential environmental benefits of GM crops; instead, they responded with general benefits. The question was an interpretation question because they were required to use their knowledge of the advantages of GM crops and use those super characteristics to explain how they benefit the environment, for example 'resistance to pests benefits the environment through use of less pesticides therefore less pollution of the environment. '

Suggestions for improvement

(a) Even though learners seem to be mastering 'monohybrid crossing', teachers still need to allow more time to train learners on formation of gametes, use of punnet square, placement of gametes and, basic crossing for a 'dihybrid cross'. This will assist learners to draw the appropriate number of blocks in a square for these crosses. Teachers should also emphasise that only letters of the alphabet are used to represent gametes that form the alleles.

(b) Understanding of terminology is key to understanding basic genetics, and learners should be able to describe the genetic concepts.

(c) Teaching genetics should be reinforced by practical examples within the learners' learning environment, such as plants, flowers and livestock.

(d) Patterns of inheritance and their application seem to be problematic, so teachers need to expose learners to different questions on these concepts and their practical application.

(e) Learners should be trained on how to analyse a pedigree diagram so that they are able to determine genotype and phenotype of individuals used in the pedigree diagram. Teachers can design various pedigree diagrams and allow learners to answer various questions based on them.

(f) When teaching breeding systems, learners should be taught examples of crossings resulting in different breeding systems and the advantages and disadvantages of each. Schematic representations of animal breeding systems should be used to illustrate basic types of breeding methods.

(g) Responses to questions on genetics suggest that there could be an underlying content gap amongst teachers. Subject advisors should conduct workshops to address the shortcomings in content knowledge in this regard.

(h) There should also be integration with Life Sciences, as genetics is taught comprehensively in Life Sciences while Agricultural Sciences only deals with their application in real-life situations.

(i) Genetic modification is a topic of current interest which is even debated on bigger public platforms; teachers are encouraged to allow such debates on this topic in classes, affording learners the opportunity to engage and present their findings. A deeper understanding of the topic would enhance their broader insight into genetic modification.

CHAPTER 4

BUSINESS STUDIES

The following report should be read in conjunction with the Business Studies Paper 1 and Paper 2 question papers for the NSC November 2024 examinations.

The year 2024 marked the fifth year since the move to 2 two-hour papers of 150 marks each. Each paper aims to assess separate and distinct disciplines as outlined in the *2021 Examination Guidelines*, as follows:

	MAIN TOPICS	SUBTOPICS
PAPER 1	Business Environments	• Macro environment: Impact of legislation • Macro environment: Business strategies • Business sectors and their environments
	Business Operations	• Human Resources function • Quality of performance
PAPER 2	Business Ventures	• Management and leadership • Investment: securities/opportunities • Investment: insurance • Forms of ownership • Presentation and data response
	Business Roles	• Ethics and professionalism • Creative thinking and problem solving • Social responsibility (CSR/CSI) • Human rights, inclusivity, and environment • Team performance; conflict management

4.1 PERFORMANCE TRENDS (2020–2024)

The number of candidates who sat for the Business Studies examinations in 2024 increased by 5 751, compared to that of 2023.

There was a significant improvement in the pass rate this year. Candidates who passed at the 30% level improved from 81,8% in 2023 to 86,0% in 2024. There was a corresponding improvement in the pass rate at the 40% level over the past two years from 62,2% to 67,2%.

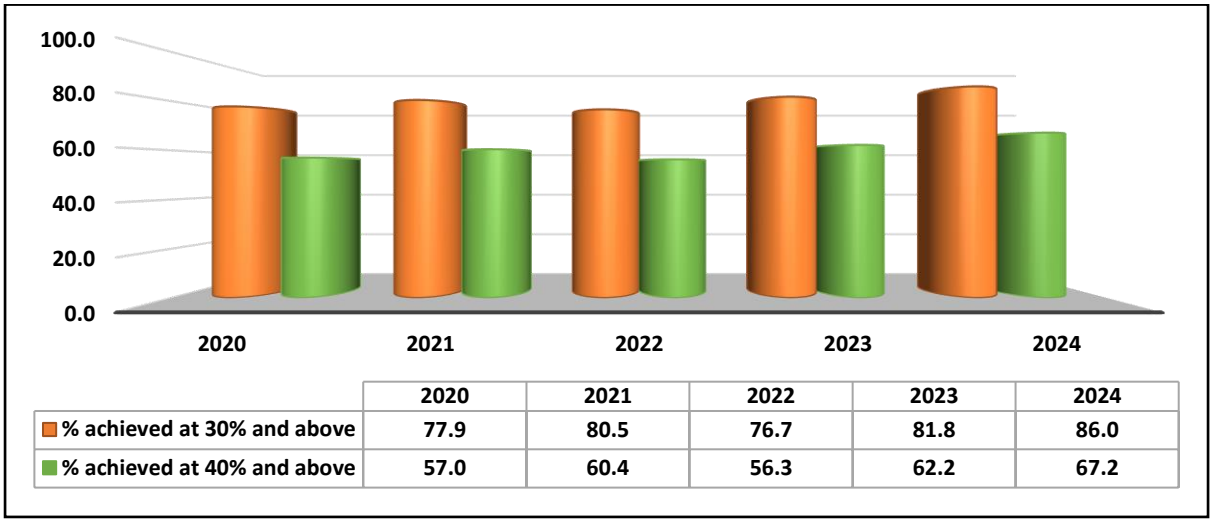
The percentage of distinctions over 80% improved from 6,5% in 2023 to 6,9% in 2024. Given the increase in the size of the 2024 cohort, this converts into an increase in the total number of distinctions from 14 796 to 16 103.

The improvement in the level of performance in 2023 gained further momentum in 2024 due to the continued quality of teaching and assessment together with the DBE textbooks that are widely used by teachers and learners across the country.

Table 4.1.1 Overall achievement rates in Business Studies

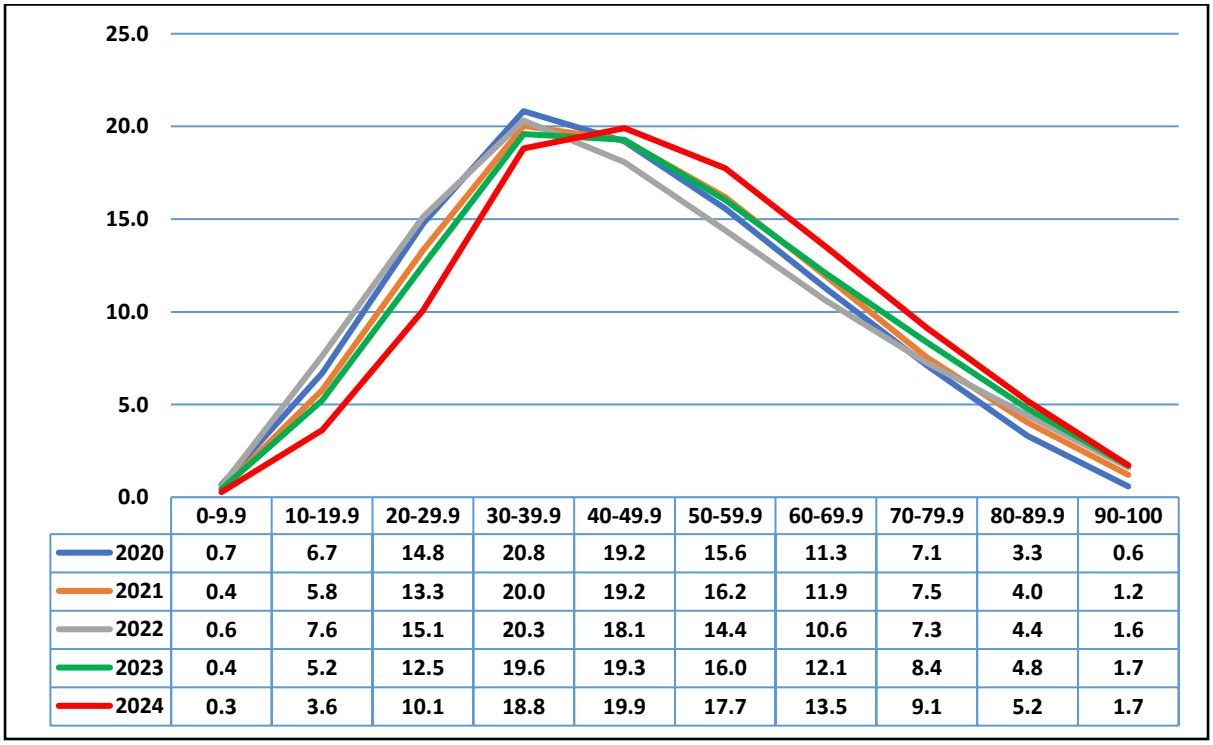
Year	No. wrote	No. achieved at 30% and above	% Achieved at 30% and above	No. achieved at 40% and above	% Achieved at 40% and above
2020	207 045	161 224	77,9	118 100	57,0
2021	243 843	196 233	80,5	147 398	60,4
2022	241 989	185 503	76,7	136 330	56,3
2023	227 632	186 191	81,8	141 604	62,2
2024	233 383	200 731	86,0	156 800	67,2

Graph 4.1.1 Overall achievement rates in Business Studies (percentage)



	2020	2021	2022	2023	2024
% achieved at 30% and above	77.9	80.5	76.7	81.8	86.0
% achieved at 40% and above	57.0	60.4	56.3	62.2	67.2

Graph 4.1.2 Performance distribution curves in Business Studies (percentage)



	0-9.9	10-19.9	20-29.9	30-39.9	40-49.9	50-59.9	60-69.9	70-79.9	80-89.9	90-100
2020	0.7	6.7	14.8	20.8	19.2	15.6	11.3	7.1	3.3	0.6
2021	0.4	5.8	13.3	20.0	19.2	16.2	11.9	7.5	4.0	1.2
2022	0.6	7.6	15.1	20.3	18.1	14.4	10.6	7.3	4.4	1.6
2023	0.4	5.2	12.5	19.6	19.3	16.0	12.1	8.4	4.8	1.7
2024	0.3	3.6	10.1	18.8	19.9	17.7	13.5	9.1	5.2	1.7

4.2 OVERVIEW OF CANDIDATES' PERFORMANCE: PAPERS 1 AND 2

General comments

(a) Candidates performed well in Section A in both Paper 1 and Paper 2, however, in Paper 1 it was observed that candidates did not prepare well for questions on *Business Environment*. In Q1.2, in both Paper 1 and Paper 2 some candidates did not follow instructions. Instead of using the words provided, they gave their own responses. Unfortunately, some candidates also forfeited marks for providing more than one answer to Q1.1 and Q1.3 in both Paper 1 and Paper 2.

(b) Although the overall performance has improved in Section B and Section C, some candidates continued to provide vague and incomplete responses to middle-order and higher-order subquestions. This challenge persisted, despite the recommendations made in previous *Diagnostic Reports* on learner performance.

(c) Many candidates did not choose *Business Environments* (Q2 and Q5) in Paper 1 whilst those who chose *Business Environments* did not perform well. This was very disappointing as all questions tested on this topic have been tested in previous NSC papers. This trend has dramatically escalated over the last four years.

(d) In Paper 2 it was evident that many candidates had prepared for questions on *Business Roles,* with many candidates answering Q3, Q4 and Q6. Very few candidates answered Q2, Q4 and Q5 on the topic *Business Ventures.* It is noted that candidates chose to focus on one of the two topics and not both, this could be due to Paper 2 consisting of many topics.

(e) The general performance of candidates has improved in Section B questions where an identification and motivation were required, in both in Paper 1 and Paper 2. The majority of the candidates were also able to use the table as a guide to present their answers in these questions.

(f) There has also been a great improvement in essay writing with the majority of candidates using the correct layout and providing adequate responses to the four subquestions. However, the ability of candidates to construct meaningful introductions and conclusions has shown very little improvement – many candidates used facts from the four subquestions in their introductions and conclusions. This meant that the introductions and conclusions continued to be a challenging aspect of essay writing.

(g) An improvement was observed in Q5 and Q6 with some candidates obtaining two marks for originality in their essay questions by providing examples to support their answers that were not older than two years (based on recent information, current trends and developments). However, many candidates provided examples that were not relevant to the four subquestions while others provided examples much older than two years. This is a persistent challenge, despite the recommendations made in the *2022* and *2023 Diagnostic Reports* on learner performance.

(h) Some candidates displayed language barriers in response to questions; they struggled to express themselves clearly. Their lack of clarity had a negative impact on the marks awarded as only part-marks were scored.

General suggestions for improvement

(a) In order to make learners aware of how certain questions are marked, it is important to explain the 'Notes to Markers', that are in the Marking Guidelines, to them. Note 3 clearly stipulates that there is only one correct answer in Section A. Teachers must explain the instructions of each question, for example Q1.2, 'Complete the following statements by using word(s) provided in the list below'. In this instruction, teachers must emphasise that learners will be penalised if they use their own responses.

(b) Learners must be encouraged to provide complete responses to questions that require middle- and higher-order thinking skills. Teachers must follow the guidelines given in Note 12.2 of the 2024 Marking Guidelines when marking these questions. Teachers must not award two marks for vague and incomplete responses when marking formal assessments in the course of the academic year. Learners should be given the opportunity to mark their own informal assessment tasks so that they can understand the importance of writing in full sentences. Teachers should ensure that learners are doing corrections on all informal and formal assessments. This will ensure an improvement in future assessments.

(c) Teachers must use practical examples of the different Acts that impact on businesses, as well as business strategies. Learners must be given assessment tasks consisting of Section B questions which are scenario-based, as well as essay questions for each Act. This will allow them to master the challenging topic of *Legislation*. Learners must be given quality feedback on how they have performed in each formal assessment task.

(d) Teachers must prepare learners for both *Business Ventures* and *Business Roles* using direct and indirect questions. Subject advisors must ensure that all five subtopics covered in *Business Ventures* are properly taught and assessed in Grades 10 and 11, in preparation for Grade 12.

(e) Teachers are advised to include distractors in questions, when learners are expected to quote from scenarios. The distractors must be close to the required answer as this will encourage learners to master the content.

(f) Learners should familiarise themselves with the introductions and conclusions from past NSC November examination papers to allow for a better understanding of what is expected in these critical elements of an essay. Candidates will not be awarded marks for introductions and conclusions if they repeat facts from the four subquestions. Teachers are also required and encouraged to address this matter during their lessons. They must work through several examples of acceptable introductions and conclusions. Learners must be given informal assessment tasks in order to practise the writing of introductions and conclusions.

(g) Teachers should allow learners to use *Google Scholar*, and other reliable sources on recent developments in the subject. This research will generate relevant and current examples and reinforce the content being taught.

(h) All subtopics for both Papers 1 and 2 must be adequately taught and assessed during the academic year. It is important to guard against predicting potential contextual and essay questions as this practice might have a negative impact on learner performance in future.

(i) It is highly recommended that teachers should construct a five-year report using the national *Diagnostic Reports* on learner performance from 2020–2024. This will allow them to address all misconceptions and errors, and implement the recommendations for each topic, in the two papers. Learners must be aware of these errors to avoid repeating them. This recommendation was made in the *2022* and *2023 Diagnostic Reports* as well.

(j) Subject advisors and teachers are advised to go through Paper 1 and Paper 2 addendums from 2019 to 2024 and take note of facts that have been revised in the November NSC Marking Guidelines. Such revisions should also be made across all resource material used by teachers and learners to preclude learners from losing marks for providing incorrect information. It must be noted that all revised facts have also been reported in the past national *Diagnostic Reports*.

(k) Greater emphasis should be placed on the learning of appropriate terminology related to the various topics. Teachers are advised to:

- Introduce new terms in every lesson, elaborate on their meanings and contexts, and create a glossary;
- Encourage learners to identify new terms and to find their meanings using a dictionary, a textbook or *Google* during lessons;
- Include subject-specific terminology in all informal assessment tasks, as well as during teaching;
- Unpack the meanings and expectations of instructional verbs that are commonly used in Business Studies; these should be pasted in learners' books; and
- Issue learners with copies of the *2021 Examination Guidelines* and focus on the 'elaborated content'. They must also be advised on the requirements or expectations of key verbs in each subtopic.

4.3 DIAGNOSTIC QUESTION ANALYSIS OF PAPER 1

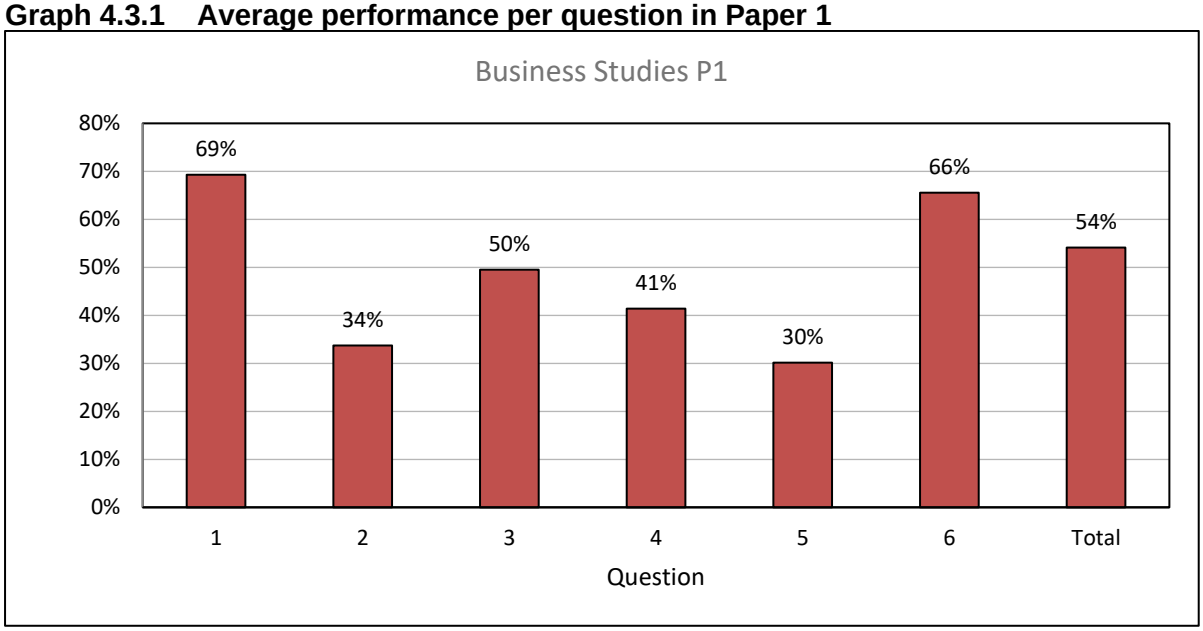
The graphs presented below are based on data from a random sample of candidates in the different provinces. Although these graphs may not accurately reflect national averages, they are helpful in determining the relative degree of challenge of each question, as experienced by candidates.

Paper 1 consists of five subtopics that assess *Business Environments* and *Business Operations*. There was an improvement in the performance of the 2024 cohort in Q1 as the average performance was 69%, compared to 64% achieved in 2023.

Many candidates still did not perform as expected in Q2 on *Business Environments,* when compared to the 2023 cohort – a 4% decrease is observed. The average percentage in Q2 (Section B) was 34% in 2024, compared to 38% achieved in 2023. There was a decline in the performance in Q4 which consisted of subquestions on *Business Environments* and *Business Operations.* The average was 41% in 2024, compared to 47% achieved in 2023. The fact that this question included two subquestions on *Legislation* related to *Business Environments,* as a main topic, may be the reason for poor performance. The performance of the 2024 cohort in Q5, an essay question on *Legislation*, was very poor when compared to the 46% achieved in 2023. Many candidates found the subtopic of *Legislation* more challenging than *Business Strategies* which was assessed as an essay question in 2023. Candidates were expected to perform well since all questions covering the subtopic *Legislation* have been asked in past NSC examinations.

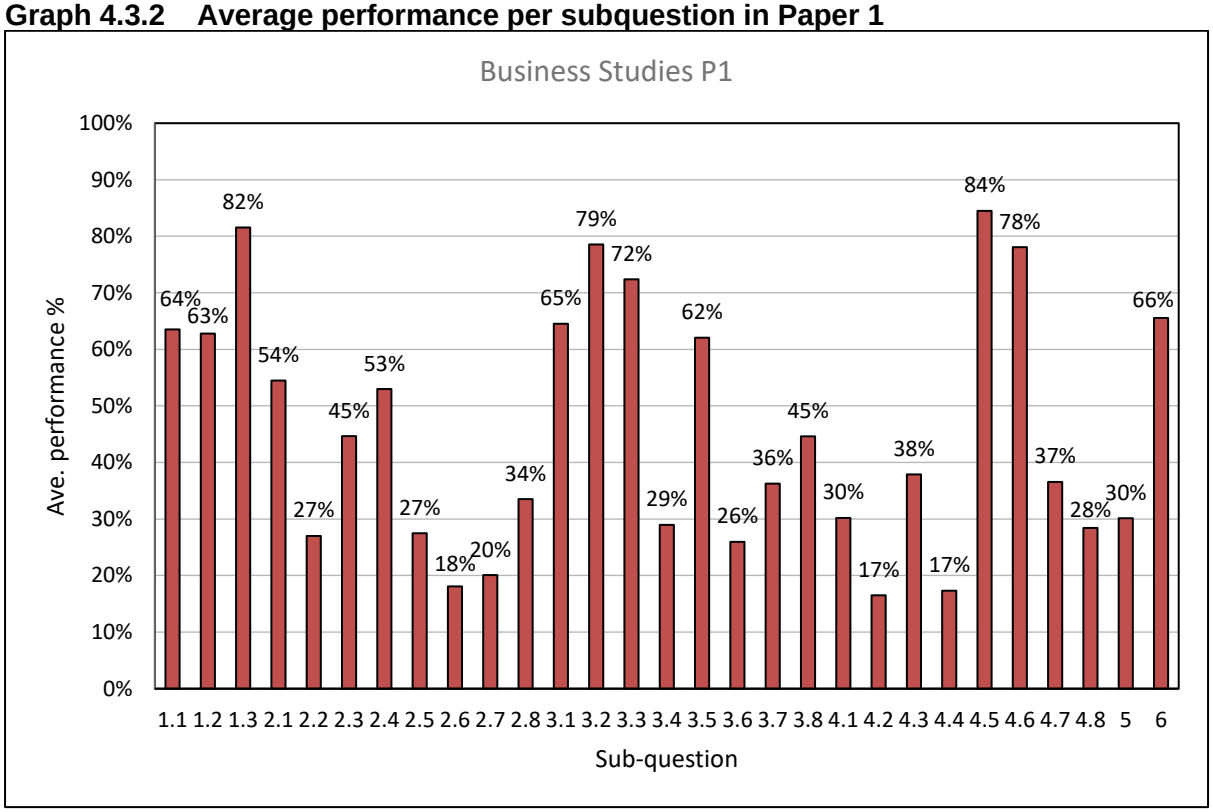
Candidates' performance in Q3, which assessed *Business Operations*, was very similar to that of the 2023 cohort. However, in Q6 on the same topic, *Business Operations*, there was a significant improvement. The average performance was 66% in 2024 compared to 57% in 2023. It was evident that candidates were well prepared for *Human Resources Function* and that they found this less challenging than *Quality of Performance* which was as an essay question in 2023.

Graph 4.3.1 Average performance per question in Paper 1



Q	Topic
1	Short Questions
2	Business Environments
3	Business Operations
4	Miscellaneous Topics
5	Business Environment: Legislation
6	Business Operations: Human Resources Function

Graph 4.3.2 Average performance per subquestion in Paper 1



SubQ	Topic	SubQ	Topic
1.1–1.3	Short questions	3.6	Bus Opn: Quality in the financial function
2.1	Bus Env: Types of diversification strategies	3.7	Bus Opn: Impact total client/customer satisfaction as TQM element
2.2	Bus Env: Advantages of intensive strategies	3.8	Bus Opn: Reduce the cost of quality by TQM
2.3	Bus Env: Dealing with challenges posed by the environmental factors of the PESTLE analysis	4.1	Bus Env: Provision in BCEA
2.4	Bus Env: Types of defensive strategies	4.2	Bus Env: Consumer rights in NCA
2.5	Bus Env: Purpose of the BBBEE Act	4.3	Bus Env: Strategy evaluation
2.6	Bus Env: Compliance to CPA	4.4	Bus Env: Power of supplier in Porter's Five Forces model
2.7	Bus Env: Impact of the LRA	4.5	Bus Opn: Aspects included in an employment contract
2.8	Bus Env: Strategic management process	4.6	Bus Opn: Components of a job analysis
3.1	Bus Opn: Sources of internal recruitment	4.7	Bus Opn: Quality circles
3.2	Bus Opn: Role of interviewer before the interview	4.8	Bus Opn: Quality in the general management function
3.3	Bus Opn: Reasons for termination of an employment contract	5	Bus Env: Legislation
3.4	Bus Opn: Implications of EEA on the human resources function	6	Bus Opn: Human Resources Function
3.5	Bus Opn: Quality management system		

4.4 ANALYSIS OF CANDIDATES' PERFORMANCE IN INDIVIDUAL QUESTIONS IN PAPER 1

SECTION A: MULTIPLE-CHOICE/SHORT ANSWER QUESTIONS

QUESTION 1: COMPULSORY (MULTIPLE-CHOICE, CHOOSING CORRECT WORDS AND MATCHING ITEMS)

Candidates performed well in all three subquestions when compared to the 2023 cohort. In Q1.1 the average performance of the 2024 cohort was 64%, compared to 66% attained in 2023. However, the 2024 cohort did not perform well in Q1.2. They obtained an average of 63%, compared to 66% achieved in 2023. In Q1.3 a significant improvement was noted, with an average performance of 82% in 2024 as opposed to 62% achieved in 2023.

Common errors and misconceptions

(a) Some candidates confused the concept of a *threat* and *weakness* in Q1.1.2. Candidates had difficulty with applying their knowledge and lacked the basic understanding that 'high employee turnover' is within the control of the business and therefore, it is classified as a 'weakness'. Here, candidates lost an opportunity to score marks as the SWOT analysis was covered in Grade 10 as a requirement for writing a business plan.

(b) In Q1.1.3, candidates did not perform well as they confused the extent of control businesses have over the market environment with the control they have on the macro environment. This question was expected to yield better results as this topic was taught in Grades 10 and 11; and has been asked in previous NSC examination papers.

(c) Candidates struggled to differentiate between *backward vertical* and *forward vertical* as an integration strategy. They lacked the ability to recognise that the 'wheat farm' would be the supplier to the 'bakery'. Some candidates forfeited marks for an incomplete response; they only responded with *vertical* instead of *backward vertical*.

(d) Many candidates identified *selection* instead of *placement.* This challenge persisted despite the recommendations made in past *Diagnostic Reports* on how to focus on the essence of the different human resources activities and to prevent learners from confusing these. The focus of *placement* should be on the word 'matching' the employee's qualifications with the requirements of the job.

(e) Candidates did not perform well in Q1.2.5 as they did not show understanding of the activities performed within each step of the PDCA model. They confused the application of the 'act' step with 'plan' and forfeited marks in this question despite this question being in the November 2023 examinations. A few candidates responded with 'act as needed' which was not the word that was provided in the text box and they forfeited two marks.

(f) In Q1.3.1 some candidates responded with H instead of E. The use of the phrase 'practical training opportunity' in both statements confused candidates who did not read the complete statement. The latter part of the statement made the answer clearer, as the learnership led to a recognised qualification. They were expected to have mastered this concept. Recommendations made in the *2020* and *2023 Diagnostic Reports* were not implemented.

Suggestions for improvement

(a) Teachers should make use of practical examples when revising the SWOT analysis. Learners should know that *weaknesses* are within the control of the business, while *threats* are not within the control of the businesses. Learners should analyse businesses to identify their strengths, weaknesses, opportunities and threats.

(b) It is necessary for teachers to conduct a baseline assessment on content covered in Grade 10 and Grade 11. This content should be tested using the different components of business environments. The tests should not only comprise of lower-order questions, e.g. that instruct learners to list the business environments and state the extent of their control of each environment.

(c) Teachers should demonstrate this content with the use of the distribution chain and practical examples. This will illustrate the position of the 'wheat farm' in relation to the 'bakery' visually. Learners should be given the opportunity to brainstorm their own examples to enhance their understanding of the content.

(d) Teachers must emphasise the logical order of the human resources activities. This will allow for a better understanding that placement is done by the business after the recruitment and selection procedures have been completed. The new employee is then assigned a specific job where he/she will function efficiently.

(e) Learners should be taught how businesses apply the PDCA model as part of a continuous improvement to processes and systems. Teachers should also focus on explaining each step. Learners should be encouraged to write only the words provided in the text block to avoid losing unnecessary marks in Q1.2.

(f) Teachers should make learners aware that both learning programmes and learnerships, are training opportunities; however, learnerships lead to a recognised qualification whereas, learning programmes provide opportunities for continuous professional development.

SECTION B: LONGER AND PARAGRAPH QUESTIONS, USING CASE STUDIES AND INFORMATION

QUESTION 2: BUSINESS ENVIRONMENTS

This question was the choice of very few candidates and yielded poor results. A possible reason for the poor performance could be that *legislation* was assessed in this question, as one of the subtopics under *Business Environments*. This topic remains a challenge despite the recommendations made in previous *Diagnostic Reports.*

Common errors and misconceptions

(a) In Q2.1 candidates performed well; however, a few candidates listed the *integration strategies* and not the *diversification strategies*.

(b) Some candidates responded with the advantages of *diversification* strategies instead of the advantages of *intensive* strategies, while others explained the types of intensive strategies.

(c) Learners were able to correctly identify the PESTLE element as *environmental,* however, the responses to Q2.3.2, on how to deal with the challenges posed by the environmental factors, were either vague or completely irrelevant.

(d) Most candidates could list the *defensive strategies*, however, some still responded with *divestment* instead of *divestiture*, despite the *2023 Diagnostic Report* stating that no marks would be awarded for *divestment*. Some candidates provided *liquidity,* as a response, instead of *liquidation,* which is a concept that belongs to *investment factors* in Paper 2.

(e) Candidates performed well in this question although some candidates wrote *management* instead of *management control* and ultimately forfeited marks for naming the pillar incorrectly.

(f) Q2.5.2 was poorly answered by many candidates. Candidates did not demonstrate an understanding of the purpose of BBBEE. It was apparent that candidates were able to either name the pillars of BBBEE or identify them from scenarios. This was evident in the good marks recorded for Q 2.5.1 which assessed naming the pillars from the scenario. Some candidates also responded with the purpose of the EEA.

(g) Candidates did not perform well in Q2.6. Some candidates provided the impact of the CPA instead of explaining how businesses could comply with the Act, while others confused the CPA with the NCA. The learners' inability to differentiate between the CPA and NCA is persisting despite the recommendations made in previous diagnostic reports.

(h) Poor performance was recorded in Q2.7 as candidates' responses were confused with those for EEA, instead of focusing on LRA. Others provided vague and incomplete responses while some provided responses based on the purpose of LRA instead of the impact. *Legislations* are a persistent challenge noted over the years under *Business Environments* content. Candidates who specified positives and negatives instead of just writing impact, confused/swapped responses and ultimately forfeited marks.

(g) Some candidates forfeited marks in Q2.8 because they confused *strategic management process* with *strategy evaluation* while others combined the responses for both options resulting in the repetition of facts.

Suggestions for improvement

(a) Teachers should use the *2021 Examination Guidelines* when teaching the types of business strategies. This will provide clarity to learners on the four types of business strategies as well as the types under each business strategy. A simple table such as the one below could also be used.

Integration strategies:	**Intensive strategies:**	**Diversification strategies:**	**Defensive strategies:**
• Forward vertical integration • Backward vertical integration • Horizontal integration	• Market penetration • Market development • Product development	• Concentric diversification • Horizontal diversification • Conglomerate diversification	• Retrenchment • Divestiture • Liquidation

(b) Learners should first have an in-depth knowledge of the three types of intensive strategies so that they can understand the advantages of these strategies.

(c) Teachers should use a table to illustrate the correlation between the challenges posed by the PESTLE factor and ask learners to suggest how businesses can deal with each challenge listed. It is important that each challenge be linked to a recommendation.

(d) Teachers should clearly explain the meaning of *defensive strategies* and also emphasise the reason for businesses implementing these strategies. The discussion of defensive strategies should be done in the sequence in which they appear in the DBE notes and the *2021 Exam Guidelines*. Learners should also be taught which strategy should be attempted first, to defend the position of the business in the market, and that liquidation is considered as the last option under defensive strategies. A clear distinction between *liquidity* and *liquidation* should be emphasised by teachers.

Teachers and subject advisors must note that the following fact under 'Retrenchment' will not be accepted in the future because it does not necessarily contextualise/demonstrate the meaning of 'retrenchment' as a defensive strategy. This fact should be **removed** from the DBE textbook.

- 'Through retrenchment, the business can reduce prices/offer discounts/ incentives for customers/consumers.'

Teachers and subject advisors must note that the following fact was elaborated on during the 2024 Marking Guideline Standardisation Meeting:

- 'Terminating employment contracts/Letting go of employees for operational reasons/to reduce costs/expenses.'

Teachers are advised to **revise** this fact in the DBE notes, textbooks and other credible resource materials to enable learners to obtain full marks.

Teachers and subject advisors must note that the following fact under 'Liquidation' was elaborated on during the 2024 Marking Guideline Standardisation Meeting:

- 'Selling all assets/bringing the business activities to an end to pay creditors due to lack of capital.'

Teachers are advised to **revise** this fact in the DBE notes, textbooks and other credible resource materials to enable learners to obtain full marks.

(e) Teachers should emphasise to learners that only the pillars listed in the *2021 Examination Guidelines* will be awarded marks. Teachers should also apply this when marking learners' formal and informal assessments.

(f) Teachers should use a column to show the purposes of each Act with highlighting of keywords in each Act. In this way, learners can easily see the purpose of each Act. This will reduce the possibility of learners confusing the Acts.

(g) Learners should firstly understand the purpose and impact of the Consumer Protection Act (CPA) on businesses to understand ways in which businesses should comply with this Act. Teachers should use a tabular method of teaching the purpose, impact and compliance with the Act.

Teachers and subject advisors must note that the following fact under 'ways in which businesses can comply with CPA' was elaborated on during the 2024 Marking Guideline Standardisation Meeting:

- 'Provide/Conduct adequate training to staff/stakeholders on the CPA.'

Teachers are advised to **revise** this fact in the DBE notes, textbooks and other credible resource materials to enable learners to obtain full marks.

(h) Learners should be taught that the main aim of LRA is to promote fair labour practices and that it protects both employees and employers. In order to assist learners to understand the impact of this Act on businesses, the purpose of this Act must be taught. Teachers should also identify the key concepts that are mentioned in the 'purpose' (of the Act).

Teachers and subject advisors must note that the following fact under 'Impact of the LRA Positives/Advantages' will not be accepted in the future because it applies to the EEA. This fact should be **removed** from the DBE textbook.

- 'Prevents unfair discrimination in the workplace because equal opportunities are promoted for all employees.'

(i) Teachers are required to teach both options of the *strategic management process,* however learners should focus on either Option 1 or Option 2 in preparation for assessments. Learners should first understand the meaning of a strategy as well as the reasons for businesses embarking on the strategic management process. It should be clarified that the strategy evaluation is done as the last process intended to check if the strategy implemented was successful or not.

QUESTION 3: BUSINESS OPERATIONS

Candidates performed well in this question with an average of 50%, however, there was a decline, compared to the 2023 average of 52%. Candidates performed better in the questions on *Human Resources* than *Quality of Performance*. The good performance can also be attributed to the fact that *Businesses Operations* only has two subtopics, which were taught in Grades 10 and 11. This made the content more manageable and less overwhelming.

Common errors and misconceptions

(a) In Q3.1 most candidates were able to name the *sources of internal recruitment*, however, some candidates forfeited marks unnecessarily by omitting the word 'internal' or 'in the business', e.g. learners mentioned e-mails as a source of internal recruitment instead of writing down the *intranet* or *internal* e-mails.

(b) Good performance was noted in Q3.2, however, some candidates forfeited marks for confusing the role of the interviewer before the interview, with the role of interviewer during the interview.

(c) In Q3.3.1 the distractor was quoted less than in previous years and candidates were capable of providing complete motivations, which was encouraging.

(d) Some candidates listed the reasons with no explanations and therefore only obtained a maximum of 2 marks. Candidates were expected to respond with a complete response as the cognitive verb was 'advise'. All higher-order verbs such as *suggest*, *recommend* and *advise* require responses to be given in full sentences with detailed explanations.

(e) Poor performance was recorded in Q3.4 because candidates confused the implications with either the purpose, or the impact of EEA. They did not demonstrate an in-depth understanding of the implications of EEA on the Human Resource function. Most of the responses were limited to either *fair treatment and equal opportunities* or *equal pay for work of equal value.*

(f) Many candidates identified the *administration function* and *production function*, while others identified *adequate financing and capacity*, which is a TQM element instead of the *financial function* in Q3.6.1. Candidates forfeited two marks for not reading the complete statement: 'The financial function keep financial records up to date to ensure timely/accurate tax payments.' In the scenario, the phrase, 'bookkeeping records' was used as a synonym for 'financial records'. The statement from administration that confused candidates focused on 'financial documents are kept up to date and recorded accurately'. The essence of the administration function is to 'keep *documents* up to date and recorded accurately' while the financial function is to 'update financial records to make timeous and accurate tax payments'.

(g) Most candidates received marks in Q3.6.2, even if they identified the business function incorrectly at Q3.6.1. This was because relevant facts were awarded marks even if the business function was incorrectly identified.

(h) In Q3.7 some candidates did not have an in-depth knowledge of the impact of *total client/customer satisfaction* as a TQM element on large businesses and responded with general statements regarding quality. They were expected to perform better in this question since the same TQM elements were asked in the 2022 NSC November examinations (as direct questions) and a scenario-based question in 2023.

(i) Some candidates were still confused about the *ways in which TQM could reduce the cost of quality* with the *impact of TQM if poorly implemented by businesses* and the *role of quality circles,* despite this question appearing in the 2020, 2022 and 2023 November NSC examinations.

Suggestions for improvement

(a) A clear distinction must be made when teaching the two sources of recruitment, namely internal and external. Teachers should use a table to visually demonstrate the different sources and make it clear to learners that they will not be awarded marks if their answers do not indicate that the source is used inside the business, if internal.

(b) Teachers should incorporate role play during lessons. This will allow candidates to visualise the role of the interviewer before and during the interview process and make the distinction between the two roles.

(c) Teachers should continue to include distractors in questions when learners are expected to quote from scenarios. The distractors must be close to the required answer as this will encourage learners to master the content.

(d) Learners must know how to respond to the different cognitive verbs used in the different questions. Teachers can make use of past NSC examination papers to provide clarity to learners.

(e) Learners should be encouraged to study all the content of the Human Resources Function as well as the 'implications of Legislation on Human Resources Function'. This section is at the end of the chapter in most resources and with learners not showing an interest in *Legislation*, they might be tempted to not prepare this section. Teachers should provide classroom activities and conduct informal assessments to determine whether learners understand the HR content applicable to *Legislation*. Teachers should also include this section in their formal assessments.

(f) Teachers have to remind learners that when asked to identify in a scenario or statement, they must read the complete statement. Teachers should also expose learners to scenarios which use statements that are rephrased from the DBE notes. This will ensure that the learners are exposed to facts that are not quoted verbatim from the DBE notes.

(g) Adequate time should be spent on teaching the impact of all TQM elements on large businesses as stated in the *2021 Examination Guidelines*. Practical examples must be used in the teaching and learning of these TQM elements. Teachers are advised to emphasise the impact of TQM elements on large businesses, focusing on how large businesses implement these TQM elements and what the advantages and disadvantages are in the implementation of these elements. Practical examples must be given to learners to understand how total client satisfaction, as assessed in this examination, impacts on large businesses.

(h) Teachers should use four columns which highlight the following headings:
- Benefits of a good quality management system;
- The impact if TQM is poorly implemented;
- Ways to reduce the cost of quality; and
- The role of quality circles.

This will enable learners to clearly see the facts under each heading and to avoid confusing them, when these subtopics are examined.

QUESTION 4: MISCELLANEOUS TOPICS

Candidates' performance in Q4 declined from 47% in 2023 to 41% in 2024. This question assessed both main topics, namely *Business Environments* and *Business Operations* consisting of 20 marks each. Many candidates struggled with the subquestions based on *Legislation,* which was one of the subtopics of *Business Environments.* Two of the four subquestions under *Business Environments* focused on this subtopic.

Common errors and misconceptions

(a) Candidates did not perform well in Q4.1 as some candidates confused the *provision of the BCEA* with the *aspects that must be included in an employment contract*. Many candidates indicated work hours, overtime/meal intervals and rest periods/Sunday work/public holidays as stand-alone points. The same was done with the different types of leave. Candidates therefore forfeited marks as only one mark each could be allocated for the repetition of the regulation of work hours and leave.

(b) Poor performance was observed in Q4.2 as candidates outlined the rights of consumers in terms of the *CPA* instead of the *NCA*.

(c) Some candidates forfeited marks for repeating answers which were quoted in Q4.3.1 while others explained the *strategic management process* instead of *the steps in strategy evaluation.* The inability of candidates to differentiate between these two questions was disconcerting as this point was noted in both the *2022* and the *2023 Diagnostic Reports.*

(d) Many candidates could not provide correct responses to the application of *power of suppliers* as a force of Porter's Five Forces model in Q4.4. Candidates mentioned the function of a supplier instead on focusing on what made the supplier powerful. This is still a persistent challenge despite recommendations made in previous *Diagnostic Reports*.

(e) In Q4.5 candidates performed very well although a few candidates confused the aspects that should be included in the employment contract, either with the legal requirements of an employment contract, or aspects that should be included in the induction programme.

(f) Candidates performed well in Q4.6 and many candidates could identify the components of the *job description* and *job specification* correctly.

(g) Candidates performed poorly in Q3.7 as they did not have an in-depth knowledge of the roles of *quality circles* as part of continuous improvement to processes and systems. Some responses were based on ways in which TQM could reduce the cost of quality while others focused on the impact of continuous improvement to processes and systems as a TQM element. The same question has been asked in the 2022 and 2023 November NSC examinations and areas for improvement were noted in the *2022* and *2023 Diagnostic Reports*.

(h) Candidates struggled to express themselves when responding to the quality indicators of the business functions. The focus should have been on what would indicate or show that a particular business function was performing well by providing quality work in that particular department. This, therefore, meant that the focus should have been on how the quality indicators of the business functions contributed to the success of the business.

Suggestions for improvement

(a) Teachers should make it clear to learners that they are expected to write the provisions as they appear in the Amended Act and the revised notes.

(b) Teachers should emphasise that NCA focuses on consumer rights in terms of credit granting, while the CPA is more about information about the products and rights of the consumers buying both on cash and credit. The rights of consumers for both Acts should be taught side-by-side using the column method. One strategy that teachers could use is to provide a list of consumer rights for both Acts and requesting the learners to classify them correctly. Learners should research 'real-world' examples of consumer rights that are listed in the National Credit Act and the consumer rights according to the CPA. This will enable them to see how the lists of consumer rights of the two Acts differ from one other.

Teachers and subject advisors must note that the following fact was elaborated on during the 2024 Marking Guideline Standardisation Meeting:

- 'Fair and responsible marketing by the credit provider.'

Teachers are advised to **revise** this fact in the DBE notes, textbooks and other credible resource materials to enable learners to obtain full marks.

(c) The steps in strategy evaluation should be taught immediately after explaining the strategic management position so that learners can understand the reason why businesses must evaluate the chosen strategy.

(d) Teachers should make it clear why the Porter's Five Forces model is used by businesses. They should then introduce how suppliers gain power over the business or how they influence it. This will then inform learners how the business can apply the model to position itself in the market using practical examples. Teachers should show learners how to identify facts from the notes, which explains what may give the suppliers power, and later those which explain how businesses respond to such influence.

Teachers and subject advisors must note that the following fact was elaborated on during the 2024 Marking Guideline Standardisation Meeting:

- 'Suppliers that deliver high quality/unique/scarce products may have power over the business.'

Teachers are advised to **revise** this fact in the DBE notes, textbooks and other credible resource materials to enable learners to obtain full marks.

(e) Learners can research a sample of an employment contract and quote the aspects of the employment contract. This will provide them with the practical experience of examining employment contracts.

(f) Teachers must make it clear that the *quality circles* is a group of employees who meet regularly to consider ways of resolving problems related specifically to quality. The focus must be on what they do to improve the quality of products/services. It must be explained to learners that the role of quality circles is to improve production by investigating the problems related to quality and not only suggest solutions but to monitor/reinforce strategies to improve the smooth running of a business.

Teachers and subject advisors must note that the following fact was elaborated on during the 2024 Marking Guideline Standardisation Meeting:

- 'Reduce costs of redundancy and wasteful efforts in the long run.'

Teachers are advised to **revise** this fact in the DBE notes, textbooks and other credible resource materials to enable learners to obtain full marks.

(g) Teachers should administer baseline assessments on the quality indicators of business functions. Subject advisors must emphasise that the quality indicators of all business functions must be assessed equally during formal assessments.

SECTION C: ESSAY QUESTIONS

QUESTION 5: BUSINESS ENVIRONMENT: LEGISLATION

This question, which assessed Skills Development Act under *Business Environments*, was not a popular choice in Section C. Most candidates performed poorly with an average of 30%, because the topic *Recent Legislation* was perceived as challenging by many learners. It is worth noting that all subquestions that were asked in this question were examined in previous NSC November examinations.

Common errors and misconceptions

(a) Many candidates had difficulty with writing meaningful introductions and conclusions for the four subquestions. Some candidates copied the preamble in the question paper while others used facts which formed part of the answers expected for the subquestions, in their introduction and conclusion. This challenge persisted although it had also been reported in previous *Diagnostic Reports.*

(b) In Q5.2 candidates incorrectly based their responses on SETAs being responsible for training employees in the workplaces. Others confused this content with the purpose of the SDA and the funding of SETAs.

(c) Poor performance was recorded in Q5.3 as most candidates lacked the knowledge and the understanding of the purpose of SDA. Some candidates confused the impact of the SDA with its purpose.

(d) Many candidates did not perform well in Q5.4 as they repeated the content of the purpose of the SDA, while others responded with the impact of the EEA. Some candidates listed the positive impact under the negative impact heading and vice versa.

(e) Candidates struggled to express themselves and only responded with vague incomplete sentences. Other responses were based on the penalties imposed by the SDA for non-compliance.

(f) Many candidates forfeited marks for originality as they were unable to provide examples based on recent information or current trends and developments. Some examples were also not relevant to the four subquestions while other examples were older than two years.

Suggestions for improvement

(a) Learners should be trained to provide an introduction and a conclusion with facts relevant to the four subquestions in the question – without repeating the preamble of the question. Teachers should emphasise that learners will not be awarded marks for introductions and conclusions when writing facts which form part of the expected answers of the subquestions. Teachers should provide learners with opportunities to practise composing of introductions and conclusions.

(b) Learners must be made aware of the relationship between the role of SETAs and how they are funded. Teachers must emphasise that SETAs are the implementers of the SDA. They do not train employees but they oversee the training process. Teachers must include real-life examples to illustrate how SETAs operate within the context of the SDA.

(c) Teachers must be advised to unpack the background of the Act first to ensure that learners have a better understanding of the purpose of the Act. It must be emphasised that the SDA focuses on investing in education and training of the South African workforce, while the EEA focuses on promoting diversity in the workplace by ensuring that people of diverse backgrounds are appointed.

(d) A clear distinction must be made between the purpose and the impact regarding the different Acts. Learners must be encouraged to use the heading 'Impact' rather than *positive* impact and *negative* impact. This will prevent them from writing facts under an incorrect heading.

(e) To avoid losing marks unnecessarily, learners must write in full sentences when responding to questions. Teachers must emphasise that the 'ways businesses can comply with the Act' focuses on what the business should do to be compliant and to avoid the penalties of non-compliance, whereas the 'penalties of non-compliance' would be the consequence to the business, if they do not comply with the Act. Teachers must use scenarios or role-playing activities where learners identify compliance actions rather than penalties. This practical approach reinforces the importance of understanding compliance mechanisms.

(f) Learners should be trained to use the internet to research possible examples of current trends and developments on the content being taught as a classroom activity. This will also allow for more interactive and interesting lessons.

QUESTION 6: BUSINESS OPERATIONS: HUMAN RESOURCES FUNCTION

Candidates who attempted this question, which was very popular, performed well and obtained an average of 66%. This aligned with the data from a random sample of candidates, presented above. It was evident that many candidates were conversant with the topic *Human Resources Function.*

Common errors and misconceptions

(a) In the introduction, some candidates' responses were based on recruitment rather than focusing on the four subquestions asked. Others copied sentences that were in the preamble as their introduction. This challenge persisted despite the recommendations made in the past *Diagnostic Reports.*

(b) In Q6.2 some candidates provided vague and incomplete responses while others responded with the recruitment process. Candidates who responded with the selection procedure forfeited marks for repeating facts in options 1 and 2.

(c) Many candidates could name and explain the salary determination methods; however, some could only explain one fact under each method.

(d) Candidates performed well in Q6.4. However, some candidates provided examples of fringe benefits and also forfeited marks for incomplete or vague answers. It was anticipated that candidates would perform well in this question as it had been examined in many previous NSC papers.

(e) Many candidates did not perform well in Q6.5 as they provided the purpose and aspects included in the induction programme instead of the benefits of induction. This question remained a challenge despite the recommendations made in past *Diagnostic Reports.*

(f) The majority of the candidates could not provide original and recent examples that were related to the content asked. Most candidates listed examples of fringe benefits which resulted in the loss of two marks for the lack of originality.

Suggestions for improvement

(a) Teachers should emphasise that the introduction and conclusion should focus only on the four questions asked, without responding with facts which form part of the expected answers of the subquestions. Subject advisors should conduct workshops which should focus on how to formulate introductions and conclusions. Teachers would then be in a better position to assist their learners with honing their writing skills.

(b) Teachers should encourage learners to focus on one option of the selection procedure. Combining facts from both options results in repetition, which causes them to forfeit marks. They should also emphasise the key concepts which distinguish the recruitment and the selection procedures, i.e. recruitment focuses on finding suitable candidates for the vacancy, while selection focuses on choosing and appointing a suitable candidate. Using visual aids, such as flowcharts or diagrams, will assist learners to have a better understanding of the sequential nature of these activities.

(c) The explanation of the terms 'piecemeal' and 'time-related salary determination methods' should be explained in terms of how businesses determine the remuneration to be paid to employees. The amount paid will be informed by either the tasks to be completed (piecemeal) or a tariff based on time spent per hour/per day/per week (time-related).

(d) A clear distinction should be made between the examples of fringe benefits and how these benefits can impact businesses. Lessons should emphasise the importance of linking fringe benefits to tangible business results. Using case studies or real-world examples to demonstrate how offering benefits leads to measurable outcomes like improved employee satisfaction, reduced turnover and a positive employer brand makes understanding the topic more relevant.

(e) Teachers should use a table to clearly illustrate the differences between the aspects, purpose and benefits of induction. The benefits should be explained as the results or outcomes that businesses will enjoy from the activities that were performed during the induction process. The following fact has been elaborated on during the 2024 Marking Guideline Standardisation Meeting:

- 'Increases quality of performance/productivity which promotes the effective use of working methods/resources.'

Teachers are advised to **correct** this fact in the DBE notes, textbooks and other credible resource materials so that learners can obtain full marks for the above-mentioned fact.

(f) Subject advisors should allow for brainstorming sessions to generate examples of recent information or current trends and developments during teacher interaction sessions of a particular topic.

4.5 DIAGNOSTIC QUESTION ANALYSIS OF PAPER 2

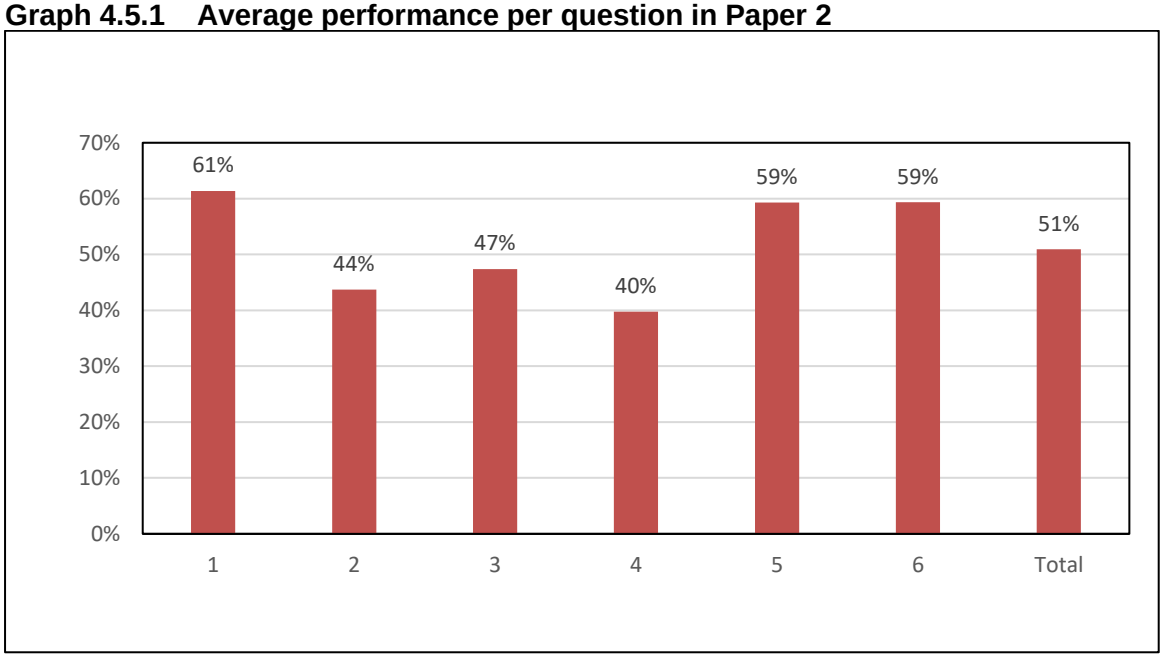
The graphs presented below are based on data from a random sample of candidates in the different provinces.

The performance of the 2024 cohort remained unchanged in Q1 compared to 2023, at an average performance of 61%. This question consisted of ten subquestions that assessed *Business Ventures* and *Business Roles.* Subquestions which appeared in past NSC examination papers were also included.

It is encouraging to note that the performance of the 2024 cohort improved on the topic of *Business Ventures* which was assessed in Q2 and Q5, in comparison to the 2023 cohort. The average percentage in Q2 (Section B) was 44%, compared to 30% attained in 2023. Candidates' performance in Q5 (Section C) was 59%, which was much higher than the 51% attained in 2023.

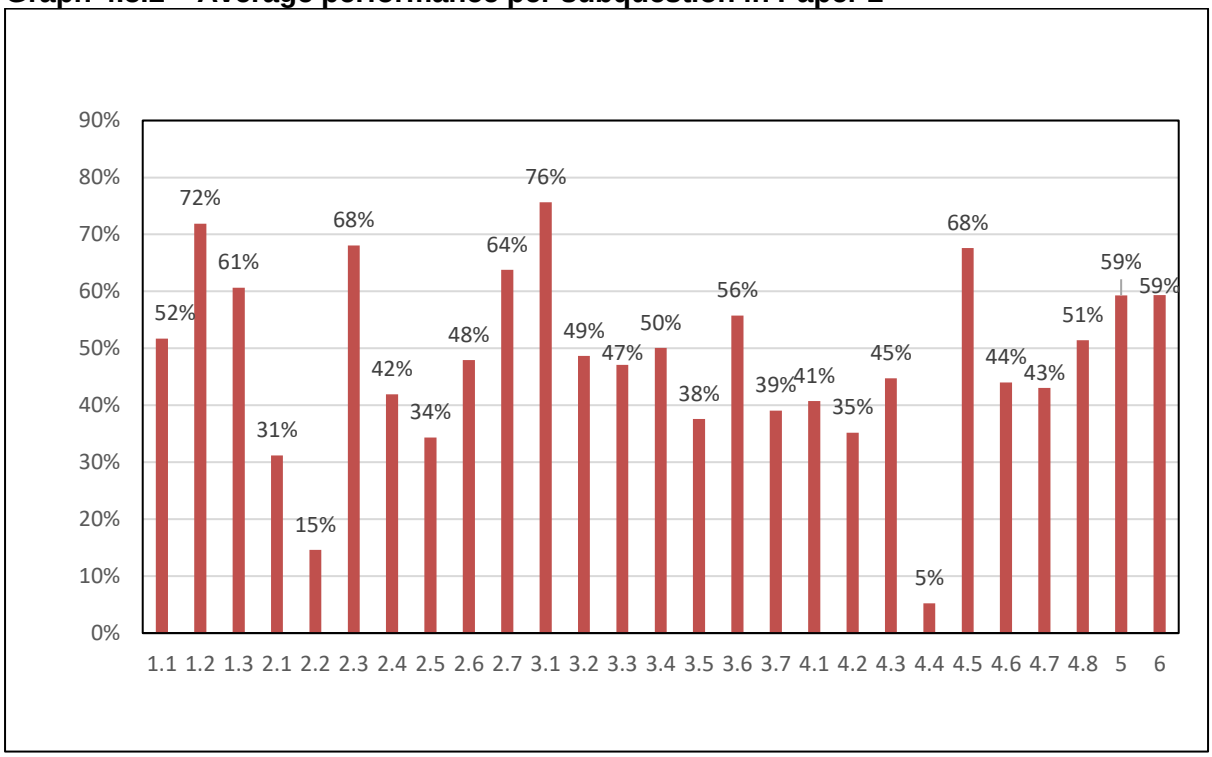
However, the candidates' performance declined in Q3 (Section B) which assessed the topic *Business Roles.* Although Q6 (Section C) assessed the same topic, there was an improvement. It was apparent that candidates were not adequately prepared to answer questions on all the subtopics that form part of *Business Roles.*

Graph 4.5.1 Average performance per question in Paper 2



Q	Topic
1	Compulsory
2	Business Ventures
3	Business Roles
4	Miscellaneous Topics
5	Business Ventures (Investment: Securities)
6	Business Roles (Social Responsibility CSR/CSI)

Graph 4.5.2 Average performance per subquestion in Paper 2



SubQ	Topic	SubQ	Topic
1.1–1.3	Short questions	3.7	Bus Roles: Dealing with gender as a diversity issue
2.1	Bus Vent: investment opportunities	4.1	Bus Vent: Types of compulsory insurance
2.2	Bus Vent: Advantages of the state-owned company	4.2	Bus Vent: Advantages of insurance for businesses
2.3	Bus Vent: Average clause & calculation of under insurance	4.3	Bus Vent: Visual aids and areas of improvement
2.4	Bus Vent: Multimedia presentation	4.4	Bus Vent: Success and the failure factor of the private company
2.5	Bus Vent: Leadership theory	4.5	Bus Roles: Problem solving steps
2.6.	Bus Vent: Impact of autocratic leadership style	4.6	Bus Roles: Contributing time and effort to improve wellbeing of employees
2.7	Bus Vent: Handling feedback	4.7	Bus Roles: Human rights
3.1	Bus Roles: CSI focus areas	4.8	Bus Roles: Ways in which professional, responsible, ethical and effective business practice
3.2	Bus Roles: Responsibility of workers in promoting human health and safety in the workplace	5	Bus Vent: Investment securities
3.3	Bus Roles: Dealing of abuse of work time	6	Bus Roles: Social Responsibility & CSR/CSI
3.4	Bus Roles: Creative thinking		

4.6 ANALYSIS OF CANDIDATES' PERFORMANCE IN EACH QUESTION IN PAPER 2

QUESTION 1: COMPULSORY (MULTIPLE-CHOICE, CHOOSING CORRECT WORDS AND MATCHING ITEMS)

The performance of candidates in this question remained at 61%, the percentage obtained in 2023. In Q1.1 a decline was noted, with an average performance of 52% in 2024, compared to 62% achieved in 2023. However, candidates performed better in Q1.2 achieving an average of 72%, compared to the 61% achieved in 2023. The average performance in Q1.3 was 61% in 2024, compared to 59% attained in 2023. These subquestions consisted of multiple-choice questions, completion of statements and matching column A and B.

Common errors and misconceptions

(a) Q1.1.2 was poorly answered by many candidates as they confused the *partnership* (partners) and *cooperative* (members).

(b) Some candidates confused the role of health and safety representatives with the responsibility of employer to protect the environment and human health in Q1.1.4. This challenge has persisted despite the recommendations made in the previous *Diagnostic Reports*.

(c) Candidates confused *collaboration* with *communication* as a criterion for the successful team performance in Q1.1.5. They were expected to perform well in this question as it had been examined in Q6 (Section C) of the 2023 November NSC examinations.

(d) Some candidates confused *bonus shares* with *founders' shares* in Q1.2.1, even though this question was assessed in Q1.3.5 in Section A of the 2023 November NSC examinations and has appeared often in previous NSC examination papers.

(e) In Q1.2.5 some candidates confused the *cultural rights* and *social rights* in the workplace.

Suggestions for improvement

(a) It is important for learners to know which forms of ownership use the term *members* and which use the term *partners*, e.g. *partners* are only used in a *partnership* and *members* in a *cooperative*. When guiding learners on how to respond to multiple-choice questions, teachers should show learners how to eliminate the additional incorrect answers, until only the correct answer remains.

(b) Learners must know that health and safety representatives protect the workplace environment by ensuring that protective clothing is available. On the other hand, the employer promotes the human health and safety in the workplace by providing protective clothing.

(c) Learners must first know the meaning of each criterion for successful team performance as well as the activities involved in each. Learners should understand that the criteria for successful team performance serve as guidelines on how team members should interact with one another when working together on a project.

(d) Teachers should make a clear distinction between *bonus shares* and *founders' shares*. Learners must know that founders' shares are issued to the promoters, while bonus shares are issued as compensation for unpaid dividends. They should be able to name and explain the four types of shares.

(e) Learners must know the four categories of rights. They should be able to recommend ways in which businesses could promote social rights and cultural rights in the workplace.

SECTION B: LONGER AND PARAGRAPH QUESTIONS, USING CASE STUDIES AND INFORMATION (THREE QUESTIONS TO BE ANSWERED)

QUESTION 2: BUSINESS VENTURES

Despite only a few candidates attempting this question, there was a significant improvement in the performance of these candidates, compared to their 2023 peers. An average performance of 44% was achieved in 2024, compared to the 30% achieved in 2023. This improvement is encouraging and may be due to the revision of similar questions that were examined in 2022 and 2023.

Common errors and misconceptions

(a) In Q2.1 candidates confused the *types of investment opportunities* with the *investment decision factors* and some confused it with the *forms of investment*. As a result, many candidates answered with options such as *risk, return on investment, RSA retail savings bonds, unit trusts, shares* and *fixed deposits.* Some candidates were unable to answer this question.

(b) Q2.2 was poorly answered, because many candidates provided the characteristics of a public company such as limited liability, continuity, and legal personality instead of the advantages of a state-owned company.

(c) Good performance was noted in Q2.3. However, some candidates confused the *average clause* with *under and over insurance* in Q2.3.1*.* Many candidates had the final answer incorrect in Q2.3.2, but they were awarded three of the four marks for the steps that they followed while working out the answer.

(d) In Q2.4 many candidates confused the aspects that should be considered when designing a multimedia presentation, with the factors that must be considered when preparing for a presentation, by providing incorrect responses such as 'create visual aids'.

(e) Some candidates incorrectly identified the *transformational leadership theory* as the leadership style from the scenario in Q2.5.1 and forfeited marks for not explaining the *transformational leadership theory* as a follow-on question in Q2.5.2.

(g) In Q2.7 candidates confused ways in which the presenter could respond to feedback in a non-aggressive and professional manner with the factors that must be considered during the presentation. Some candidates provided incomplete responses and forfeited marks.

Suggestions for improvement

(a) A clear distinction must be made between the following subtopics under investment securities: *investment decision factors, investment opportunities* and *forms of investment*. Teachers must refer to the *2021 Examination Guidelines* for the six types of investment opportunities. Subject advisors must devise a revision programme on *Investments* and *Insurance* prior to the commencement of all the examinations (June, preliminary and final examinations).

The following alternatives for the types of investment opportunities will **no longer be accepted**: *Business Venture, Call deposit* and *Life insurance policies*. Learners are encouraged to familiarise themselves with the types of investment opportunities that are listed in the *2021 Examination Guidelines.*

(b) Teachers should recap the forms of ownership that were covered in Grade 11 by conducting a baseline assessment. A clear distinction must be made between the *public company* and the *state-owned company*. Public companies are owned by shareholders, who purchase shares of the company's stock, while state-owned companies are owned by the government with an aim of conducting commercial activities.

(c) Learners must know the difference between *under-insurance* and *average clause*. *Average clause* applies when assets are under insured and *under-insurance* occurs when property or assets are insured for less than market value. Learners are expected to be able to calculate the average clause using the correct formula, i.e. the amount insured divided by the value of the property multiplied by the damage. Learners must be reminded that the formula and the calculations are allocated part-marks and must be clearly shown.

(d) Teachers should emphasise the aspects that should be considered when designing a multimedia presentation using the smartboard as a visual aid. They should use a new PowerPoint page and demonstrate each aspect so that learners have a conceptual understanding of this content.

(e) Learners should conduct research on all leadership theories and present their findings in the classroom through open discussions. Teachers must lead the discussion to close the content gap by first explaining the meaning of the three leadership theories. This will enable learners to have a better understanding. Furthermore, they must know that leadership theories guide leaders on how to use leadership styles interchangeably to achieve the desired outcome.

(f) Teachers can use role-play to highlight the factors that must be considered while presenting and learners should be able to provide and receive feedback in a non-aggressive and professional manner. Learners must also be advised to write their responses in full sentences to be awarded full marks.

QUESTION 3: BUSINESS ROLES

Candidates' performance in Q3 declined from 54% in 2023 to 47% in 2024, despite many questions having been examined in past NSC November examinations. This was a popular question and despite good performance of some candidates, better results were expected.

Common errors and misconceptions

(a) There is evidence of good performance in Q3.1 as many candidates could name the CSI focus area, however some candidates responded with *rural areas* instead of *rural development* and *employment* instead of *employees*. Some confused the focus areas with the CSR programmes even though the examples of CSI focus areas are provided in the *2021 Examination Guidelines.*

(b) In Q3.2 some candidates focused more on the responsibilities of the employer than those of the workers even though this subtopic had been examined in the past.

(c) In Q3.3.1 many candidates could quote how businesses could deal with abuse of work time as a type of unprofessional business practice. Responses in Q3.3.2 on 'other ways in which businesses can deal with abuse of work time' were vague and some candidates provided general strategies.

(d) Many candidates provided vague and incomplete responses on the ways in which businesses could create an environment that promoted creative thinking in the workplace in Q3.4. Some responses were based on the advantages of creative thinking in the workplace.

(e) In Q3.5.1 few candidates identified the stage of team development correctly from the scenario, while others failed to respond to Q3.5.2 on the importance of team dynamic theories.

(f) In Q3.6 candidates responded with grievance procedure, dealing with difficult personalities, while others provided problem-solving steps instead of the conflict resolution procedure that was asked. Some candidates provided incomplete responses such as 'acknowledge that there is conflict' or 'arrange a meeting' instead of providing complete sentences thus forfeiting marks. A few candidates also confused how to *deal with conflict* in the workplace with the *causes of conflict* in the workplace.

(g) Poor performance was noted in Q3.7, as candidates wrote about how to manage discrimination in the workplace instead of dealing with gender as a diversity issue, while some confused it with the Employment Equity Act. Some candidates forfeited marks because they omitted key words such as 'employment' and 'managerial' in the facts that they presented. Candidates were expected to perform well in this question as questions on *diversity issues* have been asked in many past NSC November examinations.

Suggestions for improvement

(a) A clear distinction must be made between the CSI focus areas and CSR programmes. It should be stressed that CSR programmes inform CSI focus areas which are aimed at rural, employee and community development. Learners must know the four CSI focus areas listed in the *2021 Examination Guidelines*.

(b) Learners should not confuse the responsibilities of workers and those of employers in promoting human health and safety in the workplace. The responsibility of workers focuses on what workers should do to ensure their own health and safety in the workplace, e.g. reporting accidents to the employer at the end of the shift.

(c) Teachers must make sure learners are able to name the types of unprofessional business practices listed in the *2021 Examination Guidelines* before instructing them on how businesses can deal with each type in the workplace. Learners must be exposed to different types of scenarios and direct questions based on this content.

(d) Ways in which businesses can create an environment that promotes creative thinking in the workplace should not be confused with the advantages of creative thinking. 'Ways to create' refers into a specific technique that can be used to actively encourage the generation of new ideas such as brainstorming, while advantages are the positive outcomes that result from being able to think creatively.

Teachers and subject advisors must note that the following fact was elaborated on during the 2024 Marking Guideline Standardisation Meeting:

- ‘Encourage employees to develop/come up with new/unique ideas/alternative ways of working/doing things.'

Teachers are advised to **revise** this fact in the DBE notes, textbooks and other credible resource materials to enable learners to obtain full marks.

(e) Learners must know the difference between team dynamic theories and the characteristics of team development. The theories assist team leaders to understand the personality types of team members so that tasks are assigned more effectively. Successful teams are often built around individuals, whose joint contribution to the goals of the team enables the team to be successful.

(f) On the content 'how businesses should handle conflict in the workplace' teachers and subject advisors must note that the following facts were elaborated on during the 2024 Marking Guideline Standardisation Meeting:

- 'Identify the cause of the conflict to get clarity on its nature';
- 'Select/Implement the best solution that will address the conflict.'

Teachers are advised to **revise** these facts in the DBE notes, textbooks and other credible resource materials to enable learners to obtain full marks.

(h) Learners must first focus on understanding each *diversity issue* before studying the ways in which businesses could address each diversity issue in the workplace. Teachers must assist learners to identify the important key words such as *gender equality, managerial positions* and *employment opportunities*.

QUESTION 4: MISCELLANEOUS TOPICS

There was a slight improvement in candidates' performance in this question with an average of 40% being attained in 2024, compared to 38% attained in 2023. This question assessed both main topics, namely *Business Ventures* and *Business Roles,* 20 marks were allocated to each topic. Candidates performed better in the subquestions on *Business Roles* and struggled with the questions on the topic, *Business Ventures*. This challenge has persisted despite recommendations made in the 2022 and 2023 *Diagnostic Reports*.

Common errors and misconceptions

(a) Some candidates performed well in Q4.1 by naming the types of compulsory insurance, however, some forfeited marks for naming the types of non-compulsory insurance and for writing Compensation for Occupational Injuries and Diseases *Act* instead of *Fund*.

(b) In Q4.2 some candidates explained the meaning of insurance instead of providing the advantages of insurance for businesses. Some responses were based on the advantages of insurance for individuals, instead of businesses and some gave general advantages/statements such as 'businesses face burglary', 'insurance will pay' as responses.

(c) Many candidates could identify PowerPoint and flip charts from the scenario in Q4.3.1 as visual aids, however, some wrote the distractor which was 'smart pens'.

(d) In Q4.3.2 some candidates provided the factors to consider before/during a presentation instead of areas for improvement of the next presentation. Some candidates gave incomplete responses and forfeited easy marks.

(e) A very poor performance was observed in Q4.4 as candidates' responses were on *profit* instead of *capital* as criteria that contributed to the success or failure of a private company. Some confused it with the characteristics of a private company.

(f) Many candidates could state the *problem-solving steps* in Q4.5, but some candidates' responses were based on the strategic management process and grievance procedure instead of problem-solving steps. The use of outdated learner resource material also contributed towards the loss of marks despite it being explained in the *2023 Diagnostic Report* that candidates would forfeit marks if they responded with the strategic management process.

(g) Some candidates' responses in Q4.6 were based on the ways in which businesses can contribute time and effort to improve the well-being of communities instead of employees. Others gave examples of CSI projects that were not required in this question.

(h) In Q4.7 some candidates identified and forfeited marks for stating *respect and dignity* instead of just *dignity;* and for omitting *'and expression'* instead of *freedom of speech and expression*.

(i) Candidates struggled to respond appropriately to Q4.8 as they provided general and vague responses on ways in which professional, responsible, ethical and effective business practices should be conducted. Some candidates confused this content with the contribution to the well-being of employees in the workplace while others discussed the meaning of ethics and professionalism and ways to comply with EEA, such as 'equal pay for work of equal value'.

Suggestions for improvement

(a) A clear distinction must be made between the types of compulsory and non-compulsory insurance. Teachers should use two columns on the board to show the differences between these concepts. Teachers must also encourage learners to know the three types of compulsory insurance that are listed in the *2021 Examination Guidelines*.

(b) Teachers should use keywords to assist learners to formulate statements on the advantages of insurance for businesses. Teaching and learning should focus on the advantages of insurance for businesses instead of insurance for individuals.

(c) Learners should focus on the visual aids provided in the *2021 Examination Guidelines* and teachers must also utilised scenarios presented in past NSC examination papers and the DBE textbook. Teachers should read the scenarios with the learners. This will assist learners to identify the distractors.

(d) Teachers must draw columns with the following headings during their lessons to explain the content on presentation clearly:

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Factors to be considered in preparing for a presentation	Factors to be considered by the presenter while presenting	How to handle feedback after a presentation	Areas of improvement in the next presentation

Learners must know that the presenter is alone when preparing the presentation; during the presentation, the presenter is with an audience. At the end of the presentation, the presenter is still with the audience: responding to questions and receiving feedback. The presenter will then be alone when he/she reflects on the questions, the feedback and what did not work, so that when the next presentation is being prepared, there will be an improvement.

(e) Teachers must conduct the baseline assessment on the forms of ownership and re-teach so that the content gaps are closed. Learners must know the advantages and the disadvantages of the forms of ownership so that it will be easy for them to understand factors which lead the success and/or the failure of the forms of ownership. A clear distinction between *capital* and *profit* must be made by using practical examples. Teachers must ensure that this content is taught and assessed thoroughly in Grades 10–12.

Teachers and subject advisors must note that the following fact will not be accepted in the future under the 'Contribution of capital to the success and/or failure of a private company'

- 'More capital can be raised by issuing shares to shareholders.'

Teachers are advised to **delete** this fact from the DBE notes, textbooks and other credible resource materials.

(f) Learners must be told that there are similarities between the problem-solving steps and the strategic management process in terms of formulating, implementing, and monitoring the strategy. However, the problem-solving steps focus on how businesses can solve problems, while the strategic management process focuses on developing suitable strategies to respond to the challenges posed by business environments.

(g) Learners should conduct research on ways businesses can contribute time and effort in improving the well-being of employees and communities, e.g. they should start looking at articles from 2023 to 2025 as this information will be deemed to be relevant and current. Teachers should differentiate between the well-being of employees and the well-being communities in a tabular form to avoid confusion. Classify the notes according to the following categories:

	Employees	**Communities**
Health	Offer annual medical assessment to workers	Ensure that the products they supply do not harm consumers
Recreational facilities	Provide recreational facilities for employees to stay healthy.	Provide recreational facilities to promote social activities.

(h) Teachers must use the latest revised *Examinations Guidelines* to update the resources used and for preparation of the lessons and assessment. The six human rights covered in the Business Studies content are clearly listed in the *2021 Examination Guidelines*, therefore, learners should be able to name and explain how businesses can deal with the six human rights in the workplace.

(i) A clear distinction must be made between the ways in which professional, responsible, ethical and effective business should be conducted and the ways in which businesses can improve the wellbeing of employees as there is a correlation between the two. The former addresses how businesses should be accountable for their decisions and actions and the latter addresses how businesses attend to employees' needs in the workplace.

SECTION C: ESSAY QUESTIONS

QUESTION 5: BUSINESS VENTURES: INVESTMENT: SECURITIES

There was an improvement in the 2024 candidates' performance their average of 59%, surpassed the 51% achieved in 2023. This question consisted of four sub-questions that were assessed in either Section B or C in the past NSC November examinations.

Common errors and misconceptions

(a) It is evident that some teachers are still not reading the *Diagnostic Reports* as the issue of the introduction and conclusion which was addressed in the *2023 Diagnostic Report* was still prevalent. Some candidates presented the preamble from the question paper as their introduction and conclusion while others extracted facts from the four subquestions, textbooks and other resources; and presented them as their introduction and conclusion.

(b) Good performance was noted in Q5.2 even though some candidates still used outdated notes on the functions of the JSE, and therefore provided incomplete responses on bullet points that were addressed in the 2022 *Diagnostic Report*.

(c) In Q5.3 candidates were able to list the factors that should be considered when making investment decisions, but failed to discuss them correctly. It was evident that some schools were still using outdated resources as factors such as personal budget were given as responses that are not in the *2021 Examination Guideline*s. Some candidates were unable to distinguish between *liquidity* and *liquidation* (a defensive strategy in Paper 1). Some candidates forfeited marks in Q5.3 because they repeated facts used in the introduction when explaining the investment decision factors.

(d) In Q5.4 candidates lacked content knowledge on unit trusts and others gave vague and incomplete responses thereby forfeiting marks. Some candidates confused the impact of unit trusts with the impact of RSA Government Retail Bonds.

(e) Good performance was noticed in Q5.5 even though some candidates swopped the responses of simple and compound interest around.

(g) Candidates forfeited marks for the conclusion as they either repeated facts mentioned either in the introduction and/or body in Q5.6. Other responses were vague and incomplete.

Suggestions for improvement

(a) Learners must know that an introduction should refer to either one or two subquestions of the questions that were asked in the paper. They must be advised to refrain from repeating statements that were used in the question paper. Instead, they should be encouraged to write creative responses that will not be repeated either in the body or in the conclusion.

(b) Learners must be advised to write full sentences on the functions of the Johannesburg Stock Exchange (JSE) to be awarded full marks. Recent marking guidelines, DBE notes, textbooks and other credible resource material must be used as references to teach this content.

(c) Learners must be able to name and explain the six factors that should be considered when making investment decisions as outlined in the *2021 Examination Guidelines*. Teachers must provide examples of the types of investment that are relevant to each investment decision. It must be noted that the following investment decision factors no longer apply and have since been excluded from the *2021 Examination Guidelines*:

- Personal budget
- Investment planning factors
- Volatility/Fluctuations in investment markets

(d) Teachers must explain the concept of unit trusts to the learners to lay a foundation for answering questions like its impact, as a form of investment. Learners must know that a unit trust is a collection of investment methods made up of shares in different companies while RSA government retail savings bonds is an opportunity for RSA citizens to invest in saving bonds, as a strategy to encourage savings in the country. Learners should be able to evaluate the impact of unit trusts and the other three forms of investment.

On the content 'Negative impact of unit trusts as a form of investment' teachers and subject advisors must note that the following fact was elaborated on during the 2024 Marking Guideline Standardisation Meeting:

- 'Share prices may fluctuate due to the volatility of the market.'

Teachers are advised to **revise** this fact in the DBE notes, textbooks and other credible resource materials to enable learners to obtain full marks.

(e) A clear distinction must be made between *simple* and *compound interest*. Teachers are advised to use practical examples in scenarios when explaining the differences between these concepts. Calculations must be used, and learners must be exposed through regular informal assessments.

(f) Teachers should assist learners to write a proper conclusion without repeating statements contained in the preamble.

QUESTION 6: BUSINESS ROLES: SOCIAL RESPONSIBILITIES, CSR and CSI

Many candidates answered this question and the performance ranged from average to good, as all subtopics assessed were answered fairly. Candidates' performance improved in 2024 with an average of 59%, compared to 50% achieved in 2023.

Common errors and misconceptions

(a) Candidates forfeited marks in Q6.2 because they wrote the purpose of CSR instead of the purpose of CSI and some candidates wrote the CSI focus areas as their responses. Some candidates wrote the meanings of CSR and CSI.

(b) Many candidates confused the impact of Corporate Social Investments (CSI) on communities with the impact of CSI on businesses in Q6.3. This error persisted despite the recommendations made in past *Diagnostic Reports*.

(c) Good performance was noted in Q6.4 as many candidates were able to name the elements of the triple bottom line but provided incomplete facts as explanations. Some candidates confused the meaning of planet with people, as a triple bottom line element.

(d) Q6.5 was fairly answered, although some candidates failed to provide strategies on how to deal with unemployment, but instead presented strategies to deal with HIV/Aids or poverty as socio-economic issues.

(e) Some candidates repeated the preamble in the conclusion and forfeited marks for committing this error in Q6.6. Candidates also lost marks for the lack of originality as they failed to incorporate practical examples on the discussion of facts, in the body of an essay.

Suggestions for improvement

(a) A clear distinction must be made between the meaning and the purpose of CSR and CSI. The purpose of CSR and CSI must then be explained, using practical examples, e.g. CSR are programmes while CSI are projects. CSR programmes are internal programmes that businesses use to comply with laws and ethics while CSI, projects are long-term investments. Support material and lessons must be designed to address the confusion.

(b) The impact of CSR on communities should not be confused with the impact of CSR on businesses. Learners must know that CSI projects can have both a positive and negative impact on communities, e.g. improving the quality of life for the community members (positive), however, businesses cannot deliver sustainable CSR programmes (negative). Learners must be given project-based learning tasks to conduct research on the impact of CSR on communities and present their findings in the classroom. To enable learners to gain insight into this content, teachers should encourage debates on the impact of both, CSI and CSR on communities and businesses.

(c) Teachers must emphasise what businesses should do concerning each triple bottom line element, to fulfil their social responsibilities. Learners must know that the planet, as one of triple line elements, focuses on minimising environmental pollution and preserving resources.

(d) Learners must be given the opportunity to suggest various strategies to deal with unemployment as a socio-economic issue. The recommended strategies must be sustainable and long-term in nature. Subject advisors must ensure that the strategies to deal with each type of socio-economic issue outlined in the *2021 Examination Guidelines* is adequately assessed and remediated during the academic year.

(e) Learners must be taught how to write a conclusion based on any of the four subquestions asked in the essay question. This can be done through continuous assessment and research on the subtopics that form part of essay questions. They should also be advised to refrain from repeating facts that were stated in the preamble, introduction and body.

CHAPTER 5

ECONOMICS

The following report should be read in conjunction with the Economics Paper 1 and Paper 2 question papers for the NSC November 2024 examinations.

5.1 PERFORMANCE TRENDS (2020–2024)

The number of candidates who sat for the Economics examination in 2024 decreased by 2 101, compared to that of 2023.

There was a significant improvement in the pass rate this year. Candidates who passed at the 30% level improved from 74,5% in 2023 to 80,5%. There was a corresponding improvement in the pass rate at the 40% level over the past two years from 49,3% to 57,6%.

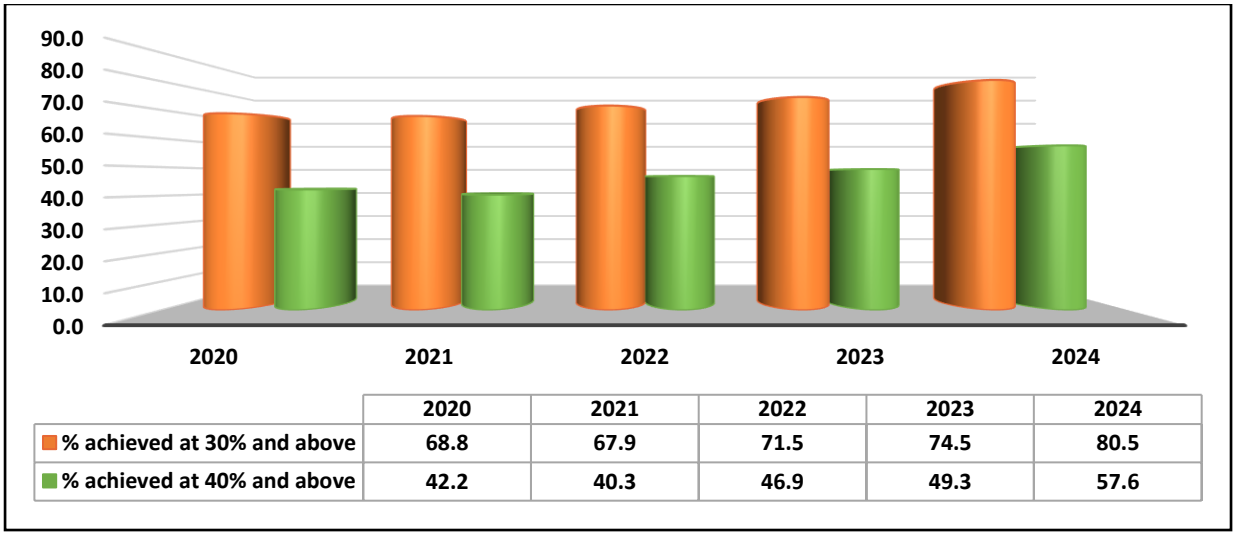
The percentage of distinctions over 80% improved from 2,2% in 2023 to 3,3% in 2024. Despite the decrease in the size of the 2024 cohort, this converts into an increase in the total number of distinctions from 2 721 to 4 012.

The various commendable support programmes employed by teachers, subject advisors and provincial education departments were continued in 2024. The resourcefulness and diligence of the above-average candidates also contributed to the overall improvement in the subject.

Table 5.1.1 Overall achievement rates in Economics

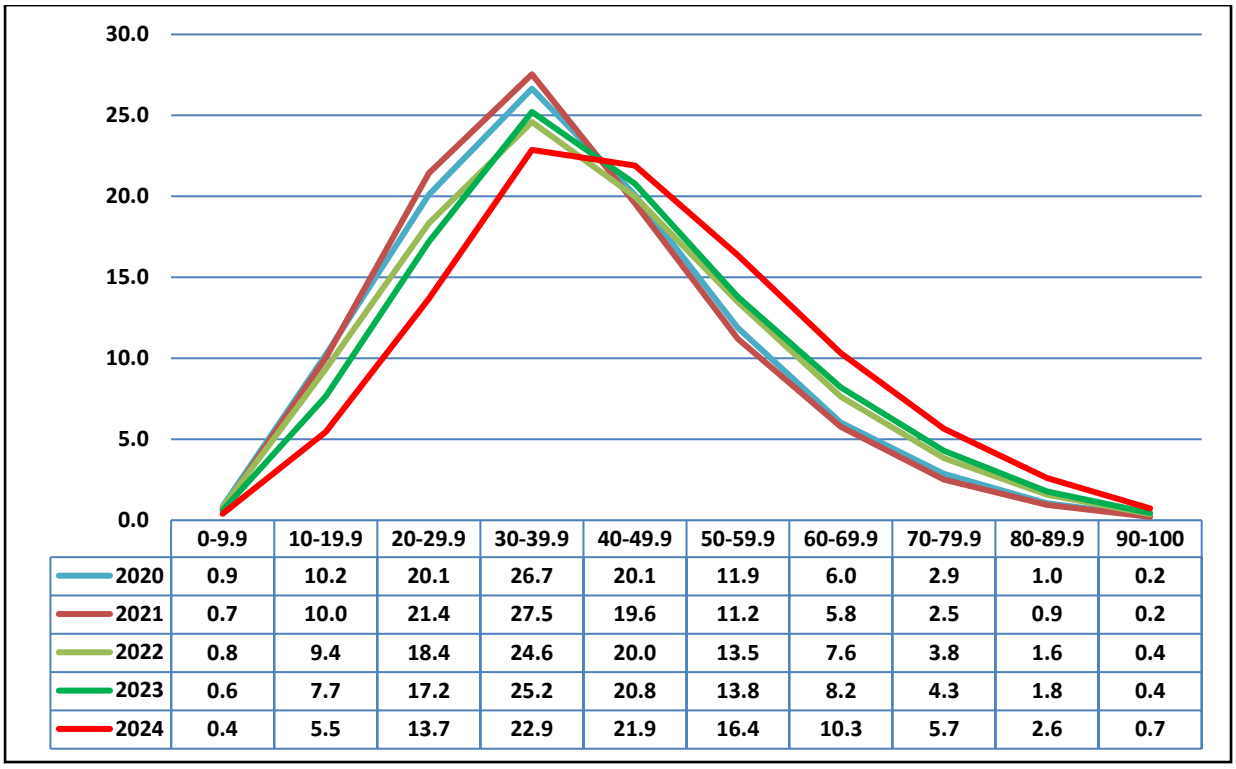
Year	No. wrote	No. achieved at 30% and above	% achieved at 30% and above	No. achieved at 40% and above	% achieved at 40% and above
2020	118 484	81 536	68,8	49 958	42,2
2021	139 191	94 479	67,9	56 145	40,3
2022	137 657	98 414	71,5	64 559	46,9
2023	123 661	92 140	74,5	60 957	49,3
2024	121 560	97 801	80,5	70 001	57,6

Graph 5.1.1 Overall achievement rates in Economics (percentage)



	2020	2021	2022	2023	2024
% achieved at 30% and above	68.8	67.9	71.5	74.5	80.5
% achieved at 40% and above	42.2	40.3	46.9	49.3	57.6

Graph 5.1.2 Performance distribution curves in Economics (percentage)



	0-9.9	10-19.9	20-29.9	30-39.9	40-49.9	50-59.9	60-69.9	70-79.9	80-89.9	90-100
2020	0.9	10.2	20.1	26.7	20.1	11.9	6.0	2.9	1.0	0.2
2021	0.7	10.0	21.4	27.5	19.6	11.2	5.8	2.5	0.9	0.2
2022	0.8	9.4	18.4	24.6	20.0	13.5	7.6	3.8	1.6	0.4
2023	0.6	7.7	17.2	25.2	20.8	13.8	8.2	4.3	1.8	0.4
2024	0.4	5.5	13.7	22.9	21.9	16.4	10.3	5.7	2.6	0.7

5.2 OVERVIEW OF CANDIDATE PERFORMANCE: PAPERS 1 AND 2

General comments

There has been a general improvement in the writing of essays in recent years. While there has been some improvement in the 8-mark higher-order questions, the candidates were still challenged by the additional part of the essay; the drawing of graphs; labelling of axes and interpretation thereof. The results will only improve in a meaningful and sustainable way, if these areas are addressed. On a positive note, the performance in some 8-mark higher-order questions in Section B were better than the content based 8-mark middle-order questions.

A thorough understanding of concepts in all topics would have greatly enhanced the performance in both papers, as they formed the basis of understanding subquestions which were pitched at various cognitive levels. This has had a direct impact on the candidates' performance in Section A, Section B (where concepts were tested as definitions and also applied in a particular context), and Section C (where concepts formed part of the introduction for the essays). An excellent knowledge of Economics terminology would have resulted in the correct interpretation and answering of indirect questions in Sections B and C.

It is imperative that the content of all topics be covered adequately and timeously to ensure sufficient opportunity for revision. When teachers fall behind in content coverage, topics under *Economic Pursuits* and/or *Contemporary Economic Issues* tend not to be taught thoroughly. Candidates who attempted questions on *Economic Pursuits* and/or *Contemporary Economic Issues* performed poorly, in comparison to questions on other topics. Teachers should structure assignments, projects and case studies in Grades 10 and 11 in a manner that will develop learners' writing skills, thus preparing them to cope with the Grade 12 content. This is also an area in which teachers must be supported by subject advisors especially where textbooks do not address the requirements of the *2021 Examination Guideline*.

In Grades 10 and Grade 11, learners' knowledge of topics/content should be extended wherever possible, so that a strong foundation is set to cope with the demands of the Grade 12 curriculum. Grade 10 topics, such as the *Circular Flow and Quantitative Elements, Budget, Government Intervention, Business Cycles,* and Grade 11 topics, such as *Calculation of the GDP, Market Structures, Cost and Revenue Curves, Income Inequalities, Indicators, North/South Divide, Globalisation and Environmental Sustainability,* have strong links to Grade 12 topics and should be emphasised and tested.

While there has been a general improvement in the drawing of graphs over the years, the technical aspects need to be reinforced. Teachers must ensure that learners have a thorough understanding of drawing and interpretation of graphs as this aspect is regularly tested in *Microeconomics.* These skills must be regularly reinforced in Grade 10 and Grade 11. With regard to *Perfect Markets and Imperfect Markets*, teachers need to address graphs with learners by drawing the *cost* and *revenue* curves step-by-step. As each step is done, it needs to be explained. After the teacher draws each step, learners should do likewise in their workbooks. This should include the correct shape, positioning and labelling of cost and revenue curves. Emphasis must be placed on the average cost curve (i.e. *smile*) which must always be drawn before the marginal cost curve (i.e. *tick*). This will ensure that the MC always intersects the AC at its minimum point. It is extremely important that teachers recognise the integration of topics from Grade 10 to Grade 12. Graphs relating to *cost* and *revenue* curves must be dealt with thoroughly in Grade 11 as this is the foundation for the more complex graphs in Grade 12. Many candidates were unable to explain a graph even though it was correctly drawn.

Simple calculations and formulae need to be reinforced and assessed regularly as these skills are tested frequently in the NSC examination papers, e.g. *national account aggregates, moving averages, tax burden, the multiplier, BoP, exchange rates, profit and loss, production cost, CBA, percentage changes* and the *inflation rate.*

Specific findings

(a) A good understanding of tables, extracts, news articles, figures and graphs enabled many candidates to perform well.

(b) Although candidates were able to complete each paper within the allocated time, it seemed that they had limited time to review and check their work as evidenced by some subquestions in Sections A and B being omitted.

(c) The main reasons for underperformance were the following:

- **Skills:** Poor language skills made it difficult for candidates to understand the requirements of questions and to express themselves clearly, especially in paragraph-type questions which formed a large part of the question paper. Most candidates were unable to solve problems, give their own opinions or evaluate data connected to their study material. Candidates also lacked basic knowledge of the general economic issues of the day.
- **Content coverage:** It is evident from the poor performance of many candidates that their teachers had not covered some of the topics. Basic Economics concepts/terminology seemed to be lacking among many candidates and there was also a lack of knowledge on current economic issues, notably in the following subquestions:
  - Paper 1 Q3.3.5 How can a decrease in labour productivity impact the economy?
  - Paper 2 Q3.2.5 How can natural disasters contribute to inflation in the economy?

- **Exposure to different types of questions:** Many candidates were unable to answer questions with different instructional verbs and lacked the ability to unlock the knowledge in different ways.
  - Paper 1: In response to Q5, the additional part, 'Analyse the impact of weaker currency (rand) on the South African economy', many candidates just explained the negative impact of a weak currency instead of discussing both the positive and negative impact of the economy. 'Analyse' involves breaking something into smaller parts, understanding how these parts interact or connect and drawing conclusions or making judgments. It is a critical thinking process aimed at gaining deeper insights or solving problems.
  - Paper 2: In response to Q6, the additional part, 'Analyse the international measures taken to reduce environmental problems', some candidates failed to distinguish between *international* measures and *local* measures. Answers included the charging of tax and promoting recycling which were relevant to the main part of the essay. Skilled candidates were better able to write essays and paragraphs and offer their opinions with confidence. Such candidates were able to focus on the information that was relevant to the answering of each question.
- **Problem-solving skills:** Candidates lacked the ability to apply their knowledge of how to solve everyday problems experienced in their own communities when answering a few of the questions, e.g.:
  - Paper 1 Q3.1.2 How can Broad-Based Black Economic Empowerment (BBBEE) help to promote industrial development?
  - Paper 1 Q4.1.2 How can the government achieve the macroeconomic objective of economic equity in South Africa?
  - Paper 2 Q2.3.5 How can the government encourage the consumption of merit goods?
  - Paper 2 Q4.1.2 How can the South African Reserve Bank (SARB) use open-market transactions to reduce money supply in the economy?
- **Language ability:** Proficiency in the language of assessment is still a drawback for many second-language candidates, however, some centres in rural areas produced good results compared to others in similar circumstances.

General suggestions for improvement

Teachers are advised to build the following practices into their work plan for the year:

(a) **Use of past NSC and *CAPS*-aligned exam papers:** In preparation for the 2025 NSC examinations, all learners should have access to and make use of past NSC papers, which should include the final examination papers (2017–2024) and the supplementary examination papers (2018–2025) for clear guidance on style, format and different questioning techniques. Furthermore, teachers should refer to the *2021 Examination Guidelines* as a guide when it comes to the scope and depth of content and on how to assess learners' understanding of the specific content matter. Previous question papers and marking guidelines should be used as revision tools, not as teaching tools, as this will encourage spotting of questions for the exams. It is critical that teaching focuses on the interpretation of questions and a clear understanding of the different instructional verbs.

(b) **Basic concepts:** Teachers should ensure that learners understand basic concepts and terminology before engaging in in-depth applications. More time should be spent on improving the reading skills of all learners – especially of those whose mother tongue is not the language of learning and teaching. Learners' understanding of terminology should be assessed on a continuous basis. *A glossary* of all concepts should be compiled for each topic. Quiz bowls, crosswords or team challenges are recommended

as useful tools to assess knowledge of economic concepts. Regular classwork or homework based on definitions will ensure that learners familiarise themselves with these basic concepts.

(c) **Requirements of questions:** Teachers should ensure that learners understand the requirements of questions that might appear in NSC examination papers. For example, if a question requires the drawing or analysis of a well-labelled graph, this must be done effectively to earn the relevant marks, e.g. Paper 1, Q2.3.5: 'Use the information in the above graph to calculate the change in national income. Show all calculations.' and in Paper 2, Q.4.4: 'With the aid of a correctly labelled graph, explain the effect of maximum prices on the market.'

Teachers should ensure that their learners understand the phrasing of questions, e.g. the *what*, *why* and *how* type of higher-order questions. However, the misconception that if a question begins with *How* then it constitutes a higher-order question, must be clarified. The following example illustrates this point:

Paper 2 - Q4.1.2 How can the South African Reserve Bank (SARB) use open-market transactions to reduce money supply in the economy? (2)

This is a middle-order cognitive level and a moderate question. Learners should be guided by the mark allocation in terms of the depth of the answer required.

Regarding higher-order questions (especially Q2.5, Q3.5, Q4.5 and the additional part of the essay questions), candidates need to read the question carefully and highlight the key points required. Furthermore, it must be noted that answers to these questions are not necessarily found in textbooks but will require an application of content studied within a particular context. Reading the question more than once will ensure greater accuracy in the candidates' responses. The question should be checked constantly to ensure the response is logical.

Learners should be given practice in answering higher-order questions as these questions place advanced cognitive demands on learners and encourage them to think beyond literal answers to questions. Higher-order questions promote critical thinking skills where learners are expected to apply, analyse, synthesise, solve problems and evaluate information instead of simply recalling facts. They require learners to make inferences, draw relevant and insightful conclusions and use their knowledge in new situations. Learners should be able to apply their thinking to other situations and to their own background knowledge. Issues from the real world can be used to either support or refute a point of view. They should be encouraged to take the time to understand the question clearly before attempting to answer it.

Teachers need to realise that there are more interesting and creative ways to teach than by simply promoting rote learning. Techniques should include teaching for understanding, decision-making, problem-solving, connecting a part to a whole, detail-to-concept, and concept- to-concept. Learners should be taught how to infer, predict, analyse for bias and learn for transfer. Each of these techniques and processes requires some form of critical thinking. Opportunities for learners to develop critical thinking processes will not be found in classrooms dominated by the regurgitation of factual content. They are found in classrooms where active learning is an essential component.

(d) **Comments and explanations:** Teachers should equip learners with the relevant skills needed to express themselves clearly where comments or explanations are required. Learners need guidance on how to express opinions that are relevant to the context of especially higher-order questions, e.g.:

- Paper 1: Q2.5 'How can the macroeconomic objective of price stability positively influence the economy.'
- Paper 2: Q2.5: 'How can a lack of information by various market participants lead to a misallocation of resources?'

(e) **The importance of formative testing:** Baseline assessments are crucial before introducing new topics as it helps to identify and mitigate on any content gaps that learners may have carried over from previous grades. Teachers should build the confidence of learners by using short, informal formative tests and tasks. These tasks should be used to ascertain whether learners are able to apply their knowledge, placing emphasis on their own opinion and understanding. The practice of drawing graphs on a regular basis is essential to understanding the content, especially in Microeconomics. This will encourage learners to take ownership of the learning process.

(f) **The structure of the paper:**

- **SECTIONS A AND B:** The demands of these sections should be explained to learners to enable them to organise their answers properly. Leaving lines between subsections, using the correct numbering system, and not omitting question numbers are examples of techniques that make assessment more effective.

  Section A, Q1.1 requires candidates to write the letter of their choice (A, B, C or D) next to question numbers. However, if they decide to write the statement/option, then this would have to be the complete statement, as per the question paper. It is suggested that learners first attempt to determine the correct answer to multiple-choice questions before analysing the given options. Learners must be made aware that no marks will be awarded when they provide more than one answer to a short question. It is important that they cancel an incorrect choice of letter in Q1.1 and Q1.2 and write the correct one next to it, instead of writing over the incorrect letter chosen. In Q1.3 teachers must stress the importance of reading the instruction, as acronyms and abbreviations will be marked incorrect as these are not accepted per instruction.

  In Section B, there is a misconception that answers to 1-mark questions in the *Data Response* items must come directly from the data. A question may require an application of knowledge when the answer appears in the data, or it may be a simple question related to the data.
- **SECTION C (Essay):** The importance of the layout of the essay should be emphasised, i.e. introduction, body (main and additional part) and conclusion. There should be a clear distinction between the various sections with line spacing between them. Using subheadings is crucial as these earn marks and provide structure to the response. Learners should structure the essay according to the outline provided in the question paper. Learners must be made aware that no marks will be earned if any part of the introduction or body is repeated in the conclusion. Instead, the conclusion should include the learner's own opinion/an alternative viewpoint/any fact to support the body or a summary of the discussion. Teachers must encourage learners to pay attention to the essay structure guideline given in the question paper as this will enhance the layout and quality of their essay writing.

  Learners should be given the opportunity to practise the answering of essay questions at the end of a topic or chapter, either in the form of a test or as homework. If given as homework, the essay can be assessed in terms of the following important aspects (detailed assessment is not necessary):
  - Relevant introduction
  - Subheadings in the main part

- The appropriateness of the additional part
- Relevant conclusion

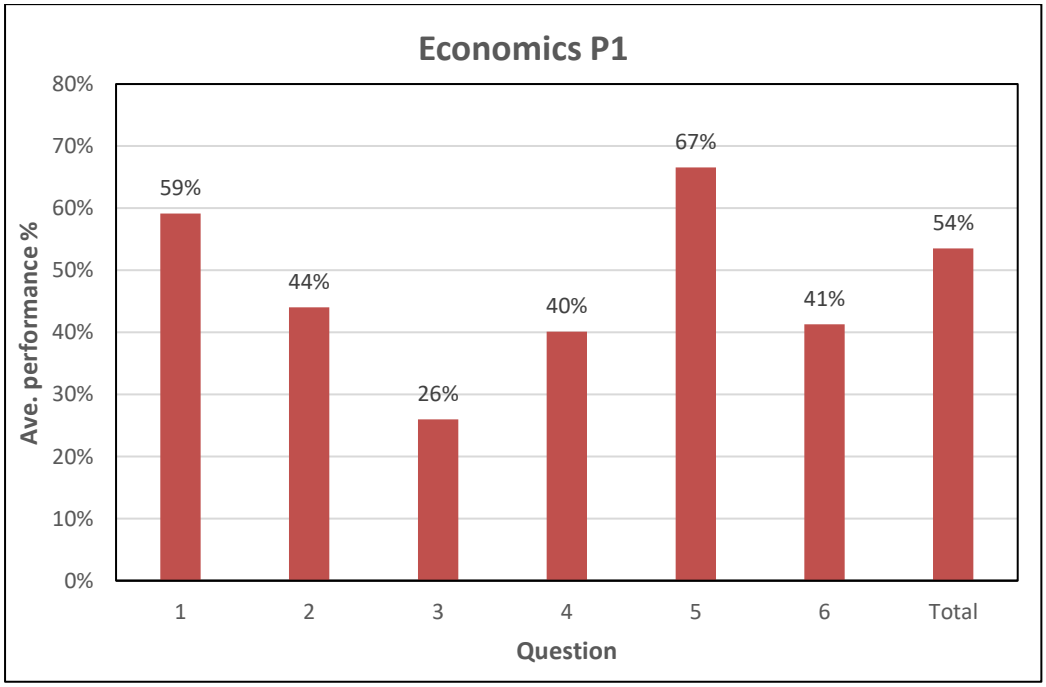
- Most resources are outdated and have not been revised recently, although there have been amendments to the *Examination Guidelines*. Teachers must be encouraged to identify content gaps in their sources when interrogating the *2021 Examination Guidelines* and network with other schools, the cluster, or the subject adviser in obtaining the relevant content to supplement their resources.
- Topics earmarked as possible essays in the *2021 Examination Guidelines* should be used to prepare thoroughly for the examination. Spotting of questions disadvantages learners and leads to poor performance. In both Paper 1 and Paper 2, the content of various essay topics was covered in lower-order, middle-order and higher-order questions:
  - Paper 1 reflected a total of 59 marks of these questions (see Q1.1.1, Q1.1.2, Q1.1.5, 1.1.8, 1.2.2, 1.2.6, 1.2.7, 1.2.8, Q1.3.2, Q1.3.4, Q2.2.1, Q2.2.3, Q2.5, Q3.1.2, Q3.2.2, Q3.2.4, Q3.3, Q4.1.1, Q4.1.2, Q4.2.3, Q4.2.4, Q4.3.4, Q4.4.)
  - Paper 2 reflected 57 marks of these questions (see Q1.1.2, Q1.1.4, Q1.1.5, Q1.2.2, Q1.2.3, Q1.3.3, Q2.3, Q2.5, Q3.2.1, Q3.2.2, Q3.2.4, Q3.5, Q4.1.2, Q4.4, Q4.5.)

5.3 DIAGNOSTIC QUESTION ANALYSIS OF PAPER 1

The performance in Section A decreased marginally when compared to that of 2023. However, an improvement in Q1.3 was noted. In Section B, there was a decline in the performance of candidates in Q3 and Q4. In Section C, Q5 showed an improvement, while the performance in Q6 remained steady.

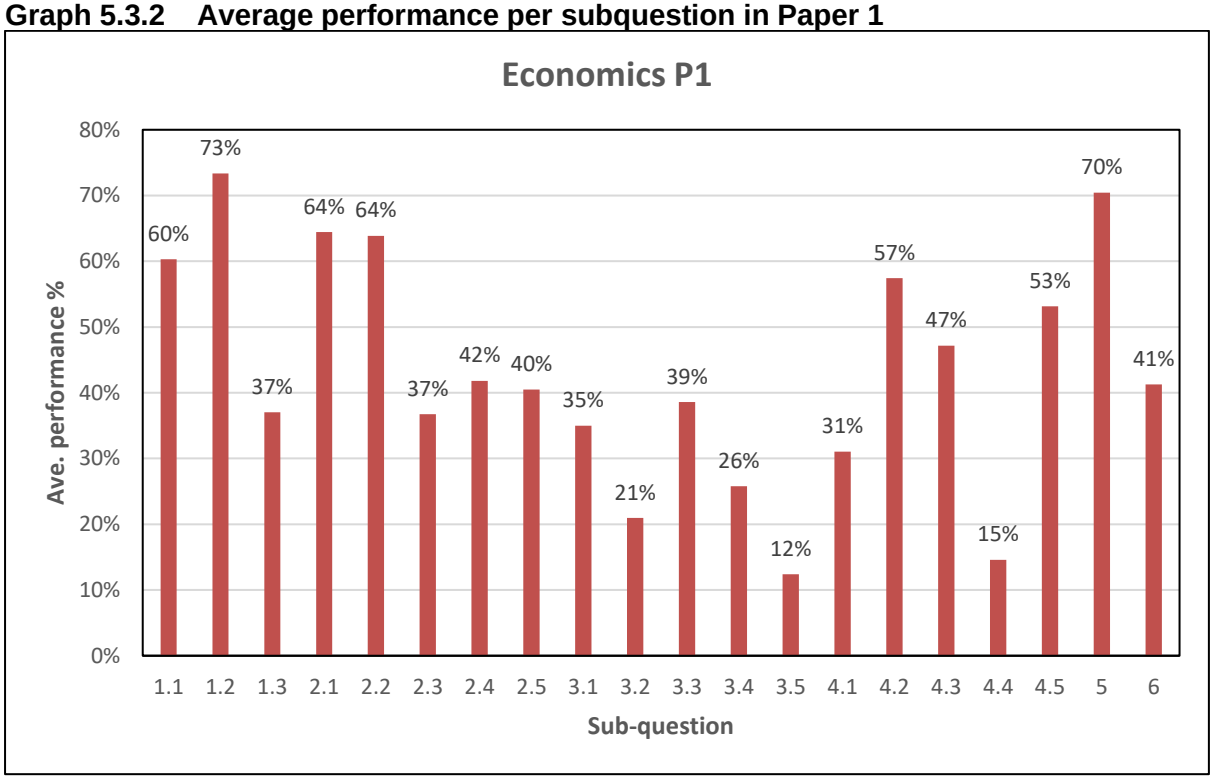
The following graph is based on data from a random sample of candidates' scripts. While this graph may not reflect national averages accurately, it is useful to assess the relative degrees of challenge of each question, as experienced by candidates.

Graph 5.3.1 Average performance per question in Paper 1



Q	Topics
1	Objective Questions
2	Macroeconomics
3	Economic Pursuits
4	Macro And Pursuits
5	Macroeconomics
6	Economic Pursuits

Graph 5.3.2 Average performance per subquestion in Paper 1



SubQ	Topic	SubQ	Topic
1.1	Multiple choice	3.3	Economic Indicators - Labour productivity
1.2	Matching	3.4	Import substitution
1.3	Give a term	3.5	Policies promoting Industrial Development
2.1	Methods to calculate GDP & Competition	4.1	Employment indicators
2.2	Public Sector Failure	4.2	Business Cycles
2.3	Multiplier	4.3	International trade Restrictions
2.4	Exogenous explanations of Business Cycles	4.4	Social indicators
2.5	Price Stability	4.5	Circular flow - Injections
3.1	Broad Based Black Economic Empowerment	5	Reasons for International Trade
3.2	Industrial Development Strategies	6	Demand Side Approach in promoting growth and development

5.4 ANALYSIS OF CANDIDATES' PERFORMANCE IN EACH QUESTION IN PAPER 1

QUESTION 1: MACROECONOMICS AND ECONOMIC PURSUITS

Most candidates achieved moderate results in Q1. The performance of candidates ranged from excellent to poor. Some candidates attained full marks, while others did not even attempt to answer some of the questions, despite the fact that Q1 is a compulsory question.

Common errors and misconceptions

(a) In Q1.1 a lack of content knowledge, especially in *Economic pursuits*, led to many candidates being unable to choose the correct alternative. Poor performance was recorded in Q1.1.3, Q1.1.6 and Q1.1.7.

(b) The majority of the candidates performed well in Q1.2 and there were candidates who managed to obtain full marks for this question. The implication is that candidates perform better if they are provided with a few concepts from which they could choose. However, poor performance was recorded in Q1.2.2 and Q1.2.4, where some candidates lacked the knowledge and understanding of *Moving Averages* and *Special Drawing Rights*, respectively.

(c) In Q1.3 most candidates performed poorly compared to Q1.1 and Q1.2. Lack of understanding of economic terminology and concepts led to poor performance in this question. Some candidates wrote *circular flow* instead of *real flow* in Q 1.3.1. Some of the candidates confused *Phillips curve* with *Laffer curve* in Q1.3.2. Most candidates performed poorly in Q1.3.4 as they responded with 'subsidy' instead of 'direct subsidy'. In Q1.3.5 a fair percentage of candidates wrote *capital-intensive industries* instead of *labour-intensive industries*. Some candidates used abbreviations when responding to Q1.3.6 as they wrote CPI instead of consumer price index.

Suggestions for improvement

(a) Teachers should focus on helping learners develop a deeper understanding of macroeconomic concepts and economic pursuits concepts, rather than just memorising key terms. Short formative tests on basic concepts are recommended to ensure that learners become familiar with economics terms and concepts. Learners should be exposed to *English across the Curriculum* activities. Assessment on short questions should be covered in a class test, or any type of assessment such as a quiz or a word puzzle. This would assist learners to memorise concepts. Teachers should also randomly ask questions during the lesson as this will ensure that learners are engaged and participate in the lesson. Teachers should make use of previous question papers to intensify assessment of economic concepts.

(b) Commence each lesson by testing concepts that were taught in the previous lesson. Continuous and constant revision of concepts and terminology is strongly advised. Learners should attempt to answer all the items in Q1.1 and Q1.2 where the options are provided. Learners should also concentrate on more detailed preparation in respect of concepts and terminology to ensure that they attain higher marks for Q1.3.

(c) Learners should be encouraged to create their own glossary for each chapter. They may keep a separate book/document containing all the terms they have to study. Use informal concept tests to reinforce these concepts. Make use of flashcards, '30 seconds game' for Economics, etc.

(d) Subject advisors should monitor the teaching of Economics concepts by checking activities in learners' books during their school visits.

QUESTION 2: MACROECONOMICS

Common errors and misconceptions

(a) In Q2.1.2 the candidates' performance was below 50%. Most candidates explained the effects of competition on the economy rather than addressing how competition can stimulates aggregate supply. Some candidates wrote about an *increase in demand stimulating aggregate supply* instead of focusing on *competition amongst firms stimulating aggregate supply*.

(b) In Q 2.2.5 candidates explained *what demerit goods were* instead of explaining *the reason for government imposing tax on demerit goods.*

(c) In Q2.3.1 some candidates could not identify the value of *marginal propensity to consume* on the graph.

(d) In Q2.3.4 most candidates' responses presented *a positive relationship between the mps and the multiplier* instead of an *inverse or negative relationship between the mps and the multiplier.*

(e) In Q2.3.5 most candidates were unable to use the information given on the graph to calculate the change in the national income. Most did not know that they had to calculate the *value of the multiplier* before doing the rest of the calculations.

(f) Candidates' responses in Q2.4 showed that some candidates confused the *explanations of business cycle features* with *exogenous explanations* as some responses discussed *endogenous explanations*. Some candidates confused the term *monetarist* with *monetary policy* in their discussion.

(g) A fair percentage of the candidates misinterpreted Q2.5. Instead of discussing *positive effects of price stability*, candidates explained *what price stability was* and *discussed inflation target of 3–6%*. Some candidates demonstrated confusion between *price stability and low prices.* Candidates also lost marks due to mere listing of facts.

Suggestions for improvement

(a) Teachers need to use the *2021 Examination Guidelines* when preparing lessons to cover all aspects that are required for a topic. They must ensure that learners are adequately exposed to middle- and higher-order questions where they have to explain questions, such as *how can competition stimulate aggregate supply in the economy?*

(b) Teachers should expose learners to standardised informal assessments that should drill them to respond to instructional verbs, such as *why.* E.g. *Why is it necessary for the government to impose taxes on demerit goods?*

(c) A variety of calculations should be practised during class time. Teachers should make use of practical examples when teaching to indicate that *extra saving reduces consumption and the multiplier*. Learners should be exposed to different calculations of the multiplier. Team teaching, outsourcing and workshops should be encouraged.

(d) Learners need to be guided on how to interpret and respond to the cognitive demands of a question, especially higher-order questions.

(e) Subject advisers need to support teachers by developing content-based documents that address challenging topics. Workshops based on content knowledge should be organised for newly appointed teachers and for those with content knowledge gaps.

(f) The use of print media and current economic issues should be linked to content to develop a better understanding and appreciation of the content. Teachers should demonstrate to learners how the macroeconomic objective of price stability can positively influence the South African economy. The use of internet for extended knowledge and understanding of the subject needs to be encouraged.

QUESTION 3: ECONOMIC PURSUITS

Common errors and misconceptions

(a) In Q3.1.1 some candidates mentioned countries that are outside the *SADC region* such as China and India. It is evident that these candidates were not exposed to *forms of protocol and economic integration,* of which South Africa is a part.

(b) In Q3.1.2 most candidates could not explain how Broad-Based Black Economic Empowerment (BBBEE) helped to promote industrial development. They demonstrated a lack of understanding of *BBBEE in relation to industrial development*.

(c) Responses to Q3.2.2 showed that candidates were not exposed to government departments and their roles, such as the *Department of Trade, Industry and Competition (DTIC)* as some did not know that its name had changed.

(d) Candidates' performance in Q3.2.3 was very poor, as many of them could not describe the term *duty-free incentives*. Some candidates wrote the description of either *tariffs* or *taxation*.

(e) Q3.2.5 was poorly answered by most candidates as they demonstrated a lack of knowledge about *the National Research and Development Strategy (NRDS)*.

(f) In Q3.3 most candidates demonstrated that they were not exposed to economic indicators content.

(g) In Q3.4, some candidates struggled to differentiate between advantages and disadvantages of *import substitution* to the South African economy. They responded by discussing the benefits for households instead of benefits to the economy.

(h) Most candidates demonstrated a lack of understanding of the challenges faced by South Africa in promoting industrial development through various policies, particularly in relation to economic pursuits in Q3.5.

Suggestions for improvement

(a) *Economic Pursuit* should be taught and assessed thoroughly. This will assist and instil confidence in learners when responding to the question. Practical and real-life situations (current economic issues) should form part of teaching to make lessons more meaningful to learners. Learners should be taught *the forms of protocol and economic integration*, and which countries form part of SADC. Teachers should teach learners to understand what *BBBEE* is and, a clear distinction between *redress policies and industrial development policies* should be made.

(b) Learners should be guided on the interpretation of questions. In-depth content knowledge by the subject teacher is important. This will assist learners to analyse, synthesise, make their own judgements and build confidence in responding to higher-order questions.

(c) Additional learning material should be given to learners during the academic year. Teachers should always seek and update recent economic information to empower learners with recent knowledge. Learners should be exposed to all government departments, their roles and the SOE's that report to them. Teachers should:

- Assign learners to research and present on economic issues, such as *the department responsible for promoting industrial development and the challenges faced by South Africa in promoting industrial development through various policies;*
- Provide *examples of duty-free incentives* and ask learners to *analyse their impact on industrial development*;
- Use real-life examples to illustrate *the importance of corridors in promoting regional development.*

(d) More case-study questions should be discussed in class and given as homework activities. Data provided in data-response questions should be analysed thoroughly before learners attempt to answer any questions set. Debates and presentations of certain topics should be conducted regularly. Teachers must endeavour to include the *why* and *how* types of questions to enable learners to think beyond typical textbook knowledge. Teachers should give learners more class activities based on economic indicators including recent real-life situations. Classroom activities and topic tests based on imports substitutions' benefits for the economy should be administered by teachers to ensure that learners are empowered to respond to this middle-order question with confidence.

(e) Subject advisers need to support teachers by developing content-based documents that address challenging topics. Data-response activities that can be used as formative assessment in the classroom should be collated.

QUESTION 4: MACROECONOMICS AND ECONOMIC PURSUITS

Common errors and misconceptions

(a) Many candidates misinterpreted Q4.1.1 as they provided business cycle indicators, such as *leading, coincident and lagging indicators* instead of *economic indicators that relate to employment.*

(b) In Q4.1.2 some candidates failed to respond to the action verb of *'how* can government achieve the macroeconomic objective of economic equity*'* in South Africa.

(c) Poor performance was also evident in Q4.2.4 as some candidates confused the term *amplitude* with the *length* of the business cycle.

(d) Some candidates failed to explain how an economic recession influences households in the economy in Q4.2.5. They mentioned other participants such as government and businesses instead of discussing the households.

(e) Q4.3.2 was poorly answered because most candidates did not know the name of the international organisation that promoted the removal of trade restrictions.

(f) Candidates could not answer Q4.3.3 properly as they used words like 'preventing*'* or 'restricting trade*'* with a particular country instead of 'banning imports' from other countries. They could not describe the economic term *embargo.*

(g) In Q 4.3.4 candidates repeated or wrote the question as the answer. Most candidates could not explain the importance of protecting infant industries from foreign competition.

(h) Q4.4 was very poorly answered. Most candidates confused the social indicator that related to *nutrition* with those that related to *health*.

(i) Although most of the candidates performed well in Q4.5, some candidates confused *injections* with *leakages*.

Suggestions for improvement

(a) Content mapping must be done at school to identify the concepts that are used from Grades 10–12 so that these concepts can be covered in detail. Teachers should discuss and clarify the difference between *business cycle indicators*, *economic indicators* and *social indicators* to learners during lesson presentations.

(b) Teachers should use a variety of resource materials to prepare learners adequately for the examination. Current economic issues should be used as examples to illustrate the subject in context. Economics in the classroom should be linked to economics in real life by exposing learners to actual data, graphs and statistics. Print media and video clips can be used to clarify content. Teachers should not only explain activities taking place when the economy is in recession, but they should also explain the impact they have in all the phases in the economy and use current data.

(c) Teachers should ensure that learners understand what is expected of them when instructional verbs such as *argue*, *analyse*, *evaluate* or *differentiate* are used in a question. Teachers should cover the *ATP* including economic pursuits topics thoroughly and drill learners using previous question papers.

(d) Application of knowledge should form part of daily teaching. Learners should be taught to make their own judgements based on particular content. Different forms of discussion from debate to case study may be used during lessons to argue and make opinion-based decisions. Teachers should explain the difference between *injections* and *leakages* to simplify the content for the learners and expose them to higher-order questions. They should also explain the impact of *leakages* and *injections* in the economy.

(e) Learners should be guided on the process of selecting questions from both Section B and Section C as part of exam-answering techniques. It is noted that often all the questions in Section B are answered; this is a clear indication of poor planning and a waste of valuable time. Instructions need to be explained and reinforced to learners during their revision sessions so that they are clear about the requirements.

QUESTION 5: MACROECONOMICS

Common errors and misconceptions

(a) In the introduction, few candidates displayed lack of understanding and knowledge of the concept being discussed. Those who had a challenge left blank spaces or provided irrelevant reasons for international trade, such as international trade was the exchange of goods and services in currency.

(b) Some candidates were unable to categorically list the subheadings for *demand* reasons and *supply* reasons, for international trade. They mentioned *demand* and/or *supply* reasons in their discussion but failed to demonstrate how they contributed to international trade.

(c) The additional part of the essay was of a higher cognitive demand and was allocated 10 marks. Most candidates had challenges to respond to the additional part of the essay, as it was of a higher cognitive demand and required application skills. They displayed a lack of understanding of *the impact of a weaker rand on the economy*. Some candidates merely listed facts on a weaker currency such as *imports will become expensive* but

failed to explain how that would impact the South African economy. This inadequate explanation resulted in candidates being unable to score the full 10 marks for this part of the essay.

(d) The conclusion was deemed to be the higher-order part of the question that challenged many candidates. They tended to repeat facts that were already mentioned and allocated marks in the main part such as *production inputs cost may decrease domestic production and will slow down economic growth*.

Suggestions for improvement

(a) It is important that subject advisers supplement content on this topic through teacher development workshops to address gaps in teachers' content knowledge. Teachers should use the *2021 Examination Guidelines* to identify all macroeconomics essays and give learners activities to write introductions, as an informal activity. This will build the capacity of learners to understand the *reasons for international trade.*

(b) Teachers must focus on guiding learners in the writing of introductions, bodies, and conclusions, when dealing with essay questions.

(c) Teachers should expose learners to past question papers to enable wider awareness of different types of questions. Learners should be exposed to questions on all levels of difficulty during class activities, tests, and internal examinations.

QUESTION 6: ECONOMIC PURSUITS

Common errors and misconceptions

(a) Most of the candidates failed to score marks in the introduction as they provided irrelevant information that did not respond to the question. This indicated that candidates lacked understanding and knowledge of *the discretionary changes in monetary and fiscal policies* involved in the demand-side approach with the aim of changing the level of aggregate demand and output. Those who had a challenge left blank spaces or provided irrelevant information on the topic being discussed.

(b) Some candidates were unable to list the subheadings for the *South African demand-side approach*.

(c) Most candidates failed to distinguish between *monetary policy instruments* and the *fiscal policy elements*. Some of those who attempted this question only listed the subheadings correctly but were unable to provide relevant information.

(d) Most candidates displayed challenges in responding to the additional part of the essay, as it was of a higher cognitive demand and required application skills. They displayed a lack of understanding of the importance of promoting small business in the South African economy. Some candidates merely listed facts such as *small businesses helping to create employment* but failed to explain how that will impact the South African economy.

(e) The conclusion is the higher-order part of the question challenged many candidates as they repeated facts that were already mentioned and awarded marks in the main part of the essay, such as *small businesses may create a source of income for the households which will help to alleviate poverty in South Africa*.

Suggestions for improvement

(a) Teaching of these topics should be done holistically. Learners should be guided in discussing each fact in detail. This will ensure that they do not omit any crucial aspect of the answer. More time should be used to teach areas that prove to be challenging for learners.

(b) When teaching the essays, teachers should highlight the importance of mentioning sub-headings as marks can be awarded for such, including examples (1 mark per subheading or example).

(c) The use of the *2021 Examination Guidelines* is strongly encouraged as it serves as a fundamental document for teachers to thoroughly prepare learners for essays that might appear in the question paper. Teachers should use the examination guidelines to identify all economic pursuits essays and give learners activities to write introductions, as an informal activity to build the capacity of learners in understanding content.

(d) Different teaching methods can be used to teach the *demand side approach to growth and development.* Use can be made of the *Aggregate Demand-Aggregate Supply (AD-AS) model* to show how policies shift the AD curve. Students can be encouraged to analyse and debate the effectiveness of demand-side policies. The class could be divided into groups to argue for or against the use of fiscal or monetary policy for growth and development. Engaging learners in policymaking roles can help them understand how demand-side policies work.

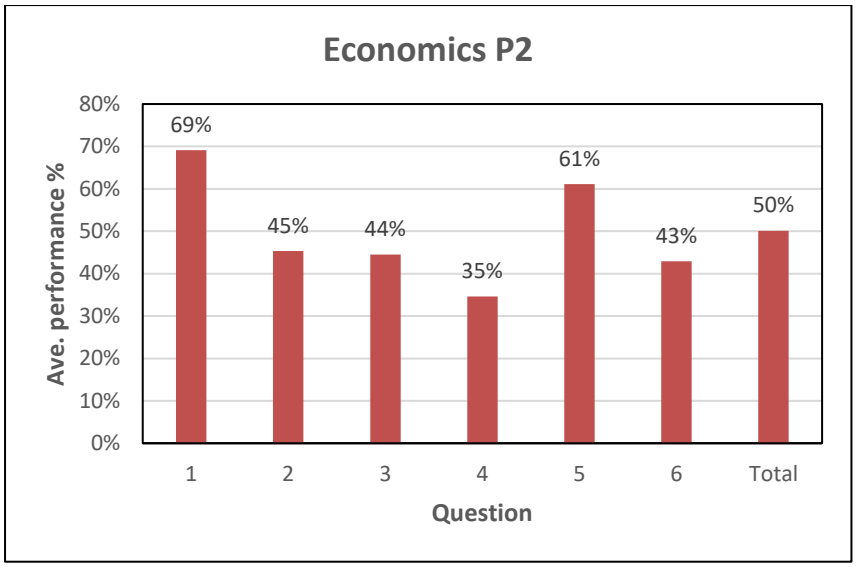
(e) Subject advisors need to monitor that assessment tasks contain a balance of all the cognitive levels. Workshops on cognitive levels and levels of difficulty should form part of content workshops conducted during the year.

5.5 DIAGNOSTIC QUESTION ANALYSIS OF PAPER 2

The candidates' performance in Section A showed a decline when compared to that of the 2023 cohort. In Section B, candidates performed marginally worse in Q2. However, there was an improvement in the candidates' performance in Q3 and Q4. In Section C, there was a satisfactory improvement in Q5, while Q6 showed a large decline in performance. The performance in the higher-order questions and *Microeconomics* in general has improved.

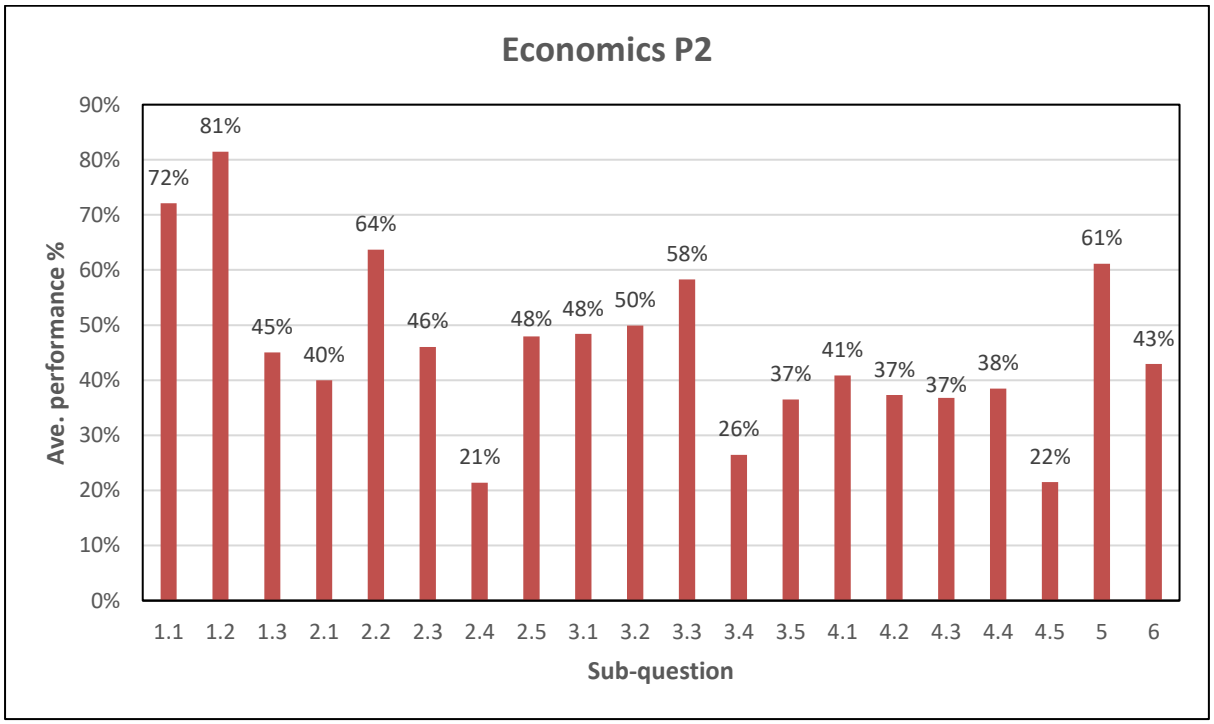
The following graph is based on data from a random sample of candidates' scripts. While this graph might not accurately reflect national averages, it is useful in assessing the relative degrees of challenge of each question as experienced by candidates.

Graph 5.5.1 Average performance per question in Paper 2



Q	Topic/s
1	Objective questions
2	Microeconomics
3	Contemporary economic issues
4	Microeconomics and contemporary economic issues
5	Microeconomics
6	Contemporary economic issues

Graph 5.5.2 Average performance per subquestion in Paper 2



Sub-Q	Topic	Sub-Q	Topic
1.1	Multiple choice	3.3	Tourism
1.2	Matching	3.4	Causes of demand-pull inflation
1.3	Concepts	3.5	Negative impact of tourism activities
2.1	Perfect competition/Cost Benefit Analysis	4.1	Types of inefficiencies/
2.2	Monopolistic competition	4.2	Perfect market long-run equilibrium graph
2.3	Positive Externalities	4.3	Types of tourism
2.4	Total, Fixed and Variable cost curves	4.4	Maximum prices - graph & explanation
2.5	Misallocation of resources	4.5	Measures to combat cost-push inflation
3.1	Consumer inflation/Tourism tax	5	Oligopoly/competition policy
3.2	Inflation	6	Government measures to ensure sustainability/International measures

5.6 ANALYSIS OF CANDIDATES' PERFORMANCE IN EACH QUESTION IN PAPER 2

QUESTION 1: MICROECONOMICS AND CONTEMPORARY ECONOMIC ISSUES

Most candidates performed well in Q1, especially in the multiple choice and matching questions. In Q1.3 an improvement was noted but it was evident that candidates still struggled with concepts and often confused related concepts. Overall, there was an increase from the previous year. The performance of candidates ranged from excellent to poor. Some candidates attained full marks, while a few did not attempt to answer some of the questions.

Common errors and misconceptions

(a) Q1.1.3 was poorly answered by many candidates, as options chosen suggested a lack of thorough understanding of *shut-down point*.

(b) The term, *direct controls,* was confused with *deregulation* regarding the government passing laws to reduce market failures.

(c) Poor performance can be attributed to the misunderstanding between *long run* and *short run* in Q1.2.1 – candidates selected the incorrect matching statement.

(d) In Q1.3.1 candidates had difficulty distinguishing between the remuneration of an entrepreneur, *explicit cost* and *implicit cost.* The most common responses were *explicit cost* and *profit,* instead of *implicit cost.*

(e) Confusion between concepts in Q1.3.3 was evident. Instead of *minimum wages* many candidates gave *minimum price, minimum earnings* and *wages and salaries* as the answer.

(f) In Q1.3.4 a fair percentage of candidates wrote the abbreviation *IKS* instead of *Indigenous Knowledge Systems.* This could be attributed to candidates not reading the instructions to the question. Incorrect responses included *world heritage site, cultural tourism* and incomplete terminology such as *indigenous*.

Suggestions for improvement

(a) Emphasis on distinguishing between the related concepts such as *long run and short run, explicit cost and implicit cost, minimum wages and minimum prices* is essential in avoiding confusion.

(b) Definitions and concepts should be emphasised. The use of a glossary at the beginning of each topic should form the basis of the teaching and learning of Economics.

(c) Learners should be advised to write the complete economic concept although similar words may appear in the stem. E.g. *minimum wage* should not be written as *minimum* although the word 'wage' appears in the stem.

(d) Teachers are encouraged to spend time reading the instructions to the learners, especially those in Q 1.1.3.

(e) Revision by means of short, regular formative tests on basic concepts is strongly recommended. Learners should be encouraged to make a list of the key concepts of each topic, especially in Microeconomics.

QUESTION 2: MICROECONOMICS

Common errors and misconceptions

(a) In Q2.1.1 many candidates failed to interpret the question fully as they gave examples of products instead of markets. Incorrect answers included oil, gold, names of supermarkets and names of market structures.

(b) A fair percentage of candidates were unable to explain the importance of *cost-benefit analysis* for public projects in Q2.1.2. Instead, answers related to businesses and explanations related to cost or benefit only and not both.

(c) Answers to Q2.2.3 suggested that candidates did not fully understand *monopolistic competition* as market structure. The characteristics of a monopoly such as 'a single seller of a product' was used as a description.

(d) Most candidates misunderstood the requirements of Q2.2.5. Answers did not suggest a comparison. Answers related to *monopoly* only instead of a comparison to *monopolistic competition.*

(e) In Q2.3.1 many candidates failed to identify the marginal private benefit curve as 'D'. Some answers included *Phillips curve* and *Laffer curve* which were not in the data given.

(f) Most candidates' answers in Q2.3.2. suggested confusion between *negative externalities* and *demerit goods*. Examples such as cigarettes and alcohol were given instead of pollution and congestion.

(g) Candidates performed poorly in Q2.3.4 misinterpreting the question coupled with a lack of understanding the graph. Many answers were incorrect or random and there was a failure to reference the answers to the graph.

(h) In Q2.4 a large percentage of candidates struggled with the drawing of the graph and explanation thereof. Some candidates misunderstood the question and instead drew graphs related to *perfect market equilibrium positions*. While graphs were correct in some cases, the explanations of the curves were incorrect.

(i) While most candidates attempted Q2.5, answers were generic and some focused on only one participant, instead of other participants as well.

Suggestions for improvement

(a) Misinterpretations of questions seem too common among candidates. Attempting past papers and unpacking a question in terms of what is required will help learners to write what is relevant to the question, especially for the 2-mark, 4-mark and 8-mark questions. Key words within the question should be underlined so that learners can respond to the requirements of the question.

(b) Learners should be encouraged to complete a table showing differences and similarities of the four market structures according to specific criteria, such as numbers of *sellers, nature of product, demand curve*, etc. The *market structures* must be arranged from the most perfect (*perfect competition*) to the most imperfect (*monopoly*).

(c) A clear distinction between *private benefit, external benefit* and *social benefit* (which is the sum of *private benefit and external benefit)* must be emphasised to avoid confusion. The same applies to *private cost, external cost* and *social cost*. These concepts must be consolidated further by explaining them in relation to the *externality* graphs.

(d) *Negative externalities* and *demerit goods* are related concepts in economics, but they are distinct and refer to different phenomena. *Negative externalities* relate to unintended side effects (costs to third parties) of economic activities which leads to overproduction or overconsumption of the goods, while *demerit goods* focus on personal or social harm from overconsumption of certain goods.

(e) A clear distinction must be made between similar or related concepts such as *monopolistic competition and monopoly, negative externalities, and positive externalities, fixed, variable and total cost.* Knowledge of these concepts will enhance question interpretation.

(f) Terminology related to cost and revenue must be emphasised from as early as Grade 11. The graphs are essential as this sets the foundation for Grade 12 content in Microeconomics. This should be re-emphasised thoroughly in Grade 12.

(g) While the practice of drawing and labelling graphs is essential to learners' understanding of various concepts and content related to a topic, teachers should also encourage learners to provide explanations of given graphs on a regular basis. Credit must be given for explanations related to the graph. Regular testing and feedback will ensure improved performance in *Microeconomics*.

(h) Subject advisors, through teacher development, should develop more material on *market structures* and *market failures*. It is evident from candidates' responses that teachers need support in this section.

QUESTION 3: CONTEMPORARY ECONOMIC ISSUES

Common errors and misconceptions

(a) In Q3.1.1 many candidates provided the general types of inflation instead of types of consumer inflation. Common responses included *stagflation, demand pull inflation, cost push inflation* and *hyperinflation*.

(b) A fair percentage of candidates were unable to provide a complete description of *stagflation* in 3.2.3. They failed to link high inflation with low economic growth and/or high unemployment.

(c) Many candidates performed poorly in Q3.2.5 and were unable to link natural disasters to inflation. Responses were mostly on the damage caused by natural disasters without showing the effect on costs and inflation.

(d) In Q3.3.2 candidates' responses indicated knowledge of the World Heritage Sites but failed to distinguish between cultural and environmental World Heritage Sites.

(e) Many candidates failed to interpret Q3.2.4 as answers were incomplete. While candidates understood the impact of a weaker rand and that foreigners would have more purchasing power, they were not able to relate this to tourist arrivals.

(f) Q3.3.5 was poorly answered as it was evident that the question was misunderstood. Responses included actions by individuals and businesses that were harmful to the environment instead of focusing why international measures had failed.

(g) Although Q3.4 was a middle-order question and content-based, the majority of the learners performed poorly in this question. *Exports* and *Government spending* were merely described without explaining how these factors resulted in inflation.

(h) Many candidates misunderstood the question in Q3.5. Reference was made to the negative publicity that tourism activities brought to South Africa, citing crime, drug trafficking and unemployment. Responses also included the positive impact of tourism activities which was not required.

Suggestions for improvement

(a) The teaching of contemporary economic issues is imperative and basic concepts need to be emphasised. Sometimes these topics may not be covered in some schools, possibly due to poor time management. Teachers should cover *Environmental Deterioration* thoroughly in Grade 11 as a large part of the content overlaps with the Grade 12 topic, *Environmental Sustainability*. Some key aspects of *inflation* could also be covered under *Money and Banking* in Grade 11 as well. Assessment should also be comprehensive to give learners a head-start in Grade 12. This will allow for more time to teach other topics which are sometimes neglected.

(b) Learners must be exposed to more data-response questions, i.e. 4-mark questions that require application skills. A thorough understanding of key concepts is necessary to interpret such subquestions. These questions should be discussed in class with the emphasis on using the relevant data to address the requirements of the question. Logical reasoning would enable learners to earn marks, especially if they can show an understanding of the question. Data-response questions should not merely require learners to re-produce answers from the given data. Learners should be able to apply the data in the appropriate context.

(c) The importance of infusing current economic issues in lessons cannot be over-emphasised, especially where content can be linked to real-life issues. Issues relating to causes, consequences and combatting inflation can easily be linked to the South African Reserve Bank's repo (repurchase) rate changes and inflation targeting.

(d) In teaching Economics, a crucial element is to motivate learners to think laterally about the topic. Where possible, teachers must relate the different topics to real-world issues. This will help learners prepare for higher-order questions. Learners must gain practice in evaluating, assessing or critiquing issues/topics whenever possible. Teachers are encouraged to set their own higher-order questions, to extend the engagement and knowledge acquisition of the learners in their respective classes. They should realise that textbooks are not adequate in providing all relevant and current responses to questions. Teachers are encouraged to use other relevant resources that will give more information, to supplement textbook information.

(e) Sufficient informal activities on higher-order questions are crucial in preparing learners for subsequent formal assessment tasks. These cognitive verbs must be unpacked with learners to improve and understand the requirements of a question.

QUESTION 4: MICROECONOMIC/CONTEMPORARY ECONOMIC ISSUES

Common errors and misconceptions

(a) In Q4.1.1 many candidates had difficulty naming the types of *inefficiencies* and instead responded by naming the causes of *market failure*.

(b) A fair percentage of candidates discussed other monetary policy instruments instead of open-market transactions. Some answers included a general description of *open-market transactions* that included the buying and selling of government securities instead of selling only, as this will reduce the money supply in the economy.

(c) Candidates' responses in Q4.2.3 suggested confusion between *revenue* and *cost* terminology. Responses included the word 'cost' instead of 'revenue' in the description. The reference to *marginal* was also omitted in the responses.

(d) In Q4.2.5 many candidates performed poorly as many responses were not referenced to the graph. In addition, candidates explained *long run* and *short run* without linking it to normal profit. Explanations included how *normal profit* is achieved from *economic profit* instead of *economic loss.*

(e) Many candidates confused *maximum prices* with *minimum prices* in Q4.4 as the incorrect graph was drawn, thus the explanation was incorrect.

(f) In Q4.5 many candidates responses related to combatting *demand-pull inflation* instead of *cost-push inflation*.

Suggestions for improvement

(a) A major contributing factor to poor performance is the incorrect interpretation of the question due to a lack of thorough understanding of a particular concept. This negatively influences its application in a context that is relevant to the question and compromises logical reasoning. Teachers should refrain from providing marking guidelines to learners before they attempt challenging questions, as this prevents them from thinking critically about the question themselves.

(b) A clear distinction must be made between similar or related concepts under market structures such as *marginal revenue* and *marginal cost, average revenue* and *average cost*, *total revenue and total cost, average cost and average variable cost, long run and short run.* The *marginal* aspect of the concept must be thoroughly explained as this would ensure the understanding of *market equilibrium positions* and the interpretations thereof.

(c) Teaches must ensure that learners understand what *maximum prices* are and why they are imposed as this will enable learners to draw the graph correctly. *Maximum price* is an upper price limit because *equilibrium price* is too high in the market, hence it will fall below *equilibrium price*. This helps to make goods affordable but creates a shortage. Similarly *minimum prices* are a lower price limit (price floor) because *equilibrium price* is too low in the market, hence it will be above *equilibrium price*. This benefits producers but creates a surplus in the market.

(d) Teachers must expose learners to adequate practice in the drawing of graphs and the correct labelling of curves, as this will aid in the correct explanation of the graph.

(e) Learners must be trained to analyse questions. A fundamental reason for learners' misinterpreting questions is a lack of understanding of the terminology contained within

the question. This compromises the learners' ability to apply the information within a given context.

(f) Teachers must spend time explaining the instructional verbs from the *2021 Examination Guidelines* to learners in detail. Learners should clearly understand the expectations of these verbs, especially in relation to higher-order questions such as *analyse* and *evaluate.* A mere listing of facts without an explanation in context will earn only 2 marks, instead of the full 8 marks.

(g) Subject advisers and teachers must be made aware that some textbooks and guides have incorrect information, and this is being taught to learners. There is a need to filter the content that is being taught to ensure accuracy as incorrect information compromises learners in the learning and examination processes.

QUESTION 5: MICROECONOMICS

In general, the level of performance in the question was satisfactory. This particular essay was popular. The candidates, however, performed poorly in the additional part.

Common errors and misconceptions

(a) The following common errors were identified in the main part of the essay:
- Listing of characteristics, instead of explanations was evident in a fair percentage of candidates' responses;
- Repetition of facts already mentioned in the introduction;
- Inclusion of characteristics of other market structures; and
- A lack of subheadings and irrelevant subheadings.

(b) Most candidates performed poorly in the additional part of the essay. *Roles of the regulatory institutions* (*Competition Commission, Competition Tribunal and Competition Appeal Court*) were discussed instead of explaining *the use of competition policy in reducing anti-competitive behaviour*. Some responses related to *monetary and fiscal policy instead of competition policy*.

(c) Although guided in the question paper as to what a conclusion should entail, the writing of a relevant conclusion was a challenge for most candidates. Some candidates repeated content from the introduction and the body, in the conclusion.

Suggestions for improvement

(a) Teachers must assess learners regularly on essay questions by focusing more on the structure of essays. Teachers should focus on the additional part and the conclusion of the essay; these areas have been identified as problematic for many learners. Learners must be encouraged to make reference to the guidelines provided in the question paper to enhance their essay writing skills.

(b) Teachers should ensure that learners are able to interpret questions correctly to avoid including irrelevant information in their responses. Learners should be exposed to different questions on the same topic and guided on the interpretation of questions. In this regard, learners should practise how to identify the key issues to be discussed.

(c) A framework structure (mind map) is encouraged before the commencement of essay writing.

(d) Learners should be encouraged to practise answering higher-order questions. Teachers must unpack questions in a way that guides learners to focus on the key issues demanded by the question. Learners should be engaged in classroom discussions, which will promote their ability to interpret content and to think critically because of the feedback they receive from others.

QUESTION 6: CONTEMPORARY ECONOMIC ISSUES

In general, the level of performance in response to this question was below average.

Common errors and misconceptions

(a) In the introduction most candidates confused *environmental sustainability* with *conservation and preservation*.

(b) The following common errors were identified in the main part of the essay:
- Repetition of facts already mentioned in the introduction;
- Writing of corrects facts under incorrect subheadings;
- Discussion of environmental problems and international measures; and
- A lack of subheadings and irrelevant subheadings.

(c) The mere listing of facts instead of full explanations was evident in the main and additional part of the essay.

(d) The additional part of the question was not answered well. The *international measures* were listed without linking them to addressing the *environmental problems*.

(e) The conclusion of many candidates' responses lacked depth and was not reflective of higher order thinking. Facts from the introduction and the main part were repeated.

Suggestions for improvement

(a) The teaching of all content should be completed timeously so that more opportunities for revision are created. Poor planning and delivery often lead to some teachers rushing through the last few modules and not spending enough time on contemporary economic topics. Teachers need to ensure that each topic is given adequate attention, as outlined in the *ATP*.

(b) In their conclusions, learners should be taught how to structure a response in support of, or against the facts mentioned in the body of the essay. During revision sessions, teachers should constantly remind learners of the guideline in the question paper regarding the conclusion to the essay. Learners must be encouraged to write more than one sentence to conclude as it is challenging to capture a good higher-order response in just one sentence.

(c) Learners must be exposed to current affairs/news/events on a continuous basis from Grade 10. SBA tasks should be prepared based on current issues to help learners to relate the content to the real world. Teachers must be encouraged to expose learners to the latest developments related to the *Contemporary Economic Issues* such as agreements related to climate change.

(d) Teachers should make the *2021 Examination Guidelines* available to all learners as this will help them to check whether all aspects of the curriculum have been completed and to identify areas where the textbook lacks the relevant information. This will prevent

content gaps in the teaching-learning process. It will provide opportunities for the teacher to set small tasks for learners to research and they can be given as part of regular homework.

(e) Most resources are outdated and have not been revised recently. There have been amendments to the *Examination Guideline*s. Teachers must be encouraged to identify content gaps in their sources when interrogating the *2021 Examination Guideline*s and network with other schools, the cluster, or the subject advisor to obtain the most relevant content to supplement the resources.

CHAPTER 6

GEOGRAPHY

The following report should be read in conjunction with the Geography question papers of the November 2024 NSC examinations.

6.1 PERFORMANCE TRENDS (2020–2024)

The number of candidates who sat for the Geography examination in 2024 increased by 2 490 compared to that of 2023.

There was a pleasing improvement in the pass rate this year. Candidates who passed at the 30% level improved from 86,2% in 2023 to 89,5% in 2024. There was a corresponding improvement in the pass rate at the 40% level over the past two years from 61,4% to 67,4%.

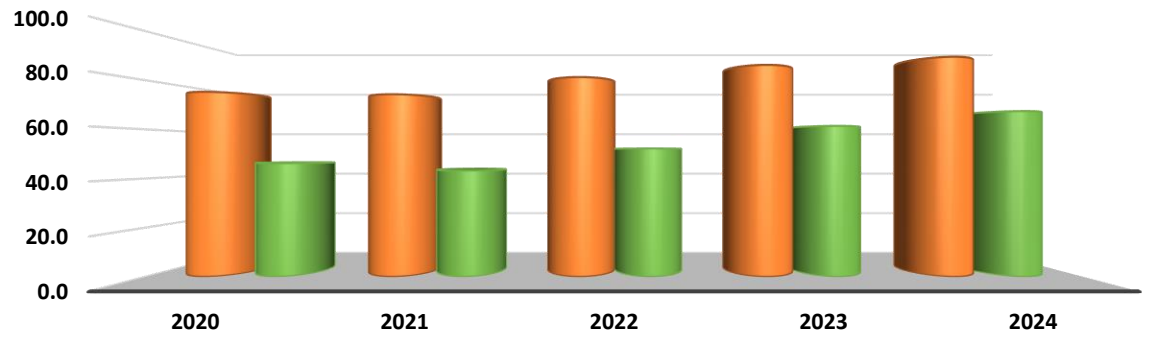
The percentage of distinctions (over 80%) improved from 2,3% in 2023 to 3,3% in 2024. Given the increase in the size of the 2024 cohort, this converts into an increase in the total number of distinctions from 7 919 to 11 444.

The various commendable support programmes employed by teachers, subject advisors and provincial education departments were continued in 2024. The resourcefulness and diligence of the above-average candidates also contributed to the overall improvement in the subject.

Table 6.1.1 Overall achievement rates in Geography

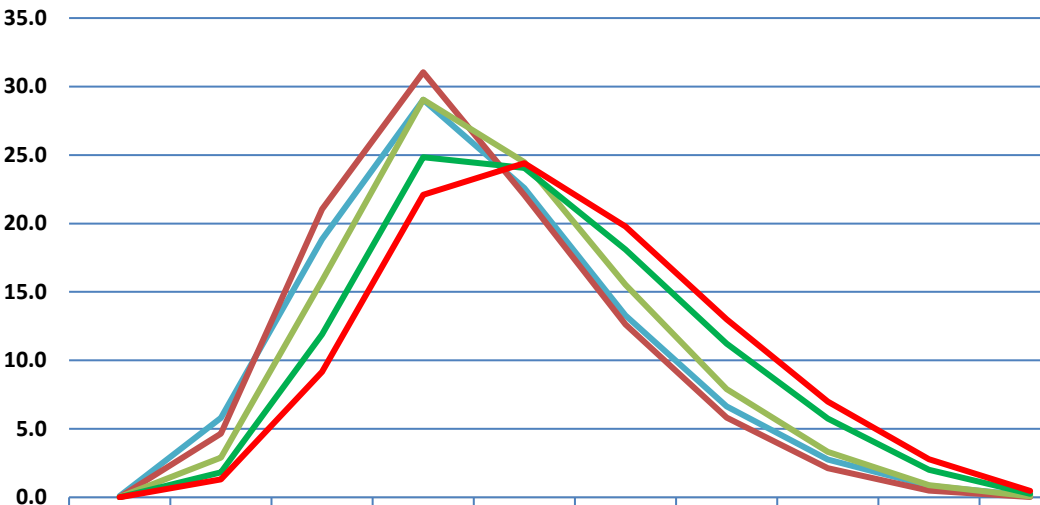
Year	No. wrote	No. achieved at 30% and above	% achieved at 30% and above	No. achieved at 40% and above	% achieved at 40% and above
2020	287 629	216 467	75,3	132 955	46,2
2021	358 655	266 402	74,3	155 060	43,2
2022	368 882	299 751	81,3	192 612	52,2
2023	344 301	296 887	86,2	211 374	61,4
2024	346 791	310 410	89,5	233 810	67,4

Graph 6.1.1 Overall achievement rates in Geography (percentage)



	2020	2021	2022	2023	2024
% achieved at 30% and above	75.3	74.3	81.3	86.2	89.5
% achieved at 40% and above	46.2	43.2	52.2	61.4	67.4

Graph 6.1.2 Performance distribution curves in Geography (percentage)



	0-9.9	10-19.9	20-29.9	30-39.9	40-49.9	50-59.9	60-69.9	70-79.9	80-89.9	90-100
2020	0.1	5.8	18.8	29.0	22.6	13.3	6.6	2.8	0.8	0.1
2021	0.0	4.7	21.0	31.0	22.1	12.6	5.8	2.1	0.5	0.0
2022	0.0	2.9	15.8	29.0	24.5	15.5	7.9	3.3	0.9	0.1
2023	0.0	1.8	11.9	24.8	24.1	18.1	11.2	5.8	2.0	0.3
2024	0.0	1.3	9.2	22.1	24.4	19.8	13.0	7.0	2.8	0.5

6.2 OVERVIEW OF CANDIDATES' PERFORMANCE: PAPERS 1 AND 2

The general comments below include points that arose from the November 2024 Geography NSC papers, and relevant advice given in previous Diagnostic Reports has been reiterated.

The November 2024 NSC Geography examination marks the fourth year of having two 3-hour papers of 150 marks each. The two-paper model was again well-received as it offered different benefits, which included:

- **More effective management of time**: Candidates had 3 hours to complete each paper; a total of 6 hours to complete a 300-mark examination.
- **Specific content per paper**: Each paper was written on separate days, affording candidates the opportunity to focus their preparation on specific content relevant to each paper. The map interpretation questions focused on the theory content being assessed for the specific paper, e.g. Paper 1: Physical Geography and Paper 2: Human Geography.

General comments

(a) **Quality of candidates' performance**

In general, the overall performance showed a fair improvement which is promising. The averages for both Papers 1 and 2 were very similar, which indicated a balance between the candidates' performance in the two papers. The inclusion of the source material in the question paper and the use of smaller topographical and orthophoto maps made the papers more user-friendly.

It was pleasing to note that most candidates attempted all questions in both Papers 1 and 2. As each question was subdivided into several subquestions, weaker candidates would have been able to score some of the marks allocated to the lower-order questions.

There was some improvement in candidates' achievement in the paragraph questions; however, the need to respond in full sentences remains a challenge. This skill should be taught, tested and rigorously practised in all activities, tests and examinations. The advice and recommendations suggested in past Diagnostic Reports seem to have been implemented by teachers to an extent, but there is still room for further improvement.

In the shorter-response questions, candidates displayed an improved understanding of geographical processes and were able to provide appropriate responses. Topics that reflected the most improvement were Climate and Weather, Geomorphology and Economic Geography of South Africa. Candidates continued to experience challenges in Section B on Geographical Skills and Techniques which included map calculations, map interpretation and in particular, GIS. A significant number of candidates struggled to provide map evidence in both Paper 1 and Paper 2. Mapwork application should be integrated with the theory taught wherever possible.

The continued inclusion of part-marking into the marking principles for certain questions has had a positive impact on the performance of the candidates in both papers but especially in Paper 2, where it was applied to a number of questions. Previously, in questions where a factor and qualifier were required to obtain two marks, candidates either received two or zero, depending on whether they gave a full response or not. The inclusion of part-marking since 2022 allowed markers to award one mark where the candidate had given the correct factor without a qualifier. This marking

principle was applied in the following questions in 2024: Paper 1: Q1.5.2, Q3.2.2 and Q3.2.4. Paper 2: Q1.3.1, Q1.4.1, Q1.5.4, Q2.4.6 and Q2.3.6.

(b) **Policy documents and LTSM:**

- The revised *CAPS* document, annual teaching plans (ATPs), the *2021 Examination Guidelines* and Diagnostic Reports are essential planning documents that form the basis of the planning process. Rotational topics must be noted each year. Documentation for 2025 has been sent to all PEDs.
- Prescribed textbooks, study guides and other departmental publications continue to be the primary resources available to teachers. However, teachers are expected to adapt the information to ensure it is correct and remains current.
- Online resources continue to play a significant role in the teaching and learning process. Educational websites, video presentations and shared resources from different provinces and publishers contribute to the continuity necessary in the teaching and learning of Geography.

(c) **Use of past NSC papers and exemplar papers:**

- Accessing and utilising NSC papers from the past four years are essential for teaching and learning. It is evident that teachers make use of these in lessons and revision. NSC Geography papers serve as reliable sources on questioning patterns and styles. Recent trends in the testing of short objective questions and the use of infographics were reflected in Paper 1: Q1.1, Q1.2, Q1.4, Q2.1 and Q2.2 and in Paper 2: Q1.1, Q1.2, Q2.1, Q2.2, Q2.3 and Q2.4.
- The migration to two equal-weighted papers from 2021 did not necessitate any changes to the content. It is, therefore, essential that every learner has access to past papers from 2015 onwards, especially from November 2021, as these are based on the current *CAPS* content and format. Teachers and learners should familiarise themselves with the specific content for each paper and extract the relevant questions from past examination question papers when preparing for examinations. Special note must be made of the relevant annual rotational topics in the Economic Geography of South Africa module.
- The exemplar papers with digital maps are also available and will assist teachers and learners. The combined A4 topographical and orthophoto maps are now more accessible as additional copies can be printed by schools.

General comments

Some areas of concern that were raised in the 2023 Diagnostic Report remain pertinent in the context of the 2024 NSC examination papers. They are emphasised here once again.

There were sufficient lower-order questions to give all candidates a fair chance to achieve a pass mark of at least 30%. Most of these were found in the short objective questions. At the start of a number of the subquestions in Section A, there were also lower-order questions. Answers to these questions could be obtained directly from the source, e.g. Q1.3.1, Q1.4.2, Q1.5.1, Q2.5.2 in Paper 1 and Q2.3.1, Q2.4.1, Q2.5.1 and Q2.5.2 in Paper 2.

(a) Thorough curriculum coverage was a challenge for a significant number of candidates. In Paper 1: Q1.5 line thunderstorms (15 marks), and Q2.3 drainage patterns (15 marks) presented a challenge to candidates, as did the following questions in Paper 2: Q1.4 urban profile (15 marks) and Q2.3 coal mining (15 marks).

(b) Rotational topics that were tested in 2024 were the following: (IDZ/SDI's, coal production and the PWV (Gauteng) core industrial region. Sections stipulated in the

2021 Examination Guidelines, with regard to rotational topics, were unfamiliar to a number of candidates.

(c) Questions that required a factor/explanation and qualifier in Paper 1: Q1.5.2 (4 marks), Q3.2.2 (2 marks), Q3.2.4 (2 marks) and in Paper 2: (Q1.5.4; (8 marks), Q2.3.6; (8 marks) were poorly answered by a significant number of candidates; they either gave only the factor/explanation or the qualifier.

(d) A significant number of candidates' responses were still not aligned to the demands of the instructional verbs in the question. A large number of candidates did not know how to approach these questions or understand what was expected of them. Words such as 'suggest', 'identify', 'account', 'comment', 'quote' 'describe', 'determine', 'explain how', 'explain why' and 'explain' require different types of responses. This resulted in candidates losing many marks in the middle- to higher-order questions.

(e) **Short objective questions**: Candidates generally performed well in these questions. A variety of short objective-type questions were used, e.g. multiple-choice questions: Paper 1 (Q1.1 synoptic weather maps; Q2.2 fluvial landforms/ features), Paper 2 (Q1.2 urban hierarchy and terminology; Q2.1 small-scale and large-scale farming and beef production); match the columns/descriptions; choosing words from within brackets or identifying features: Paper 1 (Q1.2 rural and urban climates; Q2.1 drainage basin terminology), Paper 2 (Q1.1 land reform, site and situation and types of settlements; Q2.2 IDZ/SDI's). However, candidates did not perform well in Q1.2 (urban hierarchy and terminology) in Paper 2 where an average of 42% was achieved for this question.

(f) **Source-based questions** (1 or 2 marks): Questions that required basic comprehension skills to obtain answers from sources like infographics remained a challenge for some candidates: Paper 1: Q1.3.1; Q1.4.2; Q1.5.1; Q1.5.2; Q2.3.1; Q2.4.2; Q2.5.2 and in Paper 2: Q1.3.2; Q1.4.2; Q1.5.2; Q2.3.1; Q2.3.2; Q2.4.1; Q2.4.2; Q2.4.3; Q2.4.4; Q2.5.1.

(g) **Short data response-type questions** (2, 4 or 6 marks): These data response-type questions, where short explanations or more detailed responses were required, were often poorly answered. In a significant number of cases, candidates were unsure whether a one-word answer or longer response was required: Paper 1: Q1.3.3; Q1.4.3; Q1.4.5; Q1.5.3; Q2.3.3; Q2.3.4; Q2.3.5; Q2.3.6; Q2.4.4; Q2.4.5 and in Paper 2: Q1.4.4; Q1.4.5; Q2.3.4; Q2.4.5.

(h) **Paragraph-style questions** (8 marks): These questions were of middle- to higher-order as is the norm. Candidates' performance in Paper 1 showed a pleasing improvement in both Q1.3.4 on mid-latitude cyclones and Q2.5.4 on catchment and river management. In Paper 2 the candidates' performance in paragraph questions showed an improvement due to the application of part-marking (Q1.5.4 on informal settlements and Q2.5.5 on the informal sector). Despite this, some candidates did not fare well in Q2.5.5 on the informal sector. They could not differentiate between *government* and *municipality* and the measures they are allowed to implement. Their responses were based on government measures instead of measures that can be taken by the municipality. They were also unable to demonstrate understanding of the instructional verb 'explain'.

(i) Some candidates did not have a sound knowledge of the basic geographical concepts, therefore, were not able to answer questions of a higher cognitive demand linked to these regularly tested topics. Paper 1: Q1.4 (tropical cyclones), Q2.4 (drainage patterns); Paper 2: Q1.5 (informal settlement) and Q2.5 (informal sector).

(j) A continued lack of regular practice to master the application skills in the Geographical Skills and Techniques section of the question papers impacted negatively on candidates' performance. Candidates did not make effective use of the topographical map and orthophoto map to assist them in answering questions. It was also evident that the integration of map skills and theory was not thoroughly practised by a significant number of candidates. These two aspects of Geography need to be taught in an integrated manner. Regular practice of calculations is necessary for candidates to prepare sufficiently for the NSC examinations.

(k) Map interpretation seems to be an ongoing challenge. Questions that required candidates to give answers relating to the topographical maps and orthophoto maps or refer to a specific block on the maps continued to be a challenge e.g. Paper 1: Q3.2.6 and Paper 2: Q3.2.4(b). A significant number of candidates gave general answers either not found on the maps or in the relevant blocks and therefore lost marks.

(l) Candidates continued to struggle with Geographical Skills and Techniques and Geographic Information Systems(GIS), which were examined in both question papers. Some candidates lost marks for not indicating the correct steps in calculations: Paper 1: (Q3.1.5, (4 marks), and Paper 2: (Q3.1.5, (4 marks). Many candidates did not understand the terminology and the application thereof to answer questions on (GIS) Paper 1: Q3.3.2 (type of data); Q3.3.4 (*buffering*). and Paper 2: Q3.3.1 and Q3.3.2 (*data manipulation*); Q3.3.4 (*data integration*).

(m) Most of the major topics in Section A in both Papers 1 and 2 and all sections regarding Geographical Skills and Techniques mentioned in the *CAPS* document, were tested. This benefited the candidates who studied their work comprehensively and made effective use of past papers.

General suggestions for improvement

(a) Teachers need to emphasise the importance of reading the instructions carefully before answering the question paper. These instructions provide important information with regard to the length of responses (point 9), indication of the unit in the final answer (point 10), and showing all steps in calculations (point 16).

(b) Instructional verbs that require a higher cognitive level of thinking continue to be a challenge for learners. Questions containing these instructional verbs should always be answered in full sentences, showing a clear knowledge and understanding of the geographical content tested. The instructional verbs that were deemed the most difficult in this past examination were: 'explain how' and 'explain why'. These questions require answers that include a factor/explanation and a qualifier. Included in the *2021 Examination Guidelines* is a comprehensive list of typical instructional verbs used in Geography and the response required to meet the intention of the instructional verb. Teachers are encouraged to make this list available to their learners and to use the instructional verbs in class activities regularly. The use of the marking guidelines from this past examination will assist teachers and learners to understand what is required.

(c) Reading for meaning continues to be a challenge. This results in learners not being able to understand the requirements of the question. Highlighting the instructional verbs and important aspects of the question will definitely assist learners.

(d) Most questions require interpretation and a thorough understanding of geographical processes. Learners, therefore, cannot merely reproduce content knowledge gained in the classroom. They should practise the application of theory taught, using a variety of sources. Regular informal tasks/activities will reinforce these important techniques.

(e) As geographical issues are often assessed, learners should be able to focus on the causes, impacts and solutions, e.g. Paper 1: Q1.3.4; Q1.5.5; Q2.5.5. and Paper 2: Q1.5.2; Q1.5.3; Q1.5.4; Q2.5.4 and Q2.5.5. In-depth knowledge of such issues is essential. Additional research by teachers and learners might be required. There are many reliable geographical websites that will provide up-to-date and valid information. Reviewing past question papers will also give learners an idea of how these questions are phrased.

(f) Teachers must note that the short objective questions (Q1.1, Q1.2, Q2.1, Q2.2) do not only test lower-order thinking skills. Some questions might require higher-order thinking skills. Learners must read the instructions carefully before answering the objective questions. It should be noted that more than one source might be used in these questions.

(g) Learners must be exposed to different styles of multiple-choice questions. In both papers complex multiple-choice questions are asked. Paper 1: Q1.1.7; Q1.1.8; Q2.2.8 and Paper 2: Q1.2.6, Q1.2.7 and Q2.1.8 (1 mark each). It is to be noted that there are distractors in the options given in the multiple-choice questions, e.g. Paper 1: Q1.1.4 and Paper 2: Q1.2.5. Learners must consider all four options before they make their choice. Teachers are strongly encouraged to update their methods of setting compliant multiple-choice questions which can include lower-, middle- and higher-order cognitive skills testing. Learners should be made aware of the principles underlying multiple-choice questions. It is to be noted that two or more topics might be tested in the short objective questions as in Paper 1: Q1.1 (synoptic weather maps and pressure systems) and Q2.2 (fluvial landforms/features and associated geomorphological processes) and Paper 2: Q1.2 (urban hierarchy and settlement concepts) and Q2.1 (small-scale and large-scale farming and beef production).

(h) Effective and regular practice of paragraph writing is essential. Learners need to write in full sentences and should not use bullets or point form. These questions usually require a degree of critical and analytical thinking, which places them on a higher cognitive level. Since paragraph questions are 4 x 2 marks, four points (if required) must be given; answers in many instances require qualification. The recommended eight lines should be used as a guide to the length of the response. This is done to avoid long-winded answers and time-wasting.

When planning a response, learners should underline or highlight the main topic of the question, the instructional verb and the focus areas of the question. Good practice when writing paragraph responses would be to make at least four points and then elaborate on each point.

Regular paragraph writing in short informal and formal tests/tasks, as well as in internal examinations, will allow learners to improve their skills and confidence when attempting these questions.

(i) Teachers must ensure that learners are familiar with the geographical terms/concepts and definitions required. Learners should compile a glossary of terms/concepts and an explanation of each in their notebooks for easy reference. This will assist them when describing and defining concepts and terms. Definitions/concepts are often asked as the first question on a particular topic and carry 2 marks each (Paper 1: Q2.4.1; Q2.5.1 and P2: Q1.3.1; Q1.4.1; Q1.5.1). As these are seen as concepts, they do not have to be explained verbatim. Baseline assessments and other informal tasks which mirror the questions of the NSC examinations should be practised regularly, focusing on the concepts taught. This should be done on completion of every subsection.

(j) Geography is a dynamic subject and new information on numerous topics is updated regularly. Recent climatological (e.g. tropical cyclones) and geomorphological events must be used in teaching and learning. The rural, urban and economic environment is also constantly changing. Teachers are, therefore, encouraged to collect resources on an ongoing basis and link current events to content taught in Grade 12. As life-long learners, teachers must stay abreast of new developments in their subject.

(k) Teachers are encouraged to include compliant source-based questions (like those used in the NSC examinations) in class assignments, tests and examinations. They should make use of relevant and recent reliable resources from the internet and avoid using sources that appear only in textbooks and are familiar to learners. Teachers should expose learners to a variety of sources, e.g. diagrams, sketches, photographs, graphical data (line graphs, bar graphs and pie graphs) and infographics. Learners should be taught how to access and interpret information from these different sources. Teachers and learners must be aware that different sources may also be combined for examination purposes, for example, Paper 1: Q1.4; Q2.3 and Paper 2: Q1.5 and Q2.4. The interpretation of graphs and tables containing statistics remains a challenge. The more learners are exposed to working with them, the more confident they will feel about answering these questions.

(l) Infographics are informative and were used as stimuli in both question papers. This information was very valuable and should have assisted the learners in obtaining the correct answers (Paper 1: Q1.4 and Paper 2: Q2.4). It is a visual representation of information or data, for example containing written information (extract), a sketch or map, graphs, tables and photographs. Extracts contain valuable information to guide learners to appropriate answers. All the information given should be considered when answering questions. The skill of integrating the visual and written information is one that should be practised regularly. Learners could be asked to quote or state directly from the text in the infographic which then needs to be verbatim and not paraphrased. If learners are asked to provide evidence from the infographic, they are not expected to quote directly.

(m) It is important for teachers to use plan views, cross-sectional and long-profile sketches when teaching various terms/concepts. Learners should be able to draw the correct view of features as was asked in Q1.4.4 (cross-sectional sketch of a tropical cyclone) in Paper 1 and Q3.3.3 (line and polygon human-made features) in Paper 2. Labelled sketches continue to be examined and should be practised regularly. Teachers are encouraged to ensure learners do their own labelled sketches in their workbooks to practise this skill.

(n) Teachers should be aware of the relevant subject content to be taught by constantly referring to *CAPS* and the *2021 Examination Guidelines*. Details regarding the choice of agricultural product (sugar cane), mineral (gold), core industrial areas (Gauteng (PWV), Durban-Pinetown), spatial development initiatives (SDIs-Maputo Corridor) and industrial development zones (IDZs-Dube Trade port) to be studied for 2025 have been communicated to each PED.

(o) Rotational topics like Spatial Development Initiatives (SDIs) and Industrial Development Zones (IDZs) must be well covered in teaching and learning. In many cases, they are either briefly mentioned or are not found in textbooks at all. Teachers and subject advisors need to conduct additional research into these topics to share with one another. The *2021 Examination Guidelines* has divided these topics into subsections, and it is essential that teachers provide sourced-based information on these subsections to support learners.

(p) As most prescribed textbooks do not cover all the subject content mentioned in *CAPS* and the *2021 Examination Guidelines* to the same degree, teachers should do additional research themselves. Teachers should consult more than one textbook if possible. Information provided in the various textbooks might not always be geographically correct and, when in doubt, additional research should be conducted on the topic.

(q) Teachers should provide each learner with a copy of the *2021 Examination Guidelines*, highlighting the content that will be taught. This can be used as a checklist to ensure that all content is covered, and to assist in preparing for tests and examinations. The format of each examination paper is also clearly laid out.

(r) To improve learner performance, teachers must refer to previous past examination papers as a guide to ensure that the standard of questions and the variety of questioning techniques used in assessment at school level is appropriate. This would also assist teachers to show learners how scaffolding of questions occurs, from those testing lower-order cognitive skills to the higher-order questions which address more advanced thinking skills. Previous question papers should not, however, be used as a tool for predicting topics in future papers.

(s) Teachers must ensure that the distribution of marks in the internal assessment tasks is also compliant with the requirements stipulated in *CAPS*. Blooms' Taxonomy or a similar tool should always be supplied for formal tests, examinations and tasks. The weighting is 25% lower-order, 50% middle-order and 25% higher-order. If too many lower-order questions are asked in the internal assessment conducted at school-level, learners will not be exposed to questions addressing a higher cognitive demand, as asked in the final NSC examinations. This will also give learners false notions of the level of performance required in the NSC examinations. All tasks should be based on the new November 2021 to 2024 formats regarding structure and content distribution.

(t) Teachers need to emphasise the importance of the units of measurement (point 10 in the Instructions and Information in all NSC question papers) in the final answers where required. Marks will not be awarded if the correct unit of measurement is not provided in the final answer. Learners should be made aware that this instruction applies to both the theory and mapwork sections of the question paper.

(u) With regard to improving mapwork results, learners must do a proper analysis of the general information of the map and orientate the topographical map to the orthophoto map before answering Section B on Geographical Skills and Techniques. This will assist in answering questions in Paper 1 (Q3.1.1; Q3.1.3) and Paper 2 (Q3.1.1). When orientating the maps, an easily identifiable feature on both maps should be specified. Using features like roads, railway lines, larger features and the shape of built-up areas can also be used to do map orientation. By identifying the area indicated by a red/black block on the topographical map, a learner can determine the location of the orthophoto map on the topographical map. This is most important when it comes to questions involving cross-referencing.

(v) Learners need to understand the importance of integrating their theory knowledge with Geographical Skills and Techniques. Although most of this integration is in Q3.2 (12 marks) in both papers, it must be noted that it can be found in other questions, e.g. Paper 1: Q3.2.1(b); Q3.2.2; Q3.2.6 and Paper 2: Q3.2). The frequent use of topographical maps and orthophoto maps as teaching aids in theory lessons will assist learners. Mapwork skills and interpretation exercises should be regularly practised in all types of questions, e.g. multiple-choice, map calculations, map application and interpretation and GIS.

(w) The responses to questions in Section B on Geographical Skills and Techniques are mostly derived from the maps provided. Regular revision using past papers from 2014 to 2024 will assist learners to master this skill. The focus, however, should be on the NSC November 2021 to November 2024 papers due to the new structure of this section.

(x) All aspects of mapwork as stipulated in the *2021 Examination Guidelines* must be covered thoroughly.

(y) Geographic Information Systems must be taught in detail. Teachers must emphasise the significance and purpose of GIS concepts and how to apply them: Paper 1: Q3.3.1 (*resolution*); Q3.3.2 (*spatial/attribute data*) and Paper 2 Q3.3.1 to Q3.3.2 (*data manipulation*); Q3.3.3 to Q3.3.4 (*data integration*).

(z) Teachers must expose learners to the methods/steps as indicated in the *2021 Examination Guidelines* and NSC marking guidelines (point 16 in Instructions and Information under Specific Instructions and Information for Section B). It must be noted that while certain methods may be correct in Mathematics, they may not contain all the steps that are required in Geography.

(aa) When practising and setting Mapwork exercises, teachers are encouraged to use a variety of maps which reflect the different regions of South Africa, e.g. inland or coastal regions, and from different provinces. This will prepare candidates to answer questions on whichever area the map covers in the NSC examinations. A variety of maps are available to teachers and learners from past NSC examinations.

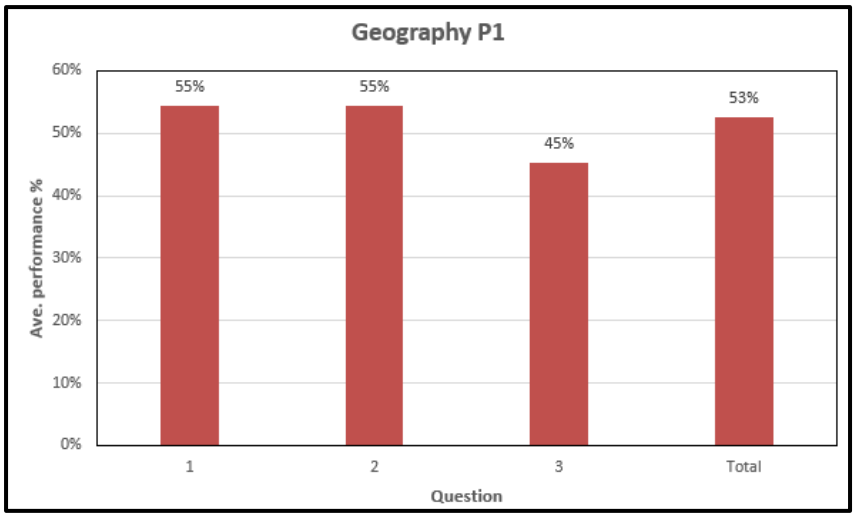
(bb) In addition to making use of previous examination papers and SABC revision programmes to explain and revise important geographical concepts, other useful tools include *YouTube* live feeds and presentations. Exemplar papers showing the new Geography paper format are available on the DBE website.

(cc) Teachers are encouraged to refer to the updated Instructions and Information page in the 2024 NSC examination papers and to include this in their formal tests and examinations. This will prepare the learners for the final examination. There are general instructions for Section A and specific instructions for Section B (Geographical Skills and Techniques) that should be highlighted. The annexure should also be incorporated into examination papers as was the case in the final November 2021 to November 2024 NSC question papers. Teachers are also encouraged to implement the new format of testing the short objective questions using a number of related sources instead of just one source.

6.3 DIAGNOSTIC QUESTION ANALYSIS FOR PAPER 1

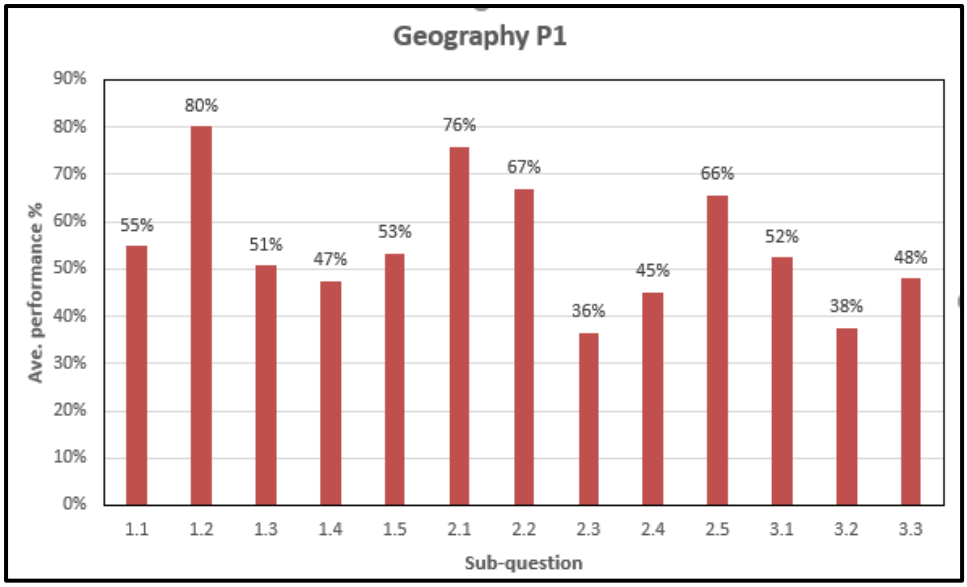
The following graph is based on data from a random sample of 100 candidates' scripts per province. While this graph might not accurately reflect national averages, it is useful in assessing the relative degrees of challenge of each question as experienced by candidates.

Graph 6.3.1 Average performance per question in Paper 1



Q	Topics
1	Climate and weather
2	Geomorphology
3	Geographical skills and techniques

Graph 6.3.2 Average performance per subquestion in Paper 1



Sub-Q	Topics	Sub-Q	Topics	Sub-Q	Topics
1.1	Synoptic weather maps	2.1	Drainage basin concepts	3.1	Map skills and calculations
1.2	Rural and urban climates	2.2	Fluvial landforms/ features	3.2	Map interpretation
1.3	Mid-latitude cyclone	2.3	Drainage patterns	3.3	Geographical information systems (GIS)
1.4	Tropical cyclone	2.4	River rejuvenation		
1.5	Line Thunderstorms	2.5	Catchment and river management		

6.4 ANALYSIS OF CANDIDATES' PERFORMANCE IN EACH QUESTION IN PAPER 1

SECTION A

QUESTION 1: CLIMATE AND WEATHER

Common errors and misconceptions

(a) In Q1.1.5 many candidates were not familiar with the term *fetch* (distance) and in Q1.1.6 candidates could not discern the correct direction of movement of a coastal low (L on sketch A). Although candidates generally did well in Q1.1 (8 marks) some struggled with the complex multiple-choice questions in Q1.1.7 and Q1.1.8. These were of a higher cognitive demand as candidates had to select two responses to complete the statement.

(b) Both rural and urban climates were tested in Q1.2 (7 marks). While candidates performed well in Q1.2.1 to Q1.2.4, some struggled with the concept of pollution dome tested in Q1.2.5 to Q1.2.7.

(c) Q1.3 (15 marks) on mid-latitude cyclones was generally well answered. However, some candidates still struggled with Q1.3.2 which asked for a reason for the movement of the mid-latitude cyclone from west to east and Q1.3.3 which required an explanation of the process of how the cold front resulted in the formation of cumulonimbus clouds. This question required a good understanding of both a cold front and vertical cloud formation which many candidates lacked. The paragraph question Q1.3.4 (8 marks) required candidates to suggest strategies to be put in place to manage the negative environmental impact of the heavy rainfall associated with mid-latitude cyclones. This question was of a very high cognitive demand and difficulty level and required candidates to unpack the three parts to the question: (i): explain strategies, (ii): manage the negative environmental impact (iii): of heavy rainfall associated with mid-latitude cyclones.

(d) The question with the poorest performance was Q1.4 (15 marks) with an average of 47%. The questions were based on an infographic which included a short extract, a map showing the path of Tropical Cyclone Filipo, a table showing a change in windspeed over a period of time and a plan view of a mature stage of a tropical cyclone. Many candidates could not use the information given to obtain correct responses. Q1.4.1 was similar to a question asked previously which required candidates to state one condition for the formation of tropical cyclones. Many candidates were not specific enough when mentioning the required conditions. In Q1.4.2 (2 marks) candidates needed to give evidence from both the map and table to show that Tropical Cyclone Filipo had strengthened from 10 to 11 March. Most candidates could not make the connection that the length of time that the tropical cyclone moved over the warm ocean would impact on evaporational rates, and the release of latent heat which would increase its strength. Candidates therefore only obtained 1 mark for giving evidence from the table.

Q1.4.4 (4 marks) required candidates to draw a labelled cross-section of a tropical cyclone. Marks were awarded for the correct cross-section, cumulonimbus clouds, eye and direction of movement of air in the eye. Many candidates drew the incorrect sketch, drew in arrows only or did not label any features and as such could not be awarded any marks. This was a higher-order, difficult question which tested candidates' ability to represent their knowledge to present a diagrammatic depiction of a cross-section through a tropical cyclone.

Candidates had difficulty responding to Q1.4.5 (4 marks) which required them to account for the lack of rainfall and clouds in the eye of the tropical cyclone. This question was asked slightly differently to the usual straight-forward way it is usually asked.

(e) A number of candidates experienced challenges with some of the subquestions in Q1.5 (15 marks). In Q1.5.2 (4 marks) candidates did not make mention of both the temperature and moisture content of wind A and wind B respectively. In a number of instances candidates did not clearly state which wind was associated with the specific temperature and moisture content. In Q1.5.3 (4 marks) candidates had to make use of the sketch to explain why heaviest rainfall occurs closest to the moisture front. The slightly different way the question was phrased was a challenge for many candidates.

In Q1.5.4 (6 marks) many candidates struggled to explain the negative physical (natural) impact of line thunderstorms.

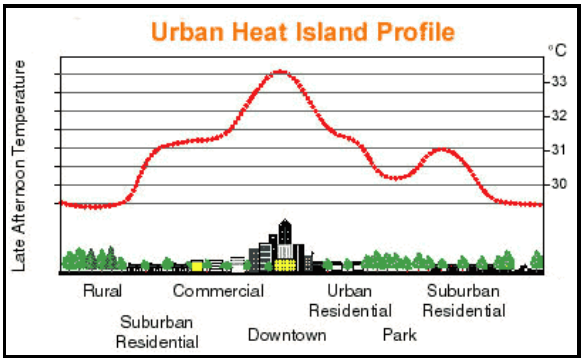
Suggestions for improvement

(a) The short objective multiple-choice questions in Q1.1 tested a variety of features associated with synoptic weather maps. Although the basics are taught in Grades 10 and 11, these features are revisited in Grade 12 when synoptic weather maps focussing on summer and winter conditions are used when teaching mid-latitude cyclones, tropical cyclone conditions and travelling disturbances. Learners must be able to identify features on a synoptic weather map associated with summer or winter conditions, as asked in Q1.1.1. They should know the conditions for the development of a low-pressure system (Q1.1.2), apply the concept of ridging (Q1.1.3) and understand how distance from the land (fetch) impacts the moisture content of the South Indian high- pressure system (Q1.1.5). The greater the fetch (distance from land) of the South Indian high-pressure system is, the more chance it has to evaporate moisture over the warmer ocean. This results in a moisture-laden air mass reaching the coast. When comparing the position of the South Indian high-pressure system in sketch A and B in Q1.1, it is clear that the system is much further from the land in sketch B.

Q1.1.7 and Q1.1.8 are complex multiple-choice questions where two responses must be selected. Teachers should include these in tests, tasks and internal examinations to prepare learners adequately.

Teachers are encouraged to integrate synoptic weather maps in the teaching of the main topics in Climate and Weather. It is vital that learners are able to identify a variety of features on a synoptic weather map. As this assesses application skills, learners need to practise this regularly.

(b) With regard to the concept *pollution dome* tested in Q1.2.5 to Q1.2.7, teachers must ensure that these concepts are well taught using sketches to enhance teaching and learning. It is also important to differentiate the change in the position of the pollution dome during the day and at night. This concept should not be confused with the concept of urban heat islands (illustrated below) which also changes in vertical extent during the day and night.



[Source: https://www.thephysicalenvironment.com/Book/climate_systems/urban climate.html]

The main difference between an urban heat island (illustrated above) and a pollution dome (NSC P1 page 5) is that an urban heat island refers to higher temperatures in urban areas, while a pollution dome refers to a concentrated area of air pollution over urban areas.

Teachers are reminded that short objective questions are not only lower-order, easy challenge questions. Teachers need to apply this in their assessments in the classroom to train their learners to answer a range of questions types.

(c) In Q1.3 the cross-section of a mid-latitude cyclone assisted the candidates to respond correctly. Teachers are encouraged to use this same testing method in informal assessments, tests and examinations. Although candidates could read the direction of movement directly from the sketch, some struggled to link the movement to mid-latitude cyclones being found in the westerly wind belt. To answer Q1.3.3 candidates needed to show a good understanding of how a cold front moves and the fact that a cold front has a very steep gradient. The cold front then undercuts the warm air ahead of it which causes strong vertical upliftment of warm air resulting in vertical condensation and the formation of cumulonimbus clouds (known as clouds of great vertical extent) which reach heights of 12km. The use of the cross-section given as the source could have assisted them.

Q1.3.4 referred to explaining strategies that could be put in place to manage the negative environmental impact of heavy rainfall. Teachers should emphasise that the following strategies are used to maintain the natural (physical) environment: maintaining natural vegetation, encouraging afforestation, terracing slopes, construction of gabions and the use of sandbags to mention a few. Teachers should guide learners on how to unpack questions such as these as this will guide their responses.

1.3.4	In a paragraph of approximately EIGHT lines, explain strategies that can be put in place to manage the negative environmental impact of the heavy rainfall associated with mid-latitude cyclones.	(4 x 2)	(8)

Many candidates gave flooding as a response but could not be credited as the question emphasised strategies to overcome heavy rainfall which would result in flooding.

(d) When teaching the formation of tropical cyclones, there are specific conditions that must be taught accurately. For example, learners must mention an ocean surface temperature of at least 26,5 °C (not 27 °C) and not just a warm ocean or upper air divergence and not just divergence, as vague responses will not be credited. Learners must be told that the action verb 'state' does not necessarily mean a one-word

response; as in some cases a short descriptor is required.

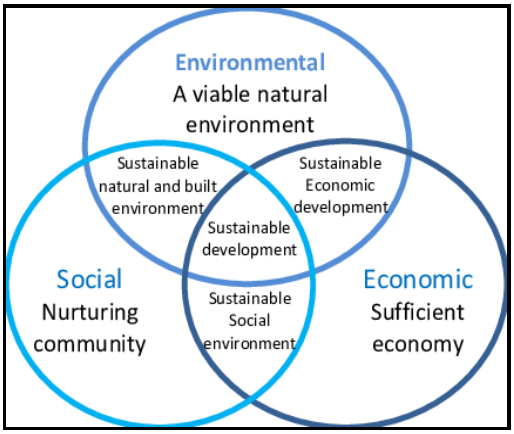
In Q1.4.2 both the map showing the path of Tropical Cyclone Filipo and the table showing the windspeed recording over certain days and times needed to be used to obtain full marks. Teachers should make use of various types of data, as included in the infographic, when teaching. Data response questions based on the source material given are often asked as introductory questions. Learners should be taught to interrogate all source material given and complete informal activities based on them. The map showed the path that Tropical Cyclone Filipo followed over a number of days. It is clear that from 10 to 11 March it was over the Indian ocean in the Mozambique channel where much evaporation takes place. When the air mass condenses due to it being saturated, latent heat is released. This provides the energy needed for the system to strengthen. The greater the evaporation the more latent heat (fuel) is provided to the system.

In Q1.4.4 a labelled cross-section of a tropical cyclone was tested. Learners should be encouraged to redraw both labelled plan views and cross-sections of systems such as tropical cyclones. A point to be noted is that an arrow on a sketch could mean anything, hence a label is required as in this case, where a downward arrow was not given credit to show air movement in the eye unless it was labelled air movement. Teachers should test labelled sketches as part of informal tests and in formal examinations. It is acceptable to give an abbreviation of the cloud type, e.g. Cb for cumulonimbus in sketches.

Although teachers should use past NSC papers as a guide, they need to be aware that the action verbs used may not always be those asked regularly. A full list of all geographical action verbs can be found in the *2021 Examination Guidelines*. The word 'account' means 'to answer for' or 'explain the cause'. Learners should familiarise themselves with the expected responses to various action verbs. The desired responses tested the candidates' understanding of air movement in the eye and the resulting evaporation of any moisture resulting in no rainfall or clouds.

(e) The topic of line thunderstorms is often tested in association with travelling disturbances. Teachers should continuously reiterate that in questions where two components (temperature and moisture content) of the two winds are referred to, as in the case of Q1.5.2, learners must clearly state which characteristics match each, e.g. wind A: cold and dry and wind B: warm and moist in order to be awarded marks. Teachers should make a point of using different sketches to test similar content so that learners can adapt to any sketches to which they are exposed. The sketch in the NSC paper showed that the rainfall experienced changed as you moved away from the moisture front. An arrow indicated where the heaviest rainfall was experienced and where it changed to moderate and light rain. To correctly respond to Q1.5.3 required an understanding that closest to the moisture front there would be greater uplift of warm air which results in greater condensation and the formation of thick clouds (visible on sketch) which would therefore result in heavy rainfall.

Q1.5.4 required responses that were linked to the negative impact of line thunderstorms on the physical (natural) environment. Responses like 'natural habitats would be destroyed'; 'biodiversity would be reduced'; and 'ecosystems would be destroyed' are correct. However, many responses alluded to damage to farmers' crops and loss of cattle, which are not considered part of the physical (natural) environment. Teachers should emphasise the different types of environment and how, even though they are interlinked, they are still seen as separate entities as depicted below.



[Source: https://www.researchgate.net/figure/The-integration-of-environmental-social-and-economical-elements-of-a-sustainable]_

QUESTION 2: GEOMORPHOLOGY

Common errors and misconceptions

(a) Candidates experienced challenges with some of the multiple-choice questions testing the concepts of *fluvial processes* and *fluvial landforms/features* in Q2.2 (8 marks). Q2.2.7 posed a challenge as candidates did not know the benefit of natural levees and in Q2.2.8 where candidates did not know the conditions required for a delta to form.

(b) Q2.3 (15 marks) recorded the lowest average performance in the Geomorphology section at 36% and the poorest performance in Paper 1. Although this section of Geomorphology on drainage patterns is often tested, candidates struggled to apply their knowledge to the plan view sketches and to the questions specifically. In this instance, radial and trellis drainage patterns were tested. Although candidates correctly identified the radial drainage pattern A in Q2.3.1, they could not give a reason for the direction in which the streams flow in this pattern in Q2.3.3. Many candidates understood that rivers flow from a high-lying to a low-lying area but did not mention 'radiate outwards from a high-lying area' and therefore could not be awarded marks.

In Q2.3.4 (2 marks) candidates struggled to indicate how the tributaries differ in the way they join in drainage patterns A and B. In order to obtain marks candidates needed to clearly differentiate between the trellis and radial drainage pattern. Most candidates could only identify that tributaries join at right angles in a trellis drainage pattern and as such could not be awarded any marks.

In Q2.3.5 (4 marks) candidates could not state two conditions associated with the underlying rock that contributed to the formation of a trellis drainage pattern. Although the word 'condition' is not incorrect, the commonly used term, 'characteristics' is preferable. This question is often asked in association with the trellis drainage pattern and should have been familiar.

Most candidates were unable to answer Q2.3.6 (4 marks). This question was of a high order and difficult challenge as candidates had to apply their knowledge of both drainage patterns and link it to the topography on which these drainage patterns occur.

(c) Candidates struggled with the whole concept of river rejuvenation due to a lack of understanding of the processes involved and many confused it with the process of river capture. Many candidates could define the term in Q2.4.1 (2 marks) and managed to identify the feature at A in Q2.4.2 (1 mark) as these were lower-order recall questions.

However, many candidates were unfamiliar with the actual process of rejuvenation (Q2.4.3 (2 marks) and Q2.4.4 (2 marks)) and the formation of river terraces (Q2.4.5 (4 marks)), and did not score many marks. It would seem that candidates had very little knowledge of how the formation of terraces can impact farming in Q2.4.6 (4 marks). This question had a high-order cognitive demand as it tested application of the process being assessed.

(d) With regard to Q2.5, candidates fared well with an average of 66% being achieved for this question. The question required candidates to read an extract on a case study based on catchment and river management. The response to Q2.5.2 came directly from the extract and then was scaffolded in Q2.5.3 (4 marks) to look at how the activity answered in Q2.5.2 negatively impacts the health of the river. Q2.5.4 (8 marks) required candidates to suggest sustainable strategies that government can put in place to preserve the river catchment area. Most candidates scored 6/8 or 8/8 for this question. Candidates who are less able to read for meaning would not have fared as well.

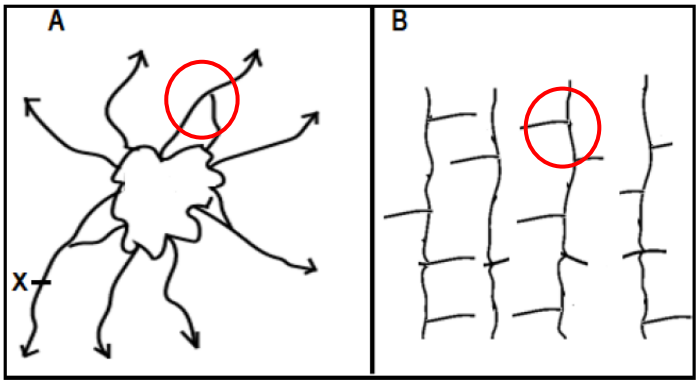
Suggestions for improvement

(a) Teachers need to expose their learners to all eight of the fluvial landforms/features mentioned in the *2021 Examination Guidelines* and not just the commonly asked meander and waterfall. According to the *2021 Examination Guidelines*, page 8, learners must be able to identify, describe, explain the processes of the formation, and know the significance and impact of these fluvial landforms/features. The use of photographs, videos, Google Earth searches as well as sketches of these landforms/features is vital to assist learners in identifying and understanding how they form. Teachers should also cover the plan views and cross-sectional views in teaching and learning to expose learners to the various views that could be tested. It is also suggested that learners draw labelled sketches of these features in their books regularly.

In Q2.2.7 a sketch of a natural levee was given, and the question asked how it will benefit the floodplain. This is an application of knowledge question and it is vital that these connections be made during teaching. A natural levee (a narrow area of deposition caused by initially regular flooding along the banks of the river in the lower course) will build up over time and will stop the floodplain from being flooded thereby allowing farming or settlement to be possible. Conditions for the formation of deltas was tested in Q2.2.8. In this complex multiple-choice question, two responses needed to be selected. Teachers need to cover these conditions for formation in class and regularly consolidate understanding through informal worksheets.

(b) It seems that many teachers still tend to focus on the most commonly asked trellis and dendritic drainage patterns. Learners should, however, be prepared for any combination that is asked, as in Q2.3. A radial drainage pattern was tested alongside a trellis drainage pattern using plan view sketches. The radial drainage pattern exists due to rainfall occurring on a high-lying area encouraging streams to flow outwards from this area towards lower ground, which was the required response to Q2.3.3.

Q2.3.4 required an understanding of how tributaries join differently in a radial and trellis drainage pattern. Tributaries join at acute angles in a radial drainage pattern (illustrated in sketch A below) whereas they join at right angles due to the folded rock structure associated with a trellis drainage pattern (illustrated in sketch B below). This question was an application question using the sketches provided. Learners need to be exposed to all relevant sketches and should indicate on these sketches information such as how tributaries join.

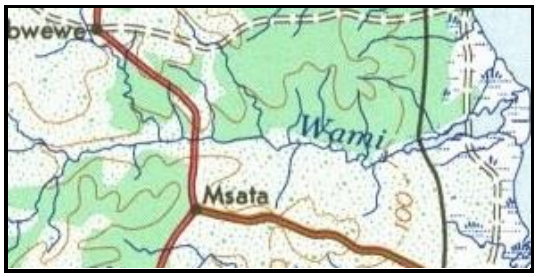


[Source: https://courses.lumenlearning.com/geo/chapter/reading-types-of-stream]

Learners should be able to state the conditions associated with the underlying rock structure which influence the formation of the different drainage patterns as was required in Q2.3.5 with regard to the trellis pattern. With reference to drainage pattern B, the only way rivers can run parallel and have tributaries join at right angles is for folding to have taken place. When this occurs, it exposes hard and soft layers of rock. The hard layers become watersheds and soft layers the valleys in which the rivers flow.

Although a plan view was used in this instance, teachers should also use cross-section and 3-dimensional sketches to give context. Teachers should always use topographical maps when teaching drainage patterns to show how the underlying topography (brown contour lines arrangement) influences the drainage patterns, as shown below:

Trellis drainage pattern



Radial drainage pattern

[Source: https://practicalgeoskills.blogspot.com/2019/04/recognizing-drainage-patterns-on.html]

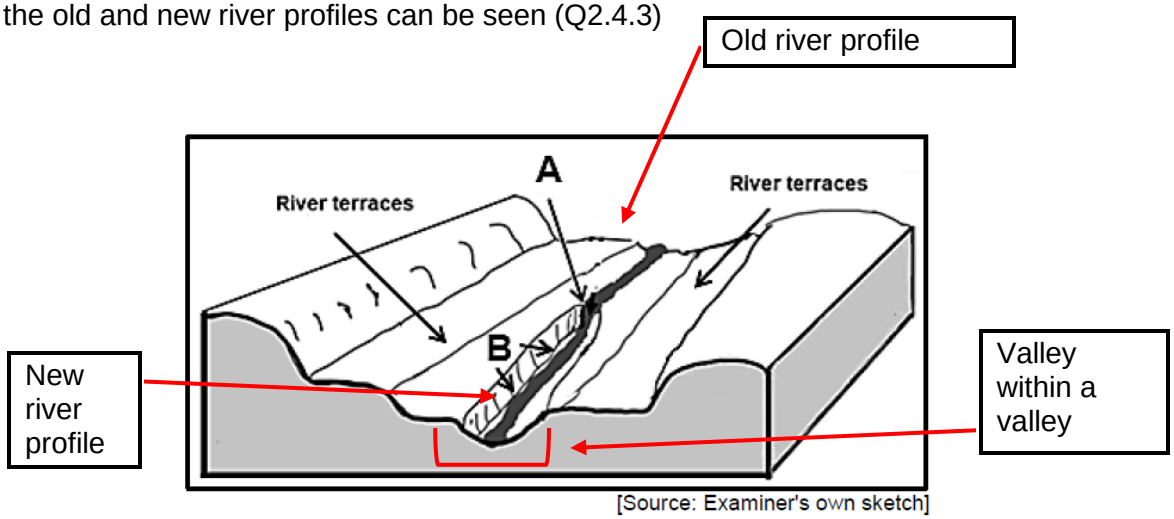
Q3.2.6 was a higher-order, difficult question. To answer the question, candidates had to conclude that the topography of both these areas was steep, prone to soil erosion and therefore, soil would be thin and infertile which is not conducive to human activities. The risk of mass movements would also be high due to the steep gradient.

(c) In Geomorphology, river rejuvenation is one of the most difficult concepts taught. Teachers should use a variety of 'before' and 'after' sketches to show how the landscape changes over time and what features result from this process. Learners also have to understand that this process takes place over a very long time.

(d) River rejuvenation is defined as when a river experiences an increase in energy and starts vertically eroding again (Q2.4.1). This could be due to:

- Change in gradient (isostatic uplift, drop in sea level), and
- Increase in the volume of water (river capture, increase in the amount of rainfall, joining of a faster tributary).

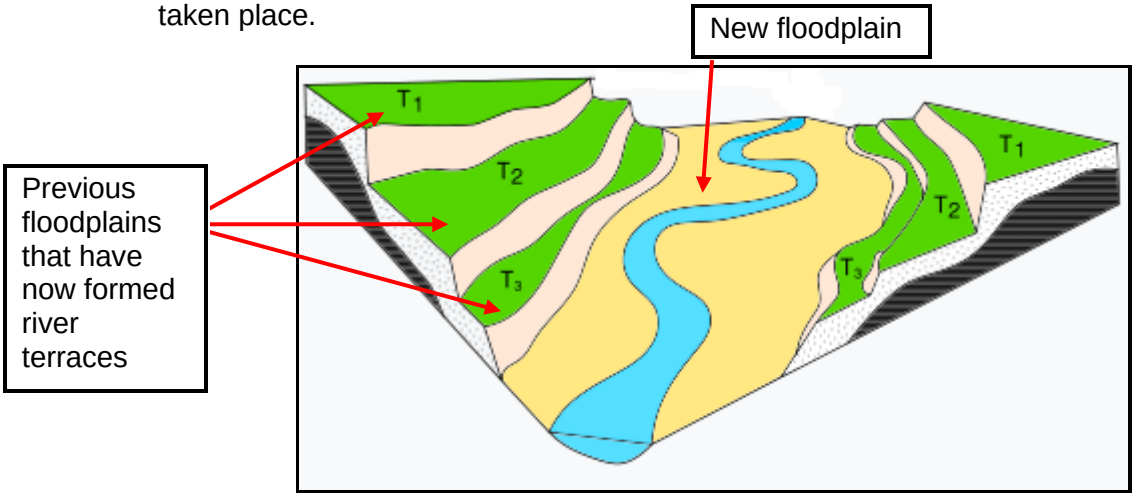
In Q2.4.2, feature A can be identified as a knickpoint or knickpoint waterfall. This is where the change in gradient is visible due to vertical erosion taking place and where the old and new river profiles can be seen (Q2.4.3)



[Source: Examiner's own sketch]

As a result of river rejuvenation, landscape B has undergone changes. Q2.4.4 asked for evidence of this which can be seen in the features that develop in the new river valley. In the sketch above, it is evident that the new river valley has formed in the existing river valley and that the river channel at B has become deeper, wider and steeper.

One of the resultant features that develops from river rejuvenation is river terraces. In Q2.4.5 an explanation of how these river terraces form was required. A river terrace is part of an older floodplain that is found at a higher level after river rejuvenation has taken place.

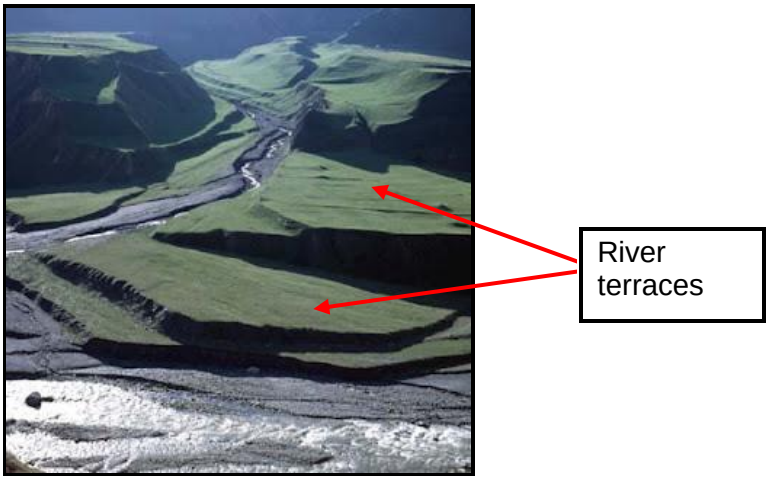


[Source: https://en.wikipedia.org/wiki/River terraces]

River terraces can form stepped slopes if river rejuvenation occurs more than once, as can be seen in the sketch above where three river terraces are visible.

When vertical erosion occurs on a floodplain, it cuts down into the floodplain forming a new river valley at a lower level. The remnants of the old floodplain that remain now become a river terrace.

Teachers are encouraged to source sketches, photographs (such as the one provided below) and videos to enhance teaching and learning of this difficult concept.



[Source: https://alevelblogger.blogspot.com/2013/05/river-rejuvenation-river-terraces.html]

Q2.4.6 required an application of knowledge of river terraces to say why they are not suitable for farming. When river terraces form, they remain at a higher level than the river and as such water access becomes more difficult. River terraces can be too narrow for farming and if they become stepped, it limits access for machinery. As there is no regular flooding of the river terraces, soil fertility will decrease in time. Teachers are encouraged to do their own research if they feel that the source material they have does not cover the topics taught sufficiently.

(e) Teachers should use various extracts and case studies when teaching the section on catchment and river management tested in Q2.5. Q2.5.4 asked for sustainable strategies that the government can implement like education programmes, awareness campaigns, creating buffer zones, regular monitoring and imposing fines to name a few. Teachers should alert learners to the fact that the local community, local municipality and government have different capacities to implement certain strategies and their responses should be tailored to accommodate this.

SECTION B

QUESTION 3: GEOGRAPHICAL SKILLS AND TECHNIQUES

Common errors and misconceptions

(a) Candidates did not use the information surrounding the topographical map to answer Q3.1.1 (1 mark).

(b) Map skills and calculations continued to pose a challenge for many candidates. In Q3.1.5 (3 marks) candidates struggled to calculate the area of the demarcated feature 6 in blocks A4/A5 on the orthophoto map despite being given the measured length of 3 cm. A number of candidates measured the length distance for themselves; others used an incorrect scale, did not include all the required steps, or did not convert their final answer to km² as was instructed.

(c) In Q3.1.6 (1 mark) many candidates could not identify why expansion to the south-east of the demarcated feature 6 was limited. This tested the skill of identifying features off the orthophoto map that could hinder further expansion.

(d) In Q3.2 candidates did not make full use of either the topographical map or the orthophoto map, as was required. Many candidates were not able to apply their Physical Geography theory knowledge to answer the questions asked in this section, resulting in only a 38% average being achieved.

(e) Q3.2.1(a) (1 mark) and (b) (2 marks) relating to urban climates and the impact of a high building density on urban temperatures was not well answered. Candidates did not use the correct concept of *urban heat island* as it is defined in *CAPS* and the *2021 Examination Guidelines* and therefore could not be credited. Many candidates struggled to focus on just the high building density and instead mentioned other factors that increase temperatures in urban areas.

(f) In Q3.2.2 (2 marks) a significant number of candidates did not understand the concept of *aspect of slope* and how it played a role in the location of the residential area of Rose Park at 7 on the orthophoto map.

(g) In Q3.2.3 (1 marks) some candidates struggled to make the connection between the position of the dam wall (at dam H) and the resultant direction of the flow of the river.

(h) Although the concept of a *weir* referred to in Q3.2.4 (2 marks) was not known to many candidates, a definition was provided to assist them. Most candidates were able to achieve 1 mark for identifying that a weir reduces flooding but they did not use the position of the weir on the topographical map to give evidence. This was a higher-order difficult question which required application of theory and map skills.

(i) Q3.2.5 (1 mark) and Q3.2.6 (1 marks) tested the fluvial landform/feature that formed between 8 and 9 on the orthophoto map. Most candidates identified the correct feature but struggled to give evidence about why it had developed in the area. Candidates needed to examine the same area on the topographical map to respond correctly, which many did not do.

(j) In Q3.2.7 (2 marks) a number of candidates could not identify that 11 on the orthophoto map was the outer bank of a meander and as such has a faster water flow resulting in more erosion taking place. Candidates needed to examine the area closely to get to the correct response.

(k) Most candidates fared better than in previous years in Q3.3 (8 marks) on GIS which resulted in this section recording an average of 48%.

(l) In Q3.3.2 (1 mark) most candidates did not score marks as they were confused by the word 'reference' which related to the table below the topographical map showing various symbols and what they mean. This was always known as a *legend* or *key*, but it is now referred to as the 'reference' related to the topographical map. If candidates used *grid reference* (coordinates) or *map reference* (map number*)* instead, they would not have reached the correct answer of *attribute data*.

(m) Many candidates struggled to show how information (*attribute data*) from the reference assisted in identifying feature J on the topographical map in Q3.3.2 (2 marks). This was a higher-order difficult question which required candidates to integrate theory and map skills.

(n) While most candidates were able to define the term *buffering* in Q3.3.4 (2 marks), many could not apply the term to area 12 on the orthophoto map to show how it protects the quality of water in the Klip River in Q3.3.5 (2 marks).

Suggestions for improvement

(a) Learners should be encouraged to use the information around the topographical map. In this instance there were a number of signs indicating places beyond the

topographical map and how far they are from Ladysmith. This question tested the map skill of using this information to name the town closest to Ladysmith.

Teachers should take time when teaching map skills to highlight not only the information found on the topographical and orthophoto maps but also show the value of the information around the map. The different contour intervals for each map are indicated as well as the map number, coordinates and magnetic declination information pertinent to the particular topographical map. Learners are encouraged to use their reading time to examine the maps thoroughly before looking at the questions.

(b) Teachers should regularly remind learners that they should read the questions carefully before attempting a response. In Q3.1.5 the length measurement was given so that learners did not have to measure. There was no range allocated for the given measurement which means that if learners did their own measurements but did not measure correctly, they were not awarded marks.

Learners had to present their final answer in km² in this instance and had to show all the steps for the full marks to be allocated as per point 16 in instructions found in the NSC paper.

Teachers must remind learners that they should convert the map measurements directly into kilometres by multiplying the length and the breadth by 0,1 km (map scale on orthophoto map) before multiplying them together to obtain the final answer. If the unit of measurement is missing from the final answer, no marks are awarded for that step.

It is important to note that, while teachers are encouraged to follow the mark allocation for steps in all calculations as mentioned on page 20 in the *2021 Examination Guidelines*, due to limited marks being set aside for calculations (10 marks), some measurements might be given.

(c) Teachers should regularly practise map skills like those required in Q3.1.6 with learners.

Below is a portion of the orthophoto map pertaining to the question asked. By looking south-east of feature 6, one can clearly see there is a road, a river with a buffer zone of trees and a recreation area. A road would, however, not hamper further development but the river, buffer zone of trees and recreational area would.

[Source: NSC orthophoto map]

(d) Teachers should use both topographical and orthophoto maps when teaching learners map interpretation skills. The area of the orthophoto map that overlaps with the

topographical map is clearly indicated by a red/black block on the topographical map. It is in this block that a number of questions are asked that require learners to cross reference between the two maps to answer the questions.

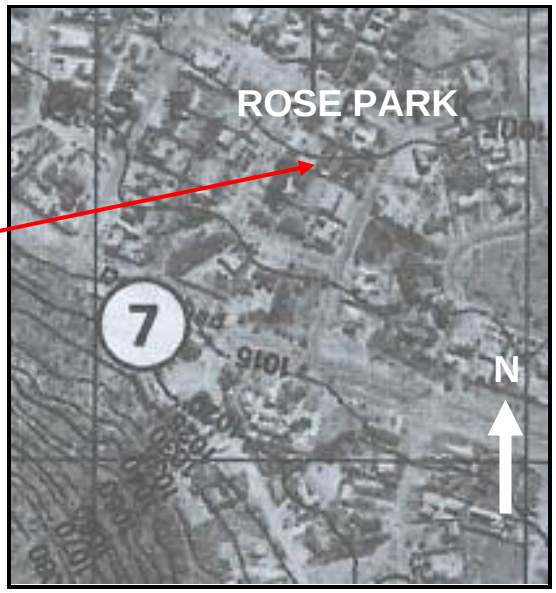
(e) When teaching concepts, it is most important that teachers use the correct terminology and that abbreviations do not become acceptable. The *CAPS* and the *2021 Examination Guidelines* give the correct geographical terminology to be used. The concept *urban heat island* is the correct geographical term for an urban area whose temperatures are higher than the surrounding area. Q 3.2.1(b) focussed on a high building density to account for the higher temperatures at F on the topographical map. Teachers are encouraged to use sketches like the one below to teach the concept of how high building density increases urban area temperatures as a result of the following:

Heat is trapped between buildings
Wind speed is reduced
Air flow is reduced
Multiple reflections between buildings
Artificial surfaces

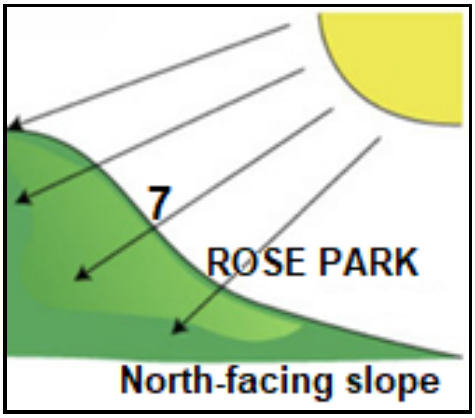
[Source: https://www.shutterstock.com/search/density-tower?image_type=illustration]

(f) The concept *aspect of slope* is taught as part of valley climates. In the Southern hemisphere, north-facing slopes receive the most direct radiation and are therefore, the warmer slope and preferred for settlement. Q3.2.2 used Rose Park in blocks D2 and D3 on the orthophoto map to test this concept. Teachers should use examples such as this to guide learners to apply their theoretical knowledge of *aspect of slope*: Rose Park faces north-east and so receives this benefit. Teachers should integrate mapwork with theory being taught, as shown below

The settlement of Rose Park lies on the more gentle slopes that face north - east and receive more direct radiation making them warmer



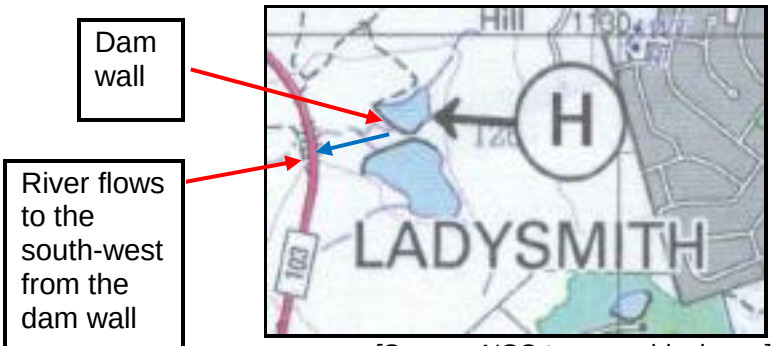
Cross-section view



[Source: NSC orthophoto map and adapted cross-section]

(g) One of the best ways to determine the direction of the flow of a river is to see if there are any dams with dam walls on the river. A dam wall is built on a river to hold back the water (to form a dam) and so when the sluice/flood gates are opened, water flows

away from the dam wall downstream as was tested in Q3.2.3 at H on the topographical map.



[Source: NSC topographical map]

(h) A weir (I on the extract from the topographical map of Ladysmith) is used to reduce the risk of flooding in rivers and protect activities and settlement along the river course. Just above the weir in block A3 three tributaries join which would increase the water level in the river creating a flood risk. The weir also protects the area below the weir from being flooded, as which was the response for Q3.2.4. This is illustrated in the map extract below.

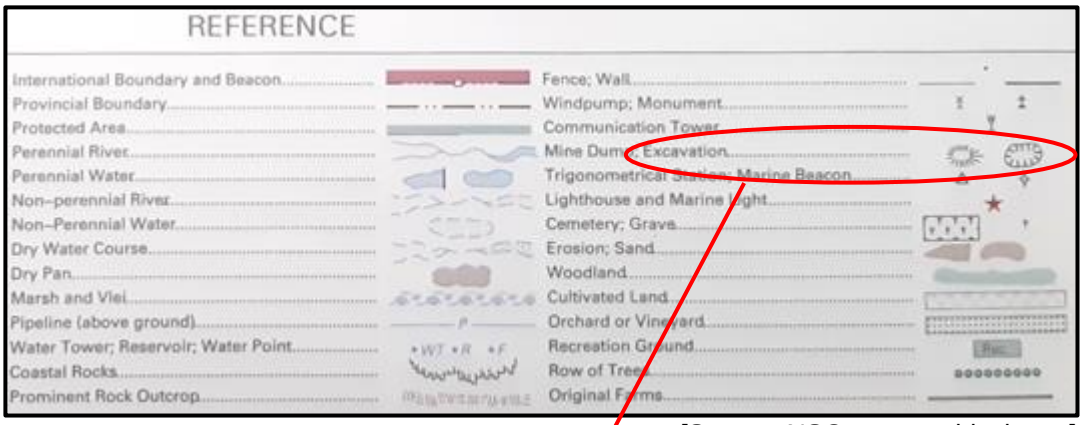
[Source: NSC topographical map and https://www.shutterstock.com/image-photo/small-weir-river-]

(i) Learners should be exposed to identifying fluvial landforms/features on both topographical and orthophoto maps, as well as in which course of the river they are most likely to form, when being taught the theory. In Q3.2.5 a meander could be identified. Meanders usually form in the middle or lower course. When examining the orthophoto map, it is clear that the contour lines are far apart in the area from 8 to 9 indicating that the land is flat which is why meanders form, which was required in Q3.2.6.

(j) Teachers must ensure that learners have an understanding of the different banks of a meander as was asked in Q3.2.7. The outer bank (11 on the orthophoto map) is known as the outer bank and greater erosion is associated with this bank due to water flowing faster here than at 10 which is the inner bank. Application of theoretical knowledge should be regularly integrated into theory lessons and consolidation exercises.

(k) GIS concepts and application thereof need to be well taught and regularly practised. Use of both topographical and orthophoto maps is essential for this.

(l) Below is an example of part of the reference that shows standardised symbols that appear on the topographical map and a short explanation of each feature. This assists with interpreting the symbols. As the reference gives more information about a symbol, it is regarded as attribute data (answer to Q3.3.2). Teachers should make clear distinctions between this reference, *grid reference* (coordinates) and *map reference* (map number*)* in class.



[Source: NSC topographical map]

The explanation for the symbol on the topographical map can be seen in the reference which indicates what feature J (referred to in Q3.3.3) is in reality. In this instance J is an excavation.

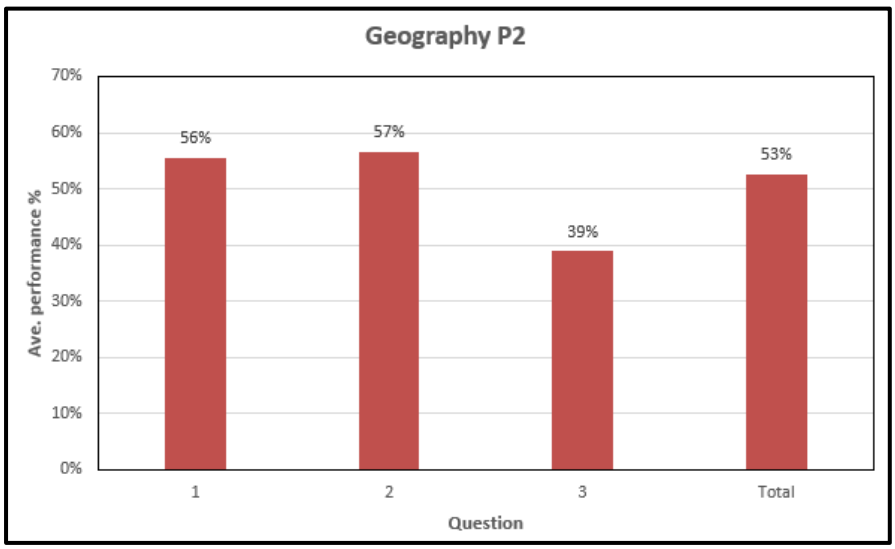
(m) When explaining the term *buffering*, teachers should make use of examples from both topographical and orthophoto maps. Buffering can occur along a river (12 on the orthophoto map) as was asked in Q3.3.5 to restrict development along the river bank, preserve the biodiversity and decrease pollution from the nearby built-up area. Candidates needed to cross-reference area 12 with the same area on the topographical map to clearly show buffering in the form of trees and the recreation area.

[Source: NSC topographical and orthophoto map]

6.5 DIAGNOSTIC QUESTION ANALYSIS FOR PAPER 2

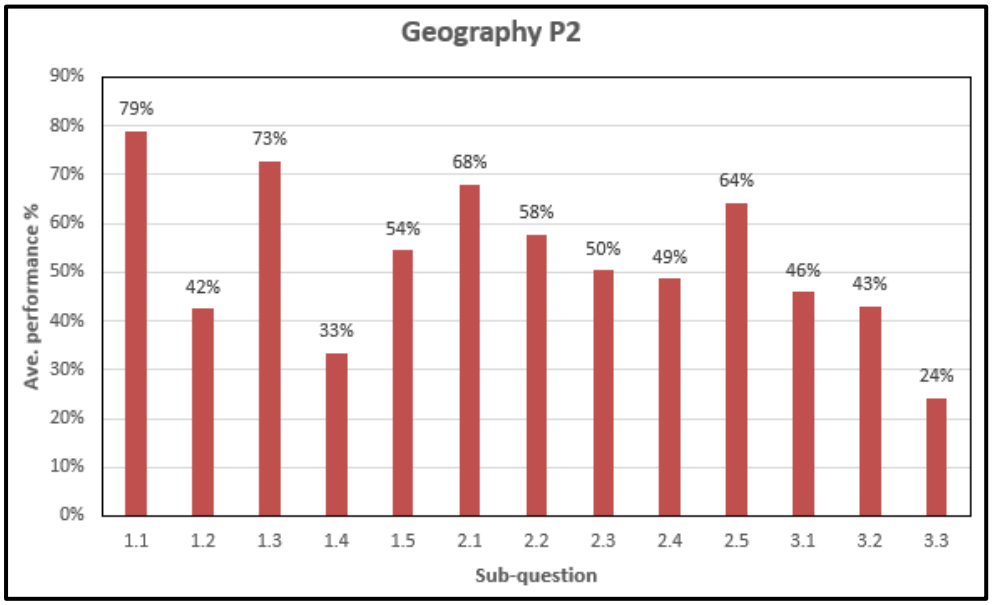
The following graph is based on data from a random sample of 100 candidates' scripts per province. While this graph might not accurately reflect national averages, it is useful in assessing the relative degrees of challenge of each question as experienced by candidates.

Graph 6.5.1 Average performance per question in Paper 2



Q	Topics
1	Rural and urban Settlements
2	Economic geography of South Africa
3	Geographical skills and techniques

Graph 6.5.2 Average performance per subquestions in Paper 2



Sub-Q	Topics	Sub-Q	Topics	Sub-Q	Topics
1.1	Settlement terminology	2.1	Mining	3.1	Map skills and calculations
1.2	Settlement terminology	2.2	Economic terminology	3.2	Map Interpretation
1.3	Rural depopulation	2.3	Maize farming	3.3	Geographical Information Systems
1.4	Commercial decentralisation	2.4	Core industrial region/IDZ		
1.5	Public transport/ Traffic congestion	2.5	Informal sector		

6.6 ANALYSIS OF CANDIDATES' PERFORMANCE IN EACH QUESTION IN PAPER 2

SECTION A

QUESTION 1: RURAL AND URBAN SETTLEMENTS

Common errors and misconceptions

(a) Candidates did not interpret Q1.1.6 (1 mark) correctly. The emphasis in the question was on greater profits and not just profits.

(b) In Q1.1.7 (1 mark) some candidates could not differentiate between the different programs associated with land reform.

(c) In Q1.2.2, Q1.2.3, Q1.2.4 (3 marks) candidates did not relate the questions to urban hierarchy of settlements and could not differentiate between the different types of settlements.

(d) In Q1.2.6 (1 mark) a significant number of candidates could not differentiate between types of economic activities, range, and sphere of influence.

(e) With regard to Q1.3.1 (2 marks) some candidates did not give the full definition of rural-urban migration and could not be awarded marks.

(f) In Q1.3.2 (1 mark) some candidates experienced challenges relating to the interpretation of the graph.

(h) With regard to Q1.3.3 (2 marks) candidates misinterpreted the question and as such, their responses focused on unemployment, instead of the impact of unemployment on poverty levels.

(i) In Q1.3.4 (4 marks) some candidates did not focus on the instructional verbs regarding the social and community impact, which focused on in rural areas. Instead, their responses focused on economic impacts and urban areas.

(j) In Q1.4.1 (2 marks) candidates lacked an understanding of the definition of *urban profile*.

(k) In Q1.4.3 (4 marks)÷ the density of buildings was not fully understood, and a significant number of candidates made reference to the height of buildings instead.

(l) In Q1.4.4 and Q1.4.5 (10 marks) the poor performance of some candidates can be attributed to the lack of understanding, interpreting and differentiating between different land-use zones (transition zone and rural urban fringe).

(m) In Q1.5.1 (2 marks) some candidates could not differentiate between the concepts informal settlement and informal sector and defined the informal sector instead of informal settlement.

(n) In Q1.5.3 (4 marks) some candidates gave general reasons for the increase of informal settlements instead of focusing on economic reasons.

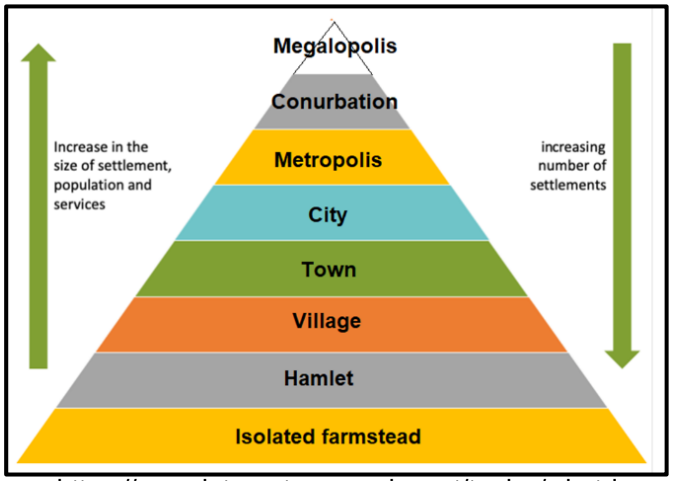
(o) Q1.5.4 (8 marks) required a factor and a qualifier and was considered a higher-order question. In some instances, candidates only gave the factor and could only be awarded one mark. Candidates who only gave the qualifier obtained no marks.

Suggestions for improvement

(a) A clear illustration (as seen below) that indicates the different programmes associated with land reform will create a better understanding when teaching and learning takes place. This will enable learners to differentiate between them.

(b) Learners need to be exposed to visual sources showing different settlements and the complexity of settlements, as illustrated below. Application of concepts such as *sphere of influence*, *range*, *threshold population* and *order of service goods* to the visual source is important. For example, settlements higher up in the hierarchy will have a larger *sphere of influence* and more high order goods.

Differentiating between explanations will also create a better understanding of settlements, e.g. a conurbation is a continuous urban settlement made up of cities and towns and a metropolis is an type of urban settlement made up of a major city and towns. (Q1.2),

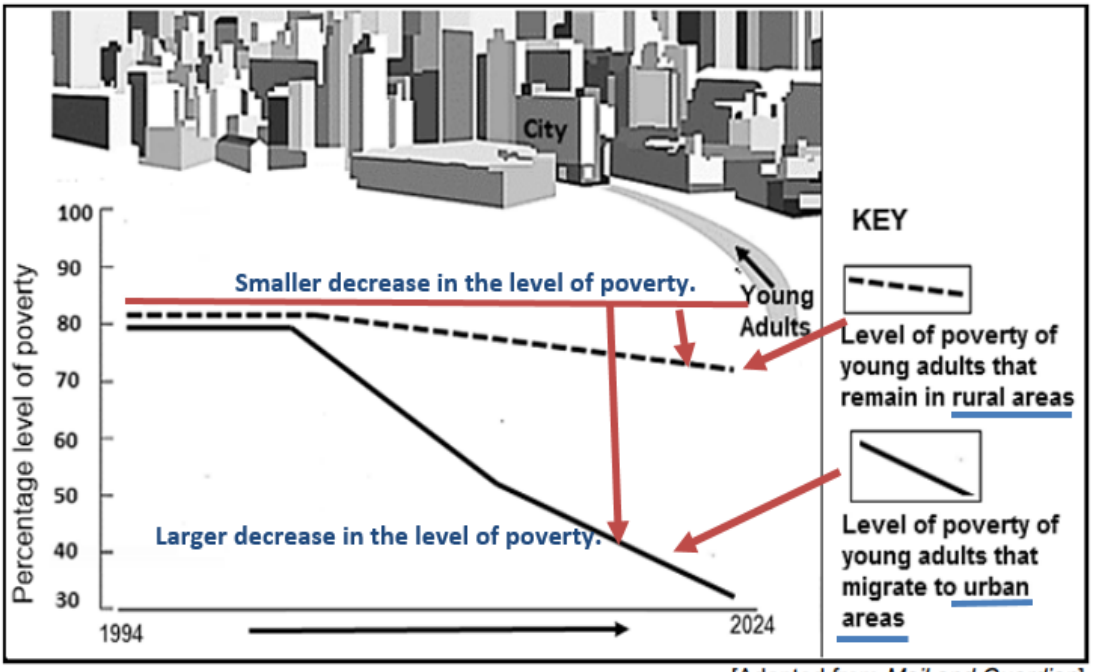


[Adapted from: https://www.internetgeography.net/topics/what-is-a-settlement-hierarchy/#]

(c) Definitions must be comprehensive in order to obtain full marks, e.g. Q1.3.1: rural-urban migration. The illustration below emphasises this aspect:

- The movement of people X
- The movement of people from rural areas √
- The movement of people from rural areas to urban areas √√

(d) With regard to Q1.3.2, learners need to be taught how to analyse the different aspects related to the graph as illustrated below:



[Adapted from *Mail and Guardian*]

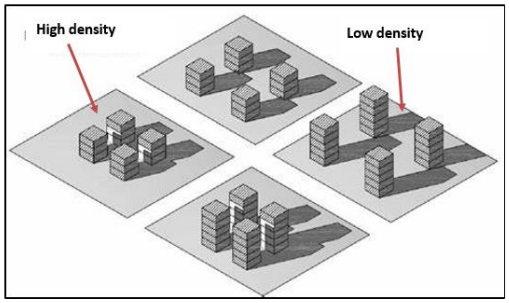
(e) Learners need to be familiar with terminology used in questions, e.g. Q1.3.3: a trend is a change or development in a general direction.

(f) Learners need to focus on all aspects of the question. Highlighting the important aspects allows the learner to identify and meet the requirements of the question. This is illustrated below:

1.3.4	How does the movement of young adults to urban areas have a negative social impact on the rural community?	(2 x 2)	(4)

(g) Teachers must expose learners to definitions, e.g. Q1.4.1: *urban profile* is the side view of an urban area.

(h) In Q1.4.3 the concept *density of buildings* needs to be explained to learners. Density of buildings is the number of buildings per unit area. Visual sources will assist learners to understand the concept better.



[Source: https://www.bing.com/images/search?view=detailV2&ccid]

(i) A clear explanation with regard to land-use zones needs to be given to learners. This will enable them to differentiate between various land-use zones. This is illustrated below:

Zone of decay/transition zone

- Found around CBD.
- Zone of change.
- Buildings are taken over by other functions and renovated.
- Many dilapidated buildings (low owner occupation).
- Zone of mixed functions.

Rural-urban fringe

- Urban functions invade the surrounding rural area.
- Has urban and rural functions.
- High income residential areas, golf course, sewage works
- Zone of mixed functions.

[Source: https://www.youtube.com/watch? v=vEnpoodej6M&list=PLLTtun7]

(j) Regarding Q1.5.1, teachers should teach the topics of informal settlement and informal sector simultaneously. This will create a clear differentiation between the two concepts. Using visual sources will definitely assist learners to discern between the two. The example below illustrates this:

https://www.bing.com/images/search?view

https://www.bing.com/images/search?view

Informal settlement	Informal sector
Building of structures on land that people occupy with no legal claim.	Businesses that are not registered and do not pay income tax.

(k)

Improved services (Factor/explain) improve quality of life (Qualifier/how) (2) More facilities (Factor/explain) built for greater convenience (Qualifier/how) (2) Improved transport infrastructure (Factor/explain) will link surrounding areas to allow for accessibility (Qualifier/how) (2) Upgraded infrastructure (Factor/explain) improves quality of life (Qualifier/how) (2)

QUESTION 2: ECONOMIC GEOGRAPHY OF SOUTH AFRICA

Common errors and misconceptions

(a) Q2.1.1 (1 mark) focused on the main difference between small-scale and large-scale farming and in some instances, candidates focused on the general differences.

(b) Some candidates in Q2.1.4 (1 mark) lacked an understanding of economic advantage and gave other advantages, e.g. social.

(c) Some candidates experienced challenges in analysing Q2.1.6 (1 mark) which focused on the distribution of the dairy products and not just on dairy products. They, therefore, gave 'secondary' as a response which was incorrect.

(d) In Q2.2.(7 marks) some candidates did not understand and could not differentiate between SDIs and IDZs.

(e) In Q2.3.1 (1 mark) candidates, in some instances, experienced difficulty in interpreting the graph. How to read the X-axis and the Y-axis was not clearly understood by some candidates. It was noted that a number of candidates did not appear to make use of the key provided.

(f) In Q2.3.2 (1 mark) the phrase 'general trend' was misunderstood by candidates. They explained the fluctuation on the graph.

(g) In Q2.3.5 (4 marks) candidates who experienced challenges could not relate information about coal to the question. Candidates seemed to lack knowledge regarding high-quality coal and low-quality coal reserves and its impact.

(h) Q2.3.6 (6 marks) required a factor and a qualifier and was considered a higher-order question. In some instances, candidates only gave the factor and obtained one mark or gave the qualifier and obtained no marks. The question was specific to the economy of South Africa and some learners gave general responses.

(i) Q2.4.2 (2 marks) clearly highlighted the challenges experienced by candidates with regard to comprehension skills. They could have worked out the answer by reading the extract properly. Reading for meaning was a challenge facing a number of candidates.

(j) Q2.4.3 (4 marks) focused specifically on the role of major roads as a factor favouring industrial development in the Gauteng (PWV) core industrial region. Candidates gave general factors that favour development in the Gauteng (PWV) core industrial region instead.

(k) In Q2.4.5 (4 marks) some candidates lacked content knowledge regarding *value-added production* despite the fact that the concept was defined in the extract.

(l) Q2.5.4 (4 marks) referred to the rapid growth and not just the growth of the informal sector. Candidates gave general answers like 'poverty' instead of an 'increase in poverty'.

(m) Q2.5.5 (8 marks) specifically focused on measures that the municipality can put in place. A significant number of candidates gave measures that could be implemented by the government instead.

Suggestions for improvement

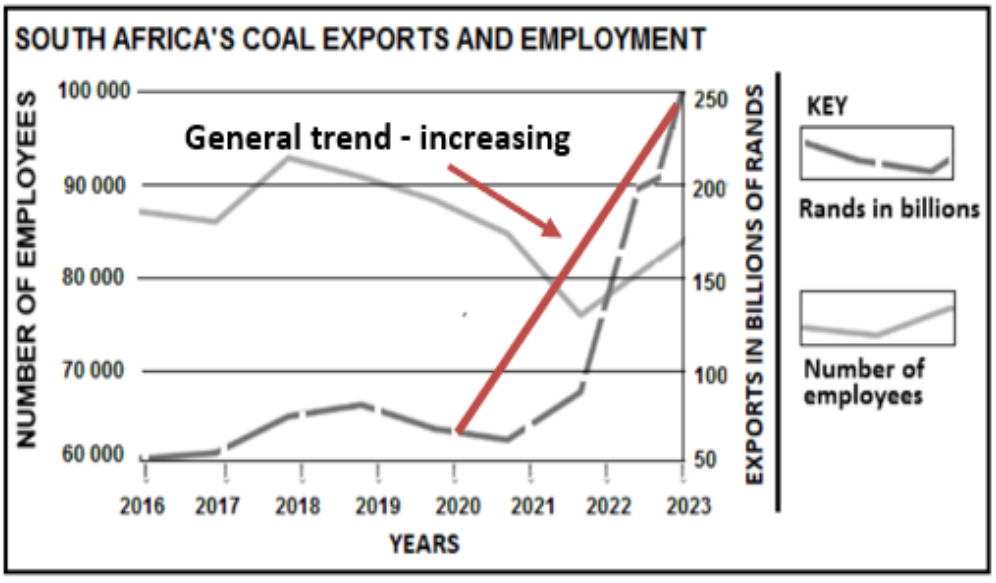
(a) Teachers need to highlight the importance of focussing on further descriptors to the instructional verb, e.g. in Q2.1.1 the emphasis is not just about the difference but the main difference between small-scale and large-scale farming. It must be noted that distractors in the options did consist of general differences.

(b) Regarding Q2.2, learners need to know the basic differences between an IDZ and an SDI as this forms the important foundation to understanding specific SDIs and IDZs taught on a rotational basis. This can be done by simultaneously differentiating between them as illustrated below:

Industrial Development Zones
• Aims to encourage manufacturing in areas and use of resources in those areas to produce goods instead of importing them (Beneficiation). • They are generally located around transport routes that have international links e.g. harbour, in order to promote exports.

Spatial Development Initiatives
• The aim here is to promote growth in areas that are underdeveloped but have economic potential e.g. creation of new jobs and improved infrastructure to attract foreign investors.

(c) The definition of 'general trend' is the overall pattern or direction of something developing/changing over a period of time (Q2.3.2). This can be illustrated using the graph:

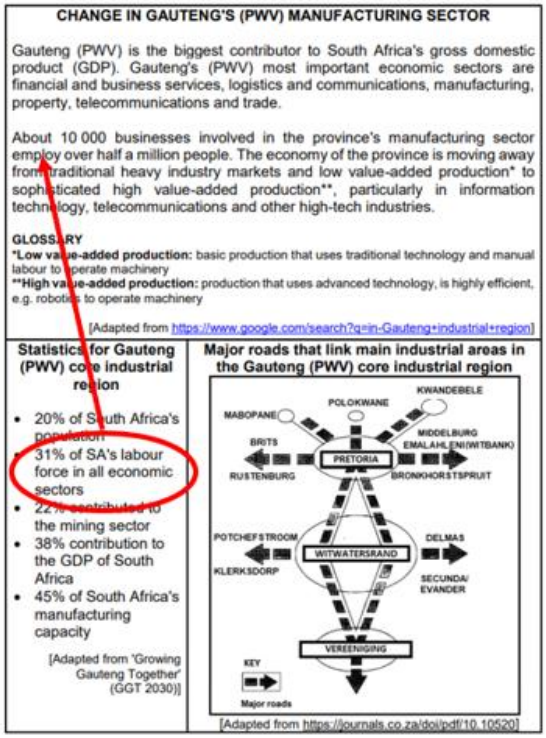


(d) Q2.3.6 is similar to Q1.5.4 where a factor and qualifier are needed. In this instance, the factor is the 'explain' and the qualifier is the 'why'. Learners also need to note that it is specific to the economy of South Africa as illustrated below. Teachers should also emphasise the economic aspects of the response.

It creates employment opportunities (factor/explain) thus reducing dependency on government/ increasing the buying power of people (qualifier/why) (2)
Multiplier effect (factor/explain) stimulates other industries growing the economy(qualifier/why) (2)
Coal mining contributes to the GDP (factor/explain) that stimulates the economy(qualifier/why) (2)
Coal is our main source of power(factor/explain) that all sectors of our economy are dependent on (qualifier/why) (2)

(e) To respond correctly to Q2.4.2, learners need to interrogate the different aspects of the infographic and comprehensively interpret the extract in order to get the correct quote as illustrated in the example below:

2.4.2 Quote evidence from the extract that shows why 31% of South Africa's labour force is found in the Gauteng (PWV) core industrial region. (1 x 2) (2)



(f) Learners need to be made aware that in instances where geographical terms are not commonly used, a further description/glossary is given (Q2.4.5). They need to analyse the source thoroughly and take special note of the glossary provided to assist them. The illustration below clearly highlights this:

GLOSSARY
***Low value-added production:** basic production that uses traditional technology and manual labour to operate machinery
****High value-added production:** production that uses advanced technology, is highly efficient, e.g. robotics to operate machinery

(g) As with Q1.5.4, Q2.5.5 required the topics of informal settlement and informal sector to be taught simultaneously in order for learners to have clarity regarding their differences and their impacts. This will avoid learners mixing up these concepts and losing marks. Learners need to be aware who is implementing measures in order to focus their responses appropriately. They need to know the difference between the

different authorities that could implement measures, as well as the types of measures that could be implemented. Refer to the examples below:

Government: has the authority to make and enforce laws, regulate society and manage public resources. **Municipality:** authorities to govern the local government affairs of its community.

SECTION B

QUESTION 3: GEOGRAPHICAL SKILLS AND TECHNIQUES

Common errors and misconceptions

(a) In Q3.1.1and Q3.1.2 (2 marks) understanding and differentiating between types of scale and raster and vector data remained a challenge for a significant number of candidates.

(b) In Q3.1.3 (1 mark) determining of *grid reference* of a feature was still not fully understood by many candidates. The main area of concern was the determining of the seconds by calculation.

(c) In Q3.1.4 (1 mark) candidates seemed to have challenges regarding the steps to be used in determining the *true bearing*, and the correct use of a protractor.

(d) With regard to Q3.1.5 (4 marks) candidates experienced some challenges, e.g. not using given information; incorrect subtraction for vertical interval (VI); use of scale in the correct unit; correct substitution and expressing final answers as a ratio.

(e) In Q3.1.7 (1 mark) candidates experienced difficulties with understanding and applying the term *gradient*. The question focussed on road construction and not just any construction. Candidates gave responses based on general construction.

(f) Some candidates could not clearly differentiate between *shape* and *pattern* and chose the incorrect response in the multiple-choice question in Q3.2.1 (1 mark).

(g) The poor performance noted in Q3.2.2(a) and (b) (4 marks) was due to poor map interpretation skills, and poor understanding and application of the term *development*. Candidates did not consult the mark allocation for Q3.2.2 (a) and gave only one response instead of two.

(h) In Q3.2.3(a) (1 mark) candidates lacked the mapwork and application skill to relate topography of the area to the resultant grid iron pattern. Giving specific map evidence to show an understanding of street patterns was a challenge for many candidates

(i) In Q3.2.3(b) (2 marks) candidates gave general advantages of the location instead of being specific regarding economic advantages found in area 9 on the orthophoto map.

(j) In Q3.2.4(b) (1 mark) reference was made to specific blocks where the candidates should obtain the evidence; however, candidates gave responses not related to these blocks. This is a common mapwork challenge.

(k) In Q3.2.4(c) (2 marks) the challenges experienced by candidates were not using the specific blocks to identify strategies and not knowing what strategies to look for.

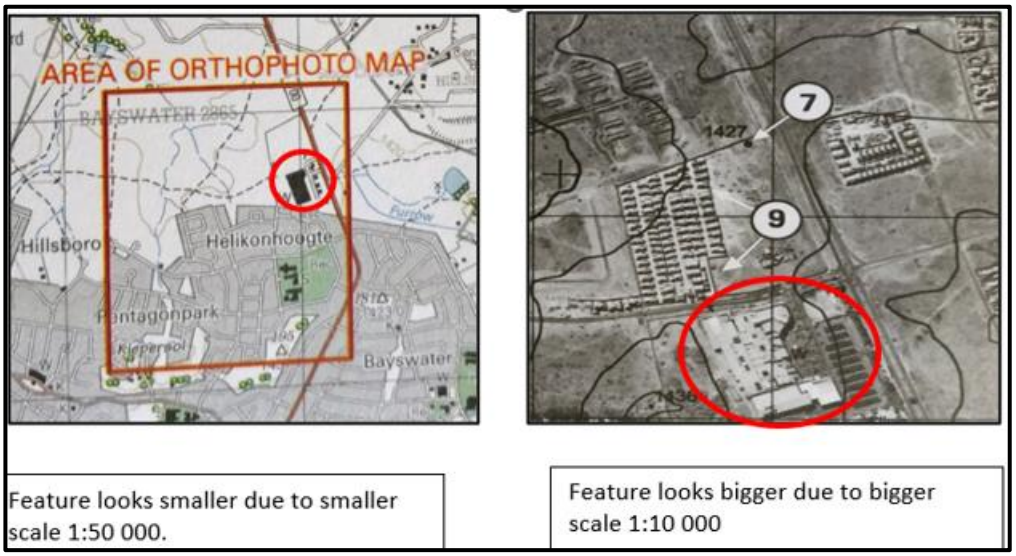
(l) In Q3.3.1 and Q3.3.2 (3 marks) a clear lack of understanding/interpretation of GIS concepts, like data manipulation and data analysis, resulted in a poor performance by many candidates.

(m) In Q3.3.3(a) and (b) (2 marks) candidates lacked skills required to do a paper GIS. The difference between *human-made* features and *natural (physical)* features was a challenge. A number of candidates did not have knowledge of the different types of spatial objects.

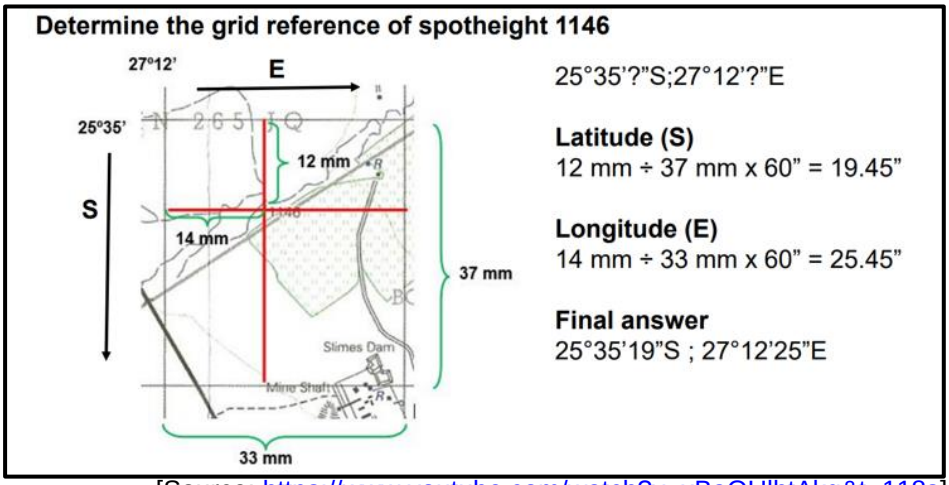
(n) In Q3.3.4 and Q3.3.5 (3 marks) the lack of understanding and application of data integration resulted in a very poor performance by candidates.

Suggestions for improvement

(a) Using visual representations, e.g. the topographical and orthophoto maps to create an understanding about scale and the difference in scale, and differentiating between raster and vector data, is far more effective than explaining it using notes. This is illustrated below:



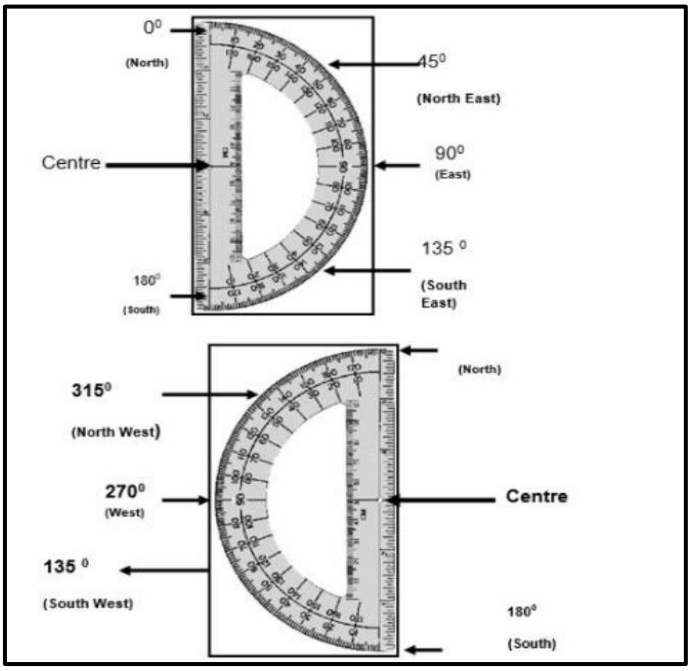
(b) When calculating grid reference (Q3.1.3), all steps should be clearly illustrated using a map. This is illustrated below

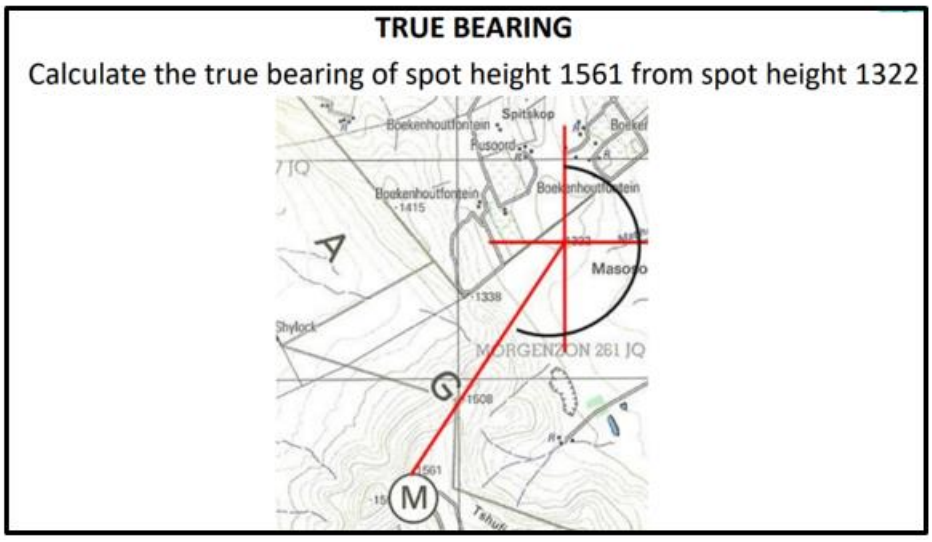


[Source: https://www.youtube.com/watch?v=xBaQUlhtAkg&t=118s]

(c) With regard to Q3.1.4, the basics, such as the correct use of the protractor, identifying

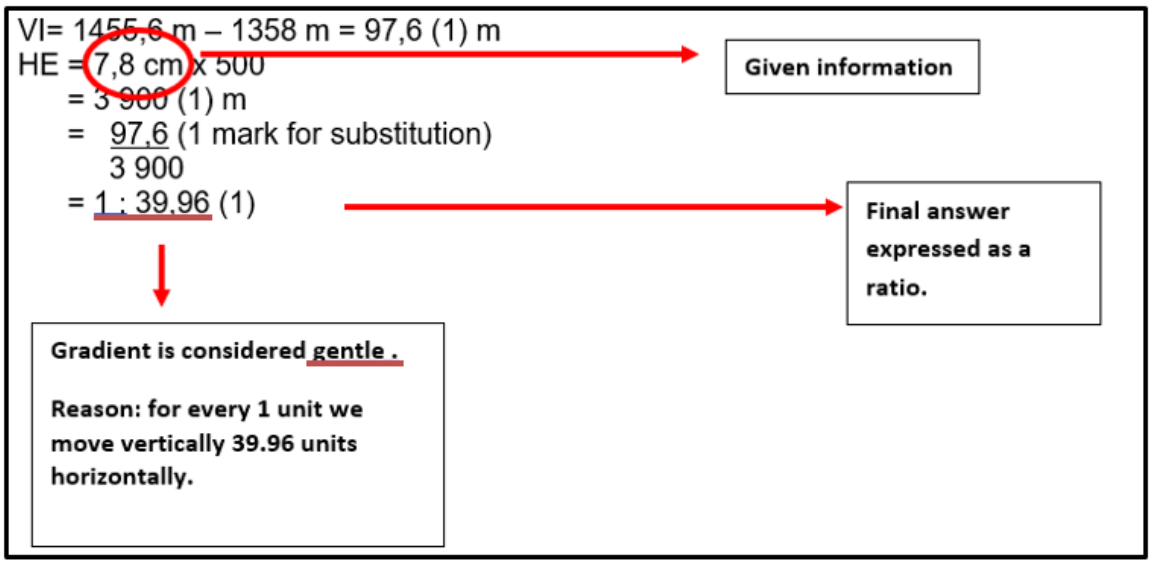
true north, drawing perpendicular lines correctly on the 'from' point and joining the intersection of the perpendicular lines to the 'to' point must be clearly illustrated. The example below illustrates all these steps.





[Source: https://www.youtube.com/watch?v=tBn7bICN0tQ&list]

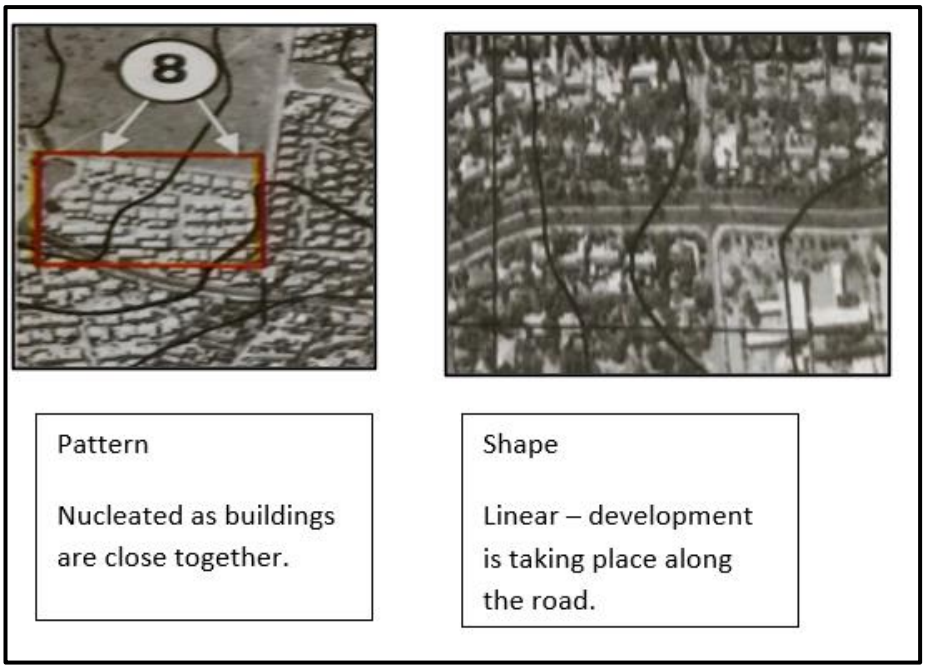
(d) Teachers need to emphasise the importance of showing all the steps in calculations (such as in Q3.1.5). The geographical method of calculation of *average gradient* should be used and the final answer should always be expressed as a ratio. Learners must note that if information, e.g. the map distance is given (7,8 cm), they do not need to re-calculate it. The application of *average gradient* should be practised with learners as illustrated below:



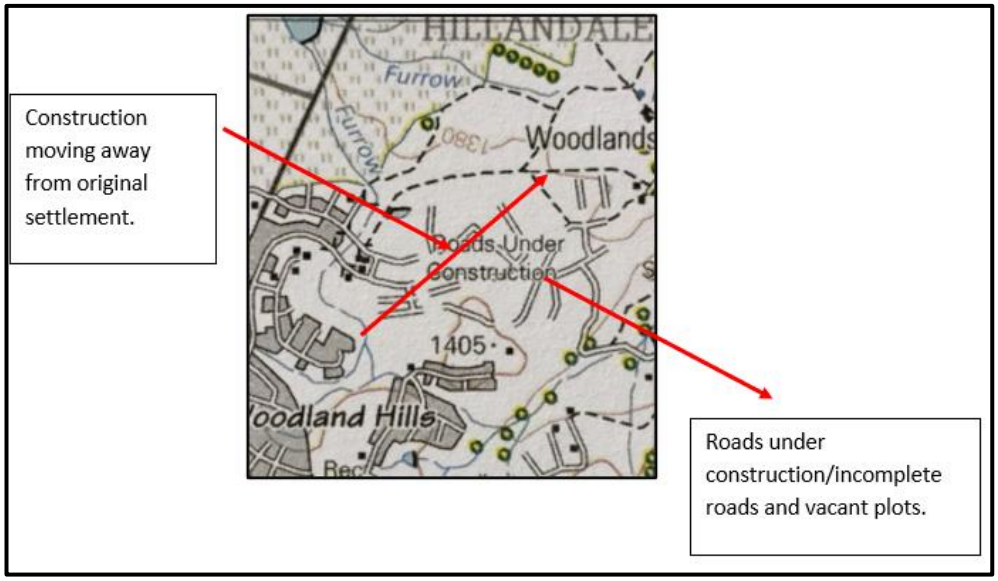
(e) Learners must note both degrees and minutes in the *magnetic declination* calculation. All steps must therefore show the correct unit, e.g. Q3.1.5.

Mean annual change: 12' (1) westwards
Total annual change: 2 x 12' = 24' (1) westwards
MD for 2023: 29°00' + (1) 24' = 29°24' west of true north (1)

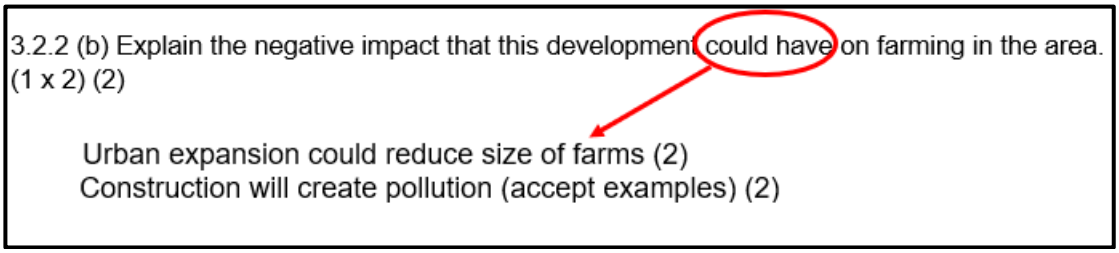
(f) A clear differentiation between *pattern* and *shape* of settlements needs to be taught. Visual illustrations, as illustrated below, will be more effective in teaching this difference (Q3.2.1).



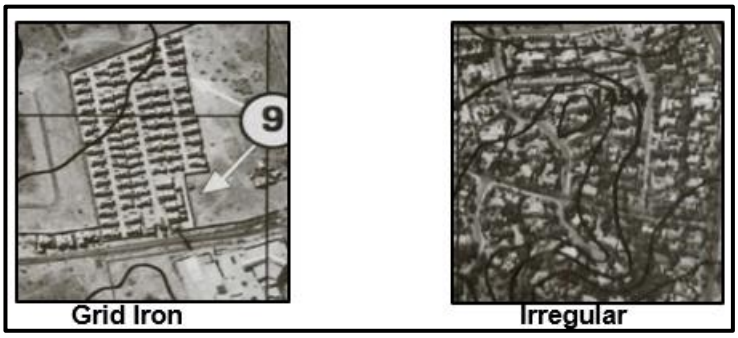
(g) The importance of map evidence needs to be emphasised as illustrated in the extract of the map below. Learners need to focus on the mark allocation, e.g. in Q3.2.2 where 2 x 1 indicated that 2 responses were required.



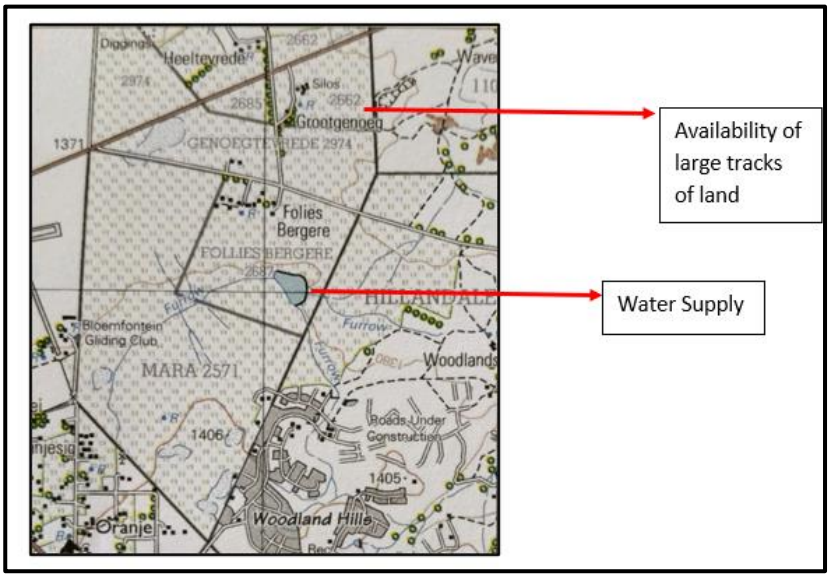
(h) Learners must be made aware that, on occasion, there are questions that may not require all answers to be taken from the map, e.g. in Q3.2.2 (b) the question states, 'could have'.



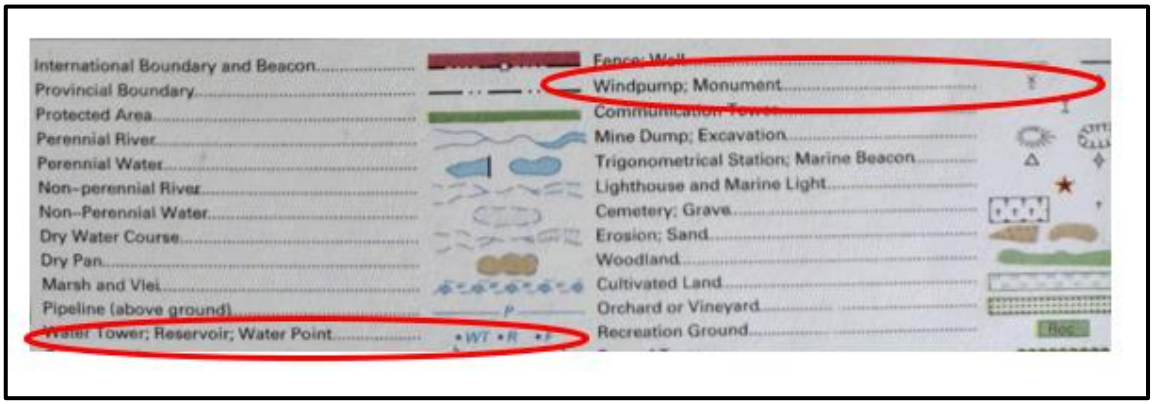
(i) For Q3.2.3 learners need to be able to identify street patterns on both the topographical map and the orthophoto map. An effective method is using the maps to illustrate this.



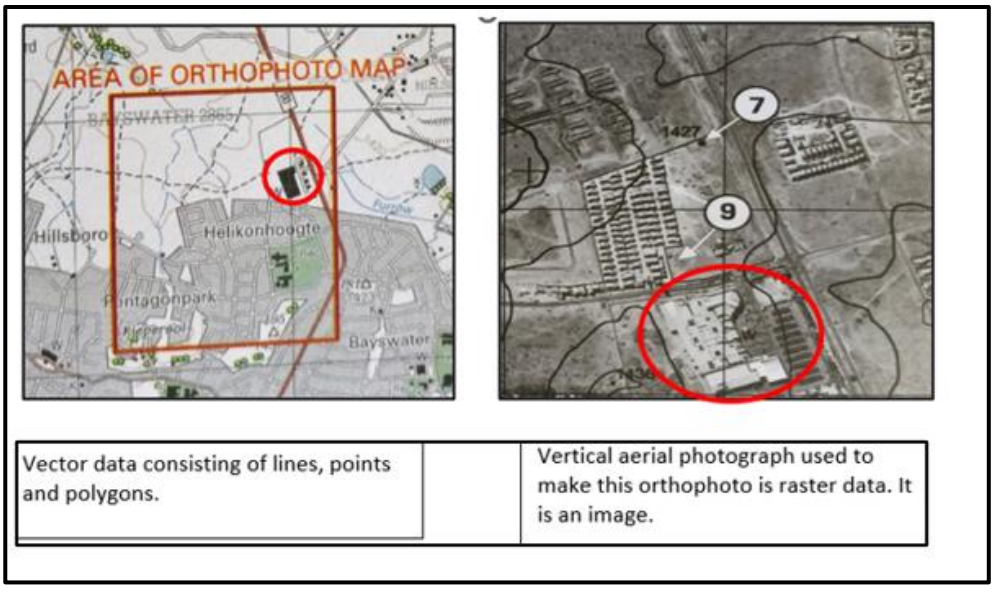
(j) Q3.2.4(b) related to blocks A1/A2 and B1/B2 and learners must be taught that these questions require evidence from the map, as indicated below:



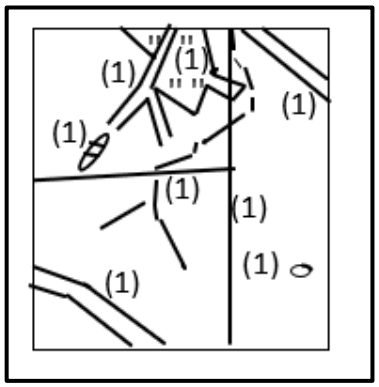
(k) Learners need to look at both the reference and the topographical map in order to identify strategies for water supply (Q3.2.4 (c). This is illustrated below:



(l) In order for learners to answer questions like Q3.3.1 successfully, they need to have a proper understanding of raster and vector data as highlighted below:



(m) For Q3.3.3 learners need to know that when doing a paper GIS, they must follow the instructions specifically, e.g. they need to re-draw the block and insert only the required features and not just indicate the features without the block or include all features found in the block.



(n) The concept *data integration* needs to be well explained to learners. Learners need to be made aware that there are different methods of *data integration,* e.g. *data layering* and combining of different statistics. *Data integration* can be defined as combining sources of information/data layers.

CHAPTER 7

HISTORY

The following report should be read in conjunction with the History question papers of the November 2024 NSC examinations.

7.1 PERFORMANCE TRENDS (2020–2024)

The number of candidates who sat for the History examinations in 2024 increased by 11 706, compared to that of 2023.

There was a marginal improvement in the pass rate this year. Candidates who passed at the 30% level improved from 87,7% in 2023 to 90,3%. There was a corresponding improvement in the pass rate at the 40% level over the past two years from 68,4% to 71,8%.

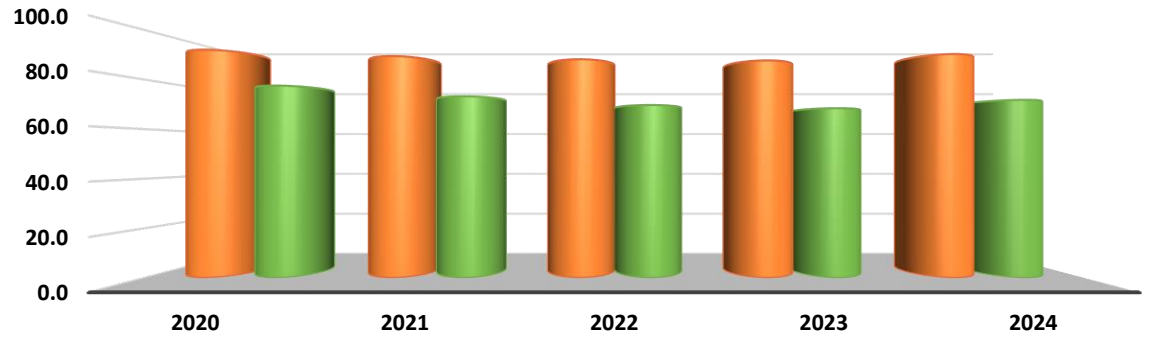
The percentage of distinctions over 80% has remained consistent for the past two years, at 3,2%. Given the increase in the size of the 2024 cohort, this converts into an increase in the total number of distinctions from 7 233 to 7 598.

The various commendable support programmes employed by teachers, subject advisors and provincial education departments were continued in 2024. The resourcefulness and diligence of the above-average candidates also contributed to the overall improvement in the subject.

Table 7.1.1 Overall achievement rates in History

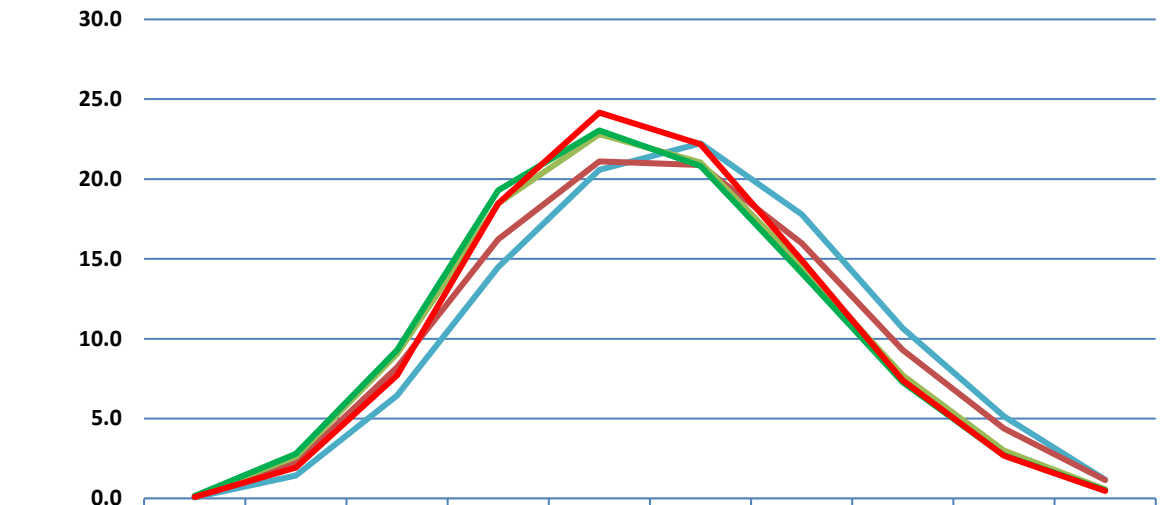
Year	No. wrote	No. achieved at 30% and above	% achieved at 30% and above	No. achieved at 40% and above	% achieved at 40% and above
2020	173 498	159 737	92,1	134 610	77,6
2021	227 448	203 473	89,5	166 576	73,2
2022	237 327	209 315	88,2	165 483	69,7
2023	225 731	198 052	87,7	154 501	68,4
2024	237 437	214 380	90,3	170 523	71,8

Graph 7.1.1 Overall achievement rates in History (percentage)



	2020	2021	2022	2023	2024
% achieved at 30% and above	92.1	89.5	88.2	87.7	90.3
% achieved at 40% and above	77.6	73.2	69.7	68.4	71.8

Graph 7.1.2 Performance distribution curves in History (percentage)



	0-9.9	10-19.9	20-29.9	30-39.9	40-49.9	50-59.9	60-69.9	70-79.9	80-89.9	90-100
2020	0.1	1.4	6.4	14.5	20.6	22.2	17.8	10.7	5.1	1.2
2021	0.1	2.2	8.2	16.2	21.1	20.9	16.0	9.3	4.4	1.1
2022	0.1	2.6	9.0	18.5	22.8	21.0	14.6	7.7	3.0	0.6
2023	0.2	2.8	9.3	19.3	23.0	20.8	14.1	7.3	2.7	0.5
2024	0.1	1.9	7.7	18.5	24.2	22.2	14.9	7.4	2.7	0.5

General comments on Paper 1 and Paper 2

The year 2024 marked the fourth year (one year extension) of a new three-year cycle in the subject History, with the introduction of new topics in both papers.

Paper 1 included source-based questions which examined *Origins of the Cold War in Europe, Independent Africa: Case study – Angola* and the *Civil Rights Movement,* as well as three essays based on the *Extension of the Cold War in Vietnam, Independent Africa (the Congo) and Civil Society Protests from the 1950s to the 1970s: The Black Power Movement.*

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Paper 2 included two relatively new sections. These are the source-based question, i.e. *Internal Resistance* and the essay, i.e. the *Black Consciousness Movement (BCM)*.

There has been a consistent and gradual improvement in the quality of candidates' performance. It is gratifying to note that candidates are being taught the prescribed content in both Paper 1 and Paper 2, and this is also apparent in the number of candidates who responded to specific choice questions.

However, in Section A of both question papers (source-based questions), it was clear that a significant number of candidates were unable to extract responses verbatim from the addendum as per the question's requirement. Many of the candidates paraphrased their responses. Some candidates were unable to answer middle- and higher-order questions. These questions required candidates to interpret, analyse, evaluate, compare, and determine the usefulness, limitations and reliability of the sources. Furthermore, many candidates could not write logical and coherent paragraphs based on the key question.

In Section B of the question papers (essay questions), most candidates displayed good content knowledge but were unable to take a stance and develop a balanced and independent line of argument. Several essays lacked introductions and convincing conclusions. It is worrisome to note that most essay responses were prepared in advance for candidates.

Teachers must make every effort to ensure that the prescribed content is taught in a user-friendly manner, and this must be underpinned by the requisite historical skills to ensure a further improvement in the overall pass rate.

7.2 OVERVIEW OF CANDIDATES' PERFORMANCE IN PAPER 1

(a) Generally, candidates' performance in this question paper ranged from fair to very good. In some provinces candidates were able to achieve total marks (150) for the paper. It was evident that many candidates opted for two essay questions and one source-based question. The popular choice questions were Q1, Q3, Q4 and Q6. Few candidates attempted Q2 and Q5.

(b) In Section A: Source-based questions, most candidates found it challenging to define concepts in their own words or explain concepts in the context of a section. They were unable to interpret statements from the sources effectively. It was also evident that many candidates lacked the ability to extract, select, interpret, analyse, evaluate, and synthesise information from the sources that were provided. This resulted in unsatisfactory responses to higher-order questions, where candidates were unable to explain the *limitations*, *reliability,* and *usefulness* of sources. Comparison of information from different sources also proved to be challenging.

(c) Most candidates relied on the relevant information in the sources, with little or no reference to their own knowledge. They were unable to write a well-structured paragraph effectively. Candidates simply copied information from the sources and some of the candidates wrote their paragraphs in point/bullet form. This is not the requirement in History.

(d) Successful candidates were able to interpret, analyse, evaluate, and synthesise evidence from the given sources and also use their own knowledge to consolidate their responses. They were also able to comment on the *usefulness*, *limitations* and *reliability* of the sources used.

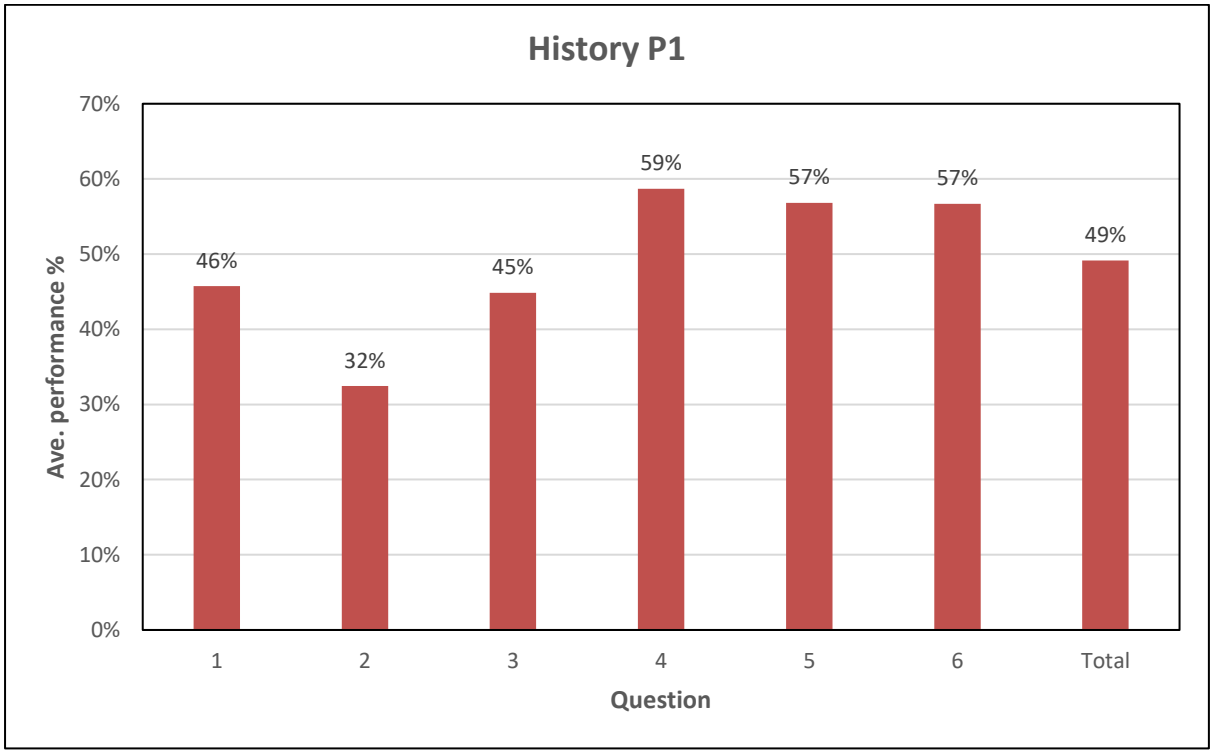
(e) In Section B: There was a general improvement in essay-writing this year as most candidates could write and complete a comprehensive essay. A new trend is emerging where many candidates opted to answer Question 5 (Congo). Overall, candidates demonstrated the required content knowledge in the essays but could not develop relevant introductions and conclusions or take a stance and defend it with more persuasive lines of argument.

(f) However, a worrying number of candidates' essay responses took a form of model (prepared) answers or regurgitation of content with no effort to write an original argumentative essay.

7.3 DIAGNOSTIC QUESTION ANALYSIS FOR PAPER 1

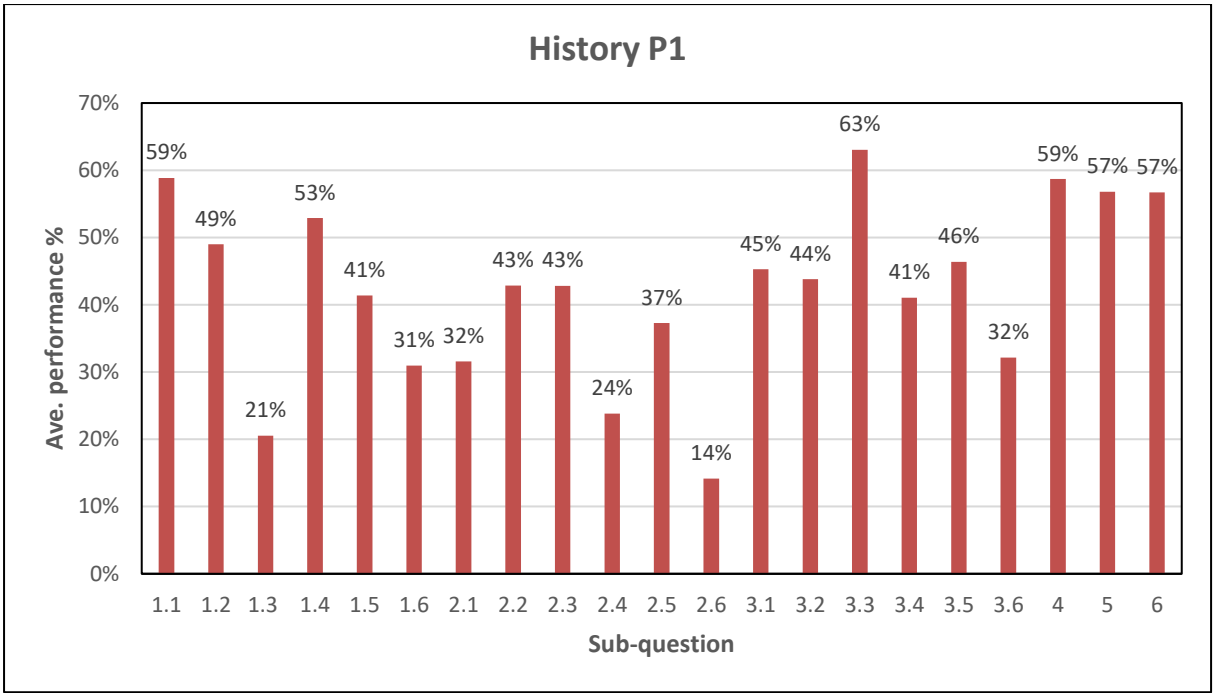
The following graph is based on data that was gathered from a random sample of candidates' scripts. While this graph might not accurately reflect the national averages, it serves as a useful tool to analyse how candidates performed in specific choice questions.

Graph 7.3.1 Average performance per question in Paper 1



Q	Topic(s)
1	The Cold War: The Origins of the Cold War
2	Independent Africa: Africa in the Cold War: Case Study – Angola
3	Civil Society Protests from the 1950s to the 1970s: The US Civil Rights Movement
4	The Extension of the Cold War – Case Study: Vietnam
5	How was Independence Realised in Africa in the 1960s and 1970s? Case Study: The Congo
6	Civil Society Protests from the 1950s to the 1970s: The Black Power Movement

Graph 7.3.2 Average performance per subquestion in Paper 1



Q	Skills assessed	Q	Skills assessed	Q	Skills assessed	Q	Skills assessed
1.1	1.1.1 Extraction 1.1.2 Extraction 1.1.3 Concept 1.1.4 Interpretation 1.1.5 Extraction	**2.1**	2.1.1 Extraction 2.1.2 Concept 2.1.3 Interpretation 2.1.4 Interpretation 2.1.5 Limitation	**3.1**	3.1.1 Extraction 3.1.2 Extraction 3.1.3 Interpretation 3.1.4 Interpretation	**4**	Essay
1.2	1.2.1 Extraction 1.2.2 Interpretation 1.2.3 Reliability	**2.2**	2.2.1 Extraction 2.2.2 Interpretation 2.2.3 Interpretation 2.2.4 Extraction	**3.2**	3.2.1 Concept 3.2.2 Extraction 3.2.3 Interpretation 3.2.4 Interpretation	**5**	Essay
1.3	Compare Sources	**2.3**	2.3.1 Interpretation 2.3.2 Interpretation	**3.3**	3.3.1 Extraction 3.3.2 Interpretation	**6**	Essay
1.4	1.4.1 Extraction 1.4.2 Concept 1.4.3 Interpretation 1.4.4 Extraction	**2.4**	Compare Sources	**3.4**	Compare Sources		
1.5	1.5.1 Interpretation 1.5.2 Interpretation 1.5.3 Interpretation	**2.5**	2.5.1 Extraction 2.5.2 Interpretation 2.5.3 Extraction 2.5.4 Concept	**3.5**	3.5.1 Extraction 3.5.2 Extraction 3.5.3 Concept 3.5.4 Extraction 3.5.5 Usefulness		
1.6	Paragraph	**2.6**	Paragraph	**3.6**	Paragraph		

7.4 ANALYSIS OF CANDIDATES' PERFORMANCE IN EACH QUESTION IN PAPER 1

SECTION A: SOURCE-BASED QUESTIONS

QUESTION 1: THE COLD WAR: THE ORIGINS OF THE COLD WAR

Common errors and misconceptions

(a) In Q1.1.3 most candidates could not explain *communism* in their own words. They provided generalised responses such as 'it is not private and is used by the state and people' and 'refers to a class in society'.

(b) A large number of candidates in Q1.1.4 were unable to explain why the fleeing of people to the West in 1961 ended up damaging the following: (a) 'the credibility of the GDR' and (b) 'the workforce of the GDR'. They simply extracted the information provided in the source, which was not a requirement to answer this question.

(c) Q1.1.5 and Q1.2.1, which were extraction questions, were poorly answered and candidates found it difficult to score the allocated 2 marks and the 3 marks respectively. These questions required candidates to extract responses directly from the sources but many of the candidates paraphrased their responses.

(d) In Q1.2.2 many candidates had difficulty to comment on what was implied by the words, 'It's all over now with trips to Berlin', in the context of what happened on 13 August 1961. They made general statements without providing relevant explanations.

(e) In Q1.2.3 several candidates struggled to comment on the *reliability* of Source 1B for a historian researching an account of what transpired on the morning of 13 August 1961. Responding to a question on the skill of identifying *reliability* remains a problem for most candidates. They used information from the source verbatim and confused *usefulness* with *reliability* of a source.

(f) Q1.3 required candidates to compare two sources. Candidates experienced difficulty in explaining how information in Source 1A supports the evidence in Source 1B regarding events that took place in Berlin on 13 August 1961. Most candidates only provided one comparison.

(g) Most candidates could not explain the term *capitalists* in the context of West Berlin (Q1.4.1). The words, *in the context of*, were misunderstood and many candidates made general statements without providing relevant explanations. Some candidate's responses, such as 'East Berlin was communists', refers to an East Berlin visiting relatives.

(h) In Q1.4.3, from the fact that Noffke and a group (words seem to be omitted) were prepared to dig a tunnel of 200 yards to smuggle their families to the West. It was evident that these candidates did not fully comprehend Source 1C. They simply extracted the information provided in the source, which was not a requirement to answer the question.

(i) In Q1.5.1 most candidates were unable to explain whether you would consider the words, 'The men are becoming more jumpy as the Berlin Crisis deepens, Comrade …', to be an appropriate caption for the cartoon. They provided irrelevant extractions,

non-factual responses and there was a clear lack of comprehension on the USA and USSR power struggle.

(j) In Q1.5.3 some candidates lacked the ability to explain the conclusion that one can draw from the body language of the two generals in the foreground, in the context of defections that were taking place. They made general statements without providing relevant explanations.

(k) The majority of candidates responded poorly to the paragraph question (Q1.6). Candidates copied information directly from the sources. They were, however, unable to use the information in the sources to write a comprehensive paragraph. The majority of learners displayed an inability to interpret, evaluate and synthesise information from different sources. A few candidates wrote their paragraphs in point form/bullet. This is not a requirement of paragraph writing.

QUESTION 2: INDEPENDENT AFRICA: AFRICA IN THE COLD WAR: CASE STUDY: ANGOLA

Common errors and misconceptions

(a) Most candidates could not explain the term *sovereignty* in their own words (Q2.1.2). They provided generalised responses such as 'refers to a country not being powerful enough' and 'the power to take over a country'.

(b) In Q2.1.3 most candidates were unable to explain the significance of Angola's air superiority during the Battle of Cuito Cuanavale. Some had a challenge to respond to the phrase, 'air superiority' in the question. It is clear that they lacked basic interpretation skills.

(c) In Q2.1.4 a large number of candidates could not comment on what is implied by the statement, 'it was important in southern Africa that white South Africans could be killed by bullets fired by black Africans and black Cubans', in the context of the Angolan war. They lacked basic interpretation skills.

(d) Many of the candidates struggled to explain the *limitations* of Source 2A for a historian researching the outcome of the Battle of Cuito Cuanavale. Most candidates had a challenge with the skill of identifying limitation. They merely explained the usefulness of the source and some merely copied the contextualisation of the source and provided this as their response.

(e) In Q2.2.2 some candidates could not explain why the United States used Mobutu and South Africa to intervene during the Battle of Cuito Cuanavale. These candidates lacked knowledge and understanding of the question.

(f) In Q2.2.3 most candidates could not comment on why Castro believed, 'there would have been no possibility of a successful outcome in Angola without the political and logistical support from the Soviet Union …'. This is probably due to their lack of knowledge of the Soviet Union's role in the Angolan Civil War.

(g) In Q2.3.2 many candidates could not explain the significance of the presence of the United Nations' Secretary General during the signing of the Tripartite Accord. They provided irrelevant and non-factual responses and there was a clear lack of comprehension on the role of the United Nations in the signing of the Tripartite Accord.

(h) The majority of candidates had difficulty comparing the information in Sources 2A and 2C regarding the signing of the Tripartite Accord in Q2.4. Many of them could not link the information in both sources.

(i) Most candidates could not explain the term *internationalism* in the context of Cuba's foreign policy (Q2.5.4). The words, *in the context of*, were misunderstood and many candidates made general statements without providing relevant explanations.

(j) A large number of candidates showed a lack of proficiency in paragraph-writing skills and did not answer the given question. Some candidates looked at sources in isolation. Candidates required the ability to utilise the sources to support their response to a question without a strong dependence on using direct quotes from the source itself.

QUESTION 3: CIVIL SOCIETY PROTESTS FROM THE 1950s TO THE 1970s: THE US CIVIL RIGHTS MOVEMENT

This proved to be a popular question as it was attempted by many candidates. The candidates' performance ranged from fair to good.

Common errors and misconceptions

(a) In Q3.1.3 a large number of candidates struggled to identify to whom the phrase, 'evil persons' referred regarding the preparations for the March on Washington in 1963. They provided general responses such as 'whites' and 'government officials'. This demonstrates a lack of understanding of the content.

(b) In Q3.1.4 a large number of candidates struggled to comment on the implication of the statement, 'We ask each and every one in attendance … to place the cause (March on Washington) above all else.' They lacked knowledge and failed to interpret the question correctly. They used verbatim information from the source.

(c) It was evident in Q3.2.4 that some candidates were unable to comment on why the 'I Have a Dream' speech may be regarded as historically significant. Many candidates responded by rewriting the message from the source without explaining it. Some also provided only one response, yet the question required two responses.

(d) Question 3.3.1 was an extraction question. It was poorly answered and candidates found it difficult to score the allocated 2 marks. This question required candidates to extract responses directly from the sources but many of the candidates paraphrased their responses.

(e) Some candidates experienced difficulty with the comparison question (Q3.4). They could not explain how Source 3B was supported by Source 3C regarding the activities on the day of the March on Washington on 28 August 1963. Most candidates only provided one comparison.

(f) Q3.5.3 was poorly answered because many candidates were unable to explain the term *discrimination* in the context of the state of Alabama.

(g) In Q3.5.5 several candidates struggled to comment on why a historian would find this source useful when studying the reaction of the USA government to the March on Washington. Responding to a question on the skill of identifying *usefulness* remains a problem for most candidates. They used verbatim information from the source and confused *usefulness* with *reliability* of a source.

(h) In Q3.6 some candidates struggled to use the information in the relevant sources and their own knowledge to write a coherent paragraph, explaining why civil rights marchers in the USA organised the March on Washington on 28 August 1963.

SECTION B: ESSAY QUESTIONS

QUESTION 4: THE EXTENSION OF THE COLD WAR – CASE STUDY: VIETNAM

This was the most popular question and the performance of candidates who attempted this question ranged from very satisfactory to good. There were many candidates who achieved 50 marks for this question. The marks obtained were marginally better than those attained in the other essays.

Common errors and misconceptions

(a) Many candidates were unable to discuss the following statement, *'Explain to what extent the technological superiority of the United States army could not help to defeat a small army of Viet Cong guerrillas in the Vietnamese War between 1962 and 1973*. They had difficulty understanding the term *technologically superiority*.

(b) Some candidates provided an unnecessary and detailed background about Vietnam. Candidates should have addressed the question.

(c) A substantial number of candidates applied the *L* in the *PEEL* method incorrectly. They ended each paragraph by simply repeating the statement provided in the question which did not relate well to the information provided in the preceding paragraph.

(d) It was also noted that the essays of weaker candidates lacked proper introductions and contained irrelevant background information. In addition, many could not sustain their line of argument or draw convincing conclusions.

(e) Chronology should be stressed in this question as the line of argument depends on it.

QUESTION 5: INDEPENDENT AFRICA: HOW WAS INDEPENDENCE REALISED IN AFRICA IN THE 1960s AND 1970s? – CASE STUDY: THE CONGO

The number of candidates responding to this question is increasing. Generally, the performance ranged from satisfactory to good.

Common errors and misconceptions

(a) A large percentage of candidates who attempted this question were able to agree with the statement, *'Mobutu Sese Seko's political, economic, social and cultural policies, which he introduced in the Congo after gaining independence in the 1960s, were anti-colonial in nature'*. They however, experienced difficulty, in understanding the term *anti-colonial* within the given context.

(b) The content presented was largely discursive and there was an attempt to develop a line of argument.

(c) Although many candidates were able to discuss the policies of Mobutu Sese Seko, they were unable to link it with anti-colonialism. Responses demonstrated relevant introductions and conclusions.

(d) Most candidates seem to have written prepared or model essays rather than argumentative responses.

QUESTION 6: CIVIL SOCIETY PROTESTS FROM THE 1950s TO THE 1970s – THE BLACK POWER MOVEMENT

Most candidates answered this question and seemed to have prepared for the theme thoroughly. Those who did not perform well, appeared to be candidates who had not covered or were not taught this theme at school.

Common errors and misconceptions

(a) Many candidates were unable to critically discuss the statement '*The Black Power Movement adopted a militant approach to challenge discrimination against African Americans in the USA in the 1960s*'.

(b) Some candidates just gave a narrative account of Black Power, the philosophy, the leaders and the Black Panthers without mentioning how it adopted a militant approach to challenge discrimination against African Americans in the USA in the 1960s.

(c) A few candidates wrote essays that lacked introductions, a logical and sequential body of events as well as persuasive conclusions.

(d) Most candidates seemed to have written prepared or model essays rather than argumentative responses.

7.5 OVERVIEW OF CANDIDATES' PERFORMANCE IN PAPER 2

(a) Generally, candidates' performance in this question paper ranged from poor to excellent with most of them being above average.

(b) Many candidates chose two essay questions and one source-based question, and they performed better than those who chose one essay and two source-based questions.

(c) Candidates who chose two source-based questions and one essay question did not do well mostly because of their inability to respond to low order (extraction), middle-order (interpretation and analysis) as well as higher-order (usefulness, reliability, limitations, comparison and paragraph-writing) questions.

(d) The popular choice questions were Q1 and Q2 (Source-Based), and Q4 and Q5 (Essays). Q3 and Q6 were unpopular as they were attempted by few candidates. Their performance was also poor.

(e) There was an increase of a noticeable negative trend in essay writing. The number of prepared essays (model answers) is becoming more common. Most candidates failed to provide properly structured argumentative essays with a relevant line of argument.

(f) English seemed to be a language barrier to most second language speakers. Most candidates failed to respond to interpretation questions because of misunderstanding or misinterpreting the questions posed. Many of them lost a lot of marks in the process.

(g) There were few candidates who managed to score 50 marks per question, implying that there would be a few distinctions awarded.

(h) Unlike in the 2023 Diagnostic Report, that indicated that paragraph writing and

questions involving *comparisons*, *usefulness*, *reliability* and *limitations* of sources are posing a challenge to most candidates, there is a marked improvement in paragraph writing, usefulness and reliability of sources. There are, however, still challenges in responding to limitations and comparison of sources – especially on differences.

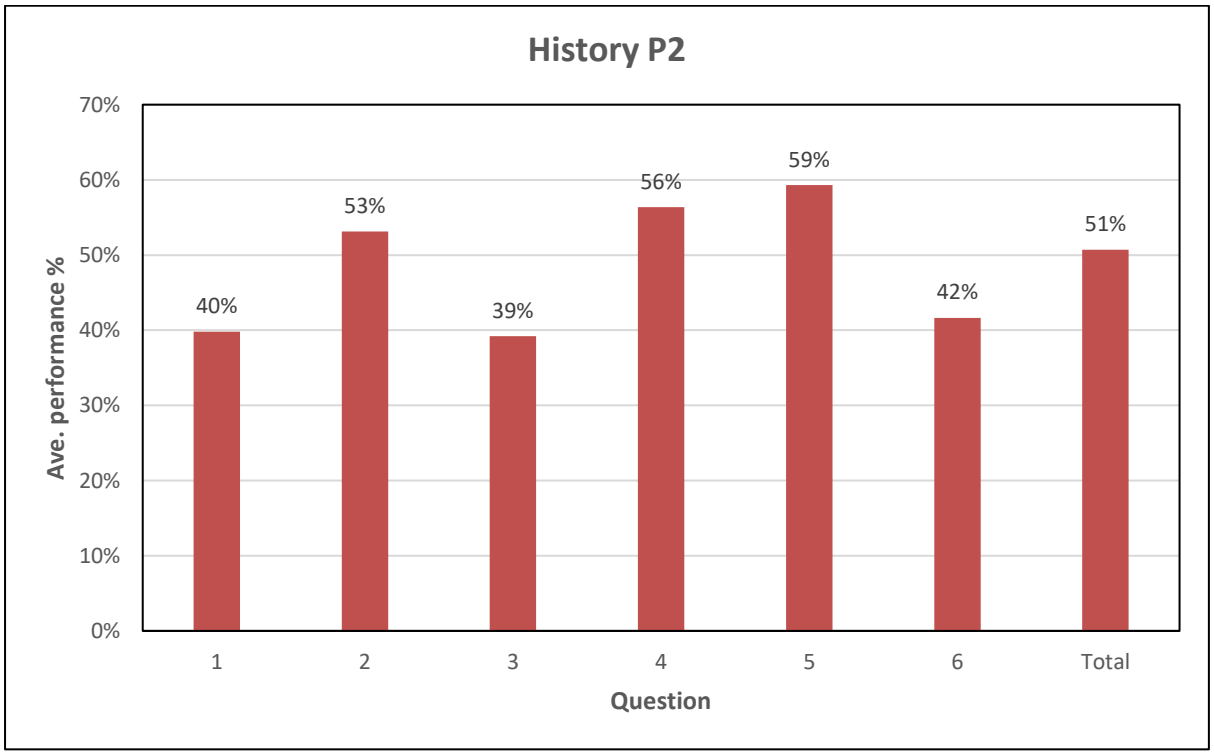
(i) Candidates who performed at an above average level were able to extract fully, interpret, analyse, evaluate and synthesise evidence from the given sources and also use their own knowledge to consolidate their responses.

(j) In Section B there was a noticeable increasing negative trend in essay-writing as most candidates presented prepared essays based on previous question papers. As a result, they failed to take a stance that is directly responding to the question posed. Consequently, their response did not provide a clear line of argument. The mastery of content on the other hand helped many candidates to perform at an average level while those who were very good at content knowledge excelled not only in developing relevant introductions and conclusions, but also in taking a line of argument and sustaining it throughout. The latter accounts for candidates who were able to score 50 out of 50 on essays – and therefore to the improved performance in general.

7.6 DIAGNOSTIC QUESTION ANALYSIS FOR PAPER 2

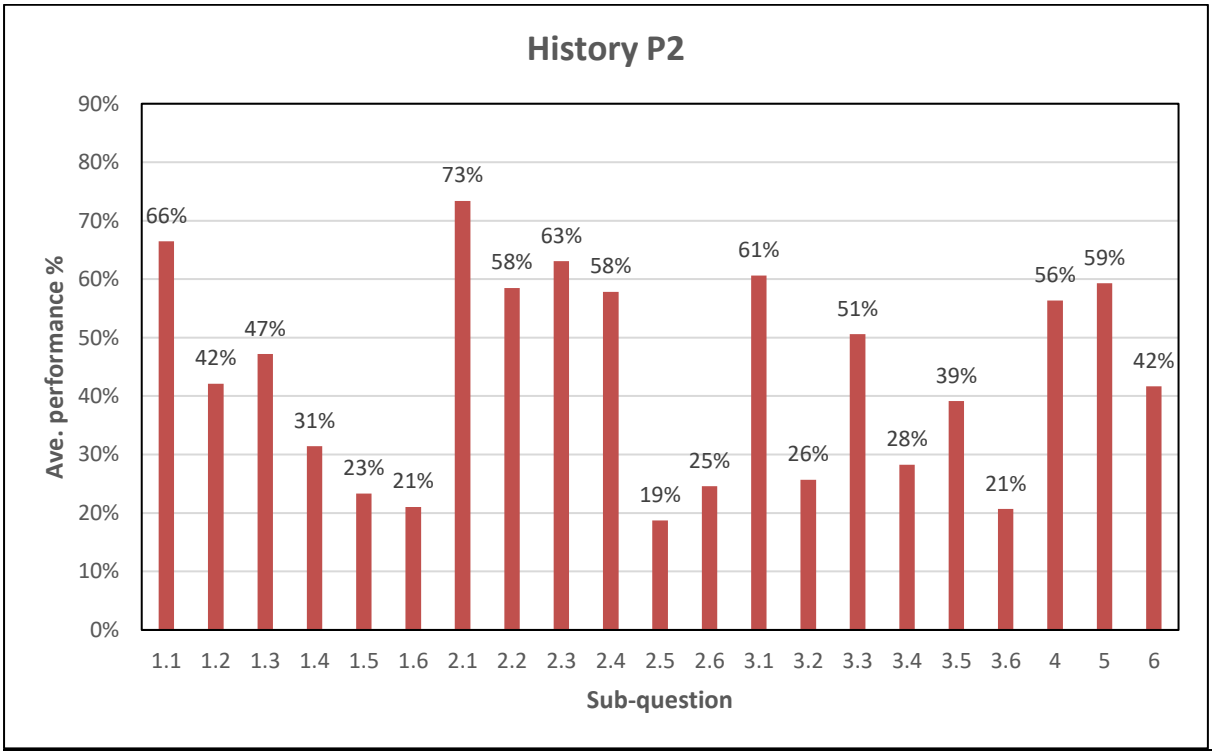
The following graph is based on data that was gathered from a random sample of candidates' scripts. While this graph might not accurately reflect the national averages, it serves as a useful tool in analysing how candidates performed in specific choice questions.

Graph 7.6.1 Average performance per question in Paper 2



Q	Topics
1	Civil Resistance, 1970s to 1980s: SA – The crisis of apartheid in the 1980s: Internal resistance to reforms
2	The coming of democracy to South Africa and coming to terms with the past – The TRC
3	The end of the Cold War and a New World Order, 1989 to the present – A new world order
4	Civil Resistance, 1970s to 1980s: South Africa: Challenge of Black Consciousness to apartheid state
5	The coming of democracy to SA and coming to terms with the past – Negotiated settlement and the GNU
6	End of Cold War and a New World Order: Impact of Gorbachev's reforms on Soviet Union and SA

Graph 7.6.2 Average performance per subquestion in Paper 2



Q	Skills assessed	Q	Skills assessed	Q	Skills assessed	Q	Skills assessed
1.1	1.1.1 Extraction 1.1.2 Extraction 1.1.3 Extraction 1.1.4 Interpretation	**2.1**	2.1.1 Extraction 2.1.2 Extraction 2.1.3 Interpretation 2.1.4 Term (Define)	**3.1**	3.1.1 Term (Define) 3.1.2 Extraction 3.1.3 Interpretation 3.1.4 Extraction 3.1.5 Interpretation	**4.**	Essay
1.2	1.2.1 Interpretation 1.2.2 Interpretation	**2.2**	2.2.1 Extraction 2.2.2 Concept (Explain) 2.2.3 Interpretation 2.2.4 Interpretation	**3.2**	3.2.1 Interpretation 3.2.2 Interpretation 3.2.3 Limitations	**5.**	Essay
1.3	1.3.1 Extraction 1.3.2 Interpretation 1.3.3 Extraction 1.3.4 Term (Define) 1.3.5 Interpretation	**2.3**	2.3.1 Interpretation 2.3.2 Interpretation 2.3.3 Interpretation	**3.3**	3.3.1 Extraction 3.3.2 Interpretation 3.3.3 Extraction	**6.**	Essay
1.4	1.4.1 Extraction 1.4.2 Interpretation 1.4.3 Concept (Explain) 1.4.4 Usefulness	**2.4**	2.4.1 Extraction 2.4.2 Interpretation 2.4.3 Interpretation 2.4.4 Reliability	**3.4**	Compare Sources		
1.5	Compare Sources	**2.5**	Compare Sources	**3.5**	3.5.1 Extraction 3.5.2 Extraction 3.5.3 Interpretation 3.5.4 Concept (Explain)		
1.6	Paragraph	**2.6**	Paragraph	**3.6**	Paragraph		

7.7 DIAGNOSTIC ANALYSIS OF CANDIDATES' PERFORMANCE IN EACH QUESTION IN PAPER 2

SECTION A: SOURCE-BASED QUESTIONS

QUESTION 1: CIVIL RESISTANCE, 1970s TO 1980s: SOUTH AFRICA: THE CRISIS OF APARTHEID IN THE 1980s – INTERNAL RESISTANCE TO REFORMS

Common errors and misconceptions

(a) Generally, Q1 was unpopular and performance in this question ranged from poor to average.

(b) Simple extractions, like Q1.1.1; Q1.1.2; Q1.3.3 & Q1.4.1 were poorly performed because some candidates did not provide full responses (extractions). As a result, candidates found it difficult to score 8 marks.

(c) Overall performance in Q1.1.4 was very poor. Candidates were unable to refer to what was implied by *'bread and butter issues'* thereby losing 2 marks.

(d) Most candidates answered the following interpretation questions as if they were extractions: Q1.2.1; Q1.2.2; Q1.3.2; Q1.3.5 & Q1.4.2.
Q.2.2, Q1.3.5 and Q1.4.2 carried 4 marks each. In the process, candidates lost many marks.
In certain instances, many of them provided one response, yet the question required two responses. They either did not understand or misinterpreted the requirements of the questions.

(e) Many candidates were unable to define the term *rent boycott* in Q1.3.4 and to explain the concept *massacre* in Q1.4.3 within the context of the apartheid government's reaction to rent protestors in Mamelodi.

(f) Several candidates had difficulty explaining the *limitations* of the source in Q1.4.4. A few who attempted the question managed to provide only one response and scored only 2 of the 4 marks.

(g) Most candidates could not explain the implication of the statement in Q1.1.4 or the meaning of the statement provided inQ1.4.2. Application of knowledge appeared to be a challenge in unpacking the question posed.

(h) Most candidates failed to score a full 4 marks for the skill of comparison in Q 1.5. Those who scored 2 out of 4 marks, managed to correctly provide one aspect of the expected response.

(i) The paragraph question, (Q1.6) was poorly answered as most candidates extracted answers directly from the sources and could not write an original paragraph. Many candidates lacked the ability to identify relevant evidence from sources and were unable to write logical and coherent paragraphs. As a result, many candidates could only manage a Level 1 (0–2) and Level 2 (3–5) score and not a Level 3 (6–8) score.

QUESTION 2: THE COMING OF DEMOCRACY TO SOUTH AFRICA AND COMING TO TERMS WITH THE PAST – THE TRC

Common errors and misconceptions

(a) Q2.1.1 was poorly answered as some candidates could not fully extract the expected response.

(b) Most candidates responded to the following interpretation questions as extraction questions: Q2.1.3; Q2.2.3; Q2.3.1; Q2.3.2; Q2.3.3; Q2.4.2 and Q2.4.3. In the process, candidates lost several marks that consequently limited the number of top performers or distinctions.

(c) Many candidates could not define the term, *traitor* in their own words (Q2.1.4) nor explain the term, *testimony* in the context of application of amnesty to the TRC (Q2.2.2).

(d) A few candidates were totally lost in understanding Q2.2.4. They could not figure out whether Sizwe Kondile or Dirk Coetzee had to ask for forgiveness from the other. This signified lack of content in general and specifically in differentiating between a perpetrator and a victim.

(e) Most candidates could not respond to Q2.4.4 correctly as they struggled to make sense of the reliability of Source 2D within the given context.

(f) In Q2.5 some candidates could not score full marks because of various reasons. A few provided differences that were out of the context provided by the question, while others provided similarities instead of differences.

(g) In Q2.6 most candidates extracted answers directly from the sources and managed to score marks at L1 and L2 of the Marking Rubric.

QUESTION 3: THE END OF THE COLD WAR AND A NEW WORLD ORDER, 1989 TO THE PRESENT – A NEW WORLD ORDER

Common errors and misconceptions

(a) Q3.1.1 was poorly answered by many candidates as they struggled to define the concept, *globalisation* in their own words. The main reason for this could be that the topic was not taught or there was a lack of understanding of the relevant content. Similarly, many candidates failed to explain the term *protectionist* in the context of international trade relations (Q3.5.4).

(b) Most responses on extraction from Q3.1.4; Q3.3.3; Q3.5.1 and Q3.5.2 were incomplete – resulting in wrong answers.

(c) Many candidates failed to respond to Q3.1.3 appropriately because they could not explain why Walmart aggressively pursued the globalisation strategy. This question was worth 2 marks.

(d) Most candidates could not explain the meaning of the statement, '… *South Africa is relatively open to trade*', in the context of globalisation (Q3.1.5). In the process, they lost 2 marks.

(e) Some candidates could not figure out why the photograph (visual source) in Q3.2.1 was taken.

(f) In Q3.3.2 many candidates failed to explain the limitations of the source in the given context.

(g) Most candidates failed to fully respond to Q3.4 which was based on comparison. They mostly provided one aspect of the response and in the process only scored 2 out of 4 marks. Other candidates just copied unrelated information from the two sources as a way of comparison.

(h) Most candidates could not write logical and coherent paragraphs in Q3.6; instead, they merely copied incoherent information directly from the sources – without any attempt to answer the question.

SECTION B: ESSAY QUESTIONS

QUESTION 4: CIVIL RESISTANCE, 1970s TO 1980s: SOUTH AFRICA–THE CHALLENGE OF BLACK CONSCIOUSNESS TO THE APARTHEID STATE

Common errors and misconceptions

(a) Question 4 was the most popular essay question. The performance ranged from average to excellent – with some candidates scoring 50 out of 50. However, some responses were generally descriptive or narrative in nature and lacked the originality required of an effective argumentative essay.

(b) Some candidates generally had a basic understanding of the related content but did not take a stance or line of argument as per the instruction in the question.

(c) A few candidates responded by listing facts and not adopting a thematic approach of targeting political organisations; Labour; Community projects; Soweto uprising; etc.

(d) Most candidates seem to have written prepared essays (based on previously set questions), rather than original argumentative responses.

(e) In most cases, the PEEL method was not properly applied, and where attempts were made, it was more artificial with candidates simply rewriting the topic at the end of each paragraph.

QUESTION 5: THE COMING OF DEMOCRACY TO SOUTH AFRICA AND COMING TO TERMS WITH THE PAST – NEGOTIATED SETTLEMENT AND THE GNU

Common errors and misconceptions

(a) This was the second most popular question which was relatively well answered. Some candidates failed to appropriately use content to respond to the question.

(b) Most candidates did not address the question adequately. Their introductions and conclusions were not properly contextualised. They also failed to maintain a consistent and structured line of argument. Their essays were generally descriptive rather than argumentative in nature.

(c) Most candidates did not know how to link violence with willingness to compromise by various leaders of political parties.

(d) Some candidates had challenges regarding chronology and sequencing of events.

(e) Most candidates seemed to have written prepared or model essays rather than argumentative responses. This was evident by some who took a stance as if the question asked was 'explain to what extent …'

(f) Most candidates did not use content to support their line of argument. They repeated the question statement at the end of every paragraph to an extent that the response became artificial, monotonous, and lacked originality.

QUESTION 6: END OF THE COLD WAR AND A NEW WORLD ORDER – IMPACT OF GORBACHEV'S REFORMS ON SOVIET UNION AND SOUTH AFRICA

Common errors and misconceptions:

(a) This was the least popular question, with performance ranging from poor to average.

(b) The introduction and conclusion were not properly contextualised, and no line of argument was developed.

(c) The question focused on how Gorbachev's reforms led to the disintegration of the Soviet Union, but many candidates focused on its impact in bringing a democratic dispensation to South Africa. The part on South Africa was irrelevant.

(d) Irrelevant responses presented by most candidates suggested that topics were prepared in advance. This was evident in their irrelevant response to the question.

(e) Most candidates provided minimal information on the disintegration of the Soviet Union.

7.8 SUGGESTIONS FOR IMPROVEMENT IN PAPER 1 AND PAPER 2

Teachers should:

(a) Ensure that the prescribed content, as contained in the *CAPS, Abridged Section 4 of CAPS* and the *2021 Examination Guidelines* document, are aligned to the Recovery Annual Teaching Plan (ATP) – 2023/2025.

(b) Incorporate suggestions for improvement in relation to teaching and learning from this Diagnostic Report into teaching and intervention as well as learning strategies.

(c) Refer to past NSC question papers for practical examples on how the challenging assessment skills can be tested and incorporated into lessons, not as model answers.

(d) Train learners to differentiate Level 1 (Extraction) questions and Level 2 (Interpretation) questions. Learners should be taught not to paraphrase when they are asked to extract, and they should not extract information from sources when they are asked to interpret or analyse.

(e) Teachers must teach learners that once the question states 'comment, explain or what is implied, why do you think', (whether it says 'using the source and your own knowledge), they must NEVER extract from the source.

(f) Familiarise learners with the definition of the terms/concepts using own words and how to explain a term/concept in context. Develop a list of concepts (in your own words and within a context) pertaining to each theme that must be covered and apply these concepts throughout the year as each topic is addressed. This will assist learners to refine the skills needed to answer interpretative questions.

(g) Treat mastery of content as one aspect that should be complemented by assessment skills in both source-based and essay questions.

(h) Regarding an approach to any topic in whatever paper, teachers should cover all the bullets as per the *Exam Guidelines*. In each case, they should make use of typical vocabulary and terms/concepts relating to the topic under discussion.

(i) Provide more regular informal assessment (Assessment for Learning) to test the skills on the concepts and the content covered in the previous lesson.

(j) Teach learners to look for key words (clues) in the addendum in answering the Level 1 questions as the applicable answers will be in the source. Guide learners to extract by writing complete responses as it appears in the addendum.

(k) Train learners on paragraph-writing skills. In responding to a paragraph, candidates must not only directly quote from the sources without using their own words.

(l) Expose learners to a variety of sources (e.g. visual, written, statistical, graphical and electronic) and provide opportunities for learners to develop the related source-based skills such as extraction and selection of relevant information, interpreting, analysing, evaluating, comparing and contrasting sources, and ascertaining *limitations*, *usefulness* and *reliability* of sources. Focus on visual literacy to train learners on how to answer questions on why a poster or a photograph was produced. Use the DBE booklet that was prepared for Second Chance learners.

(m) Use item analysis, especially after formal tasks, for positive developmental feedback.

(n) Integrate ITC in their lessons to help learners understand the content and make provision for adaptation. Different sources of information like videos and written sources should be provided to enhance learners' knowledge. Develop user-friendly resource materials, especially for the new content areas such as Origins of the Cold War, Vietnam, Congo, Internal Resistance to Reforms and The Challenge of the Black Consciousness to the apartheid state.

(o) Essay-writing skills should be given priority. Teachers are urged to refrain from preparing model essay responses for learners. They should be taught to construct their own original line of argument.

(p) Teach all the bullets that are indicated in the *Examination Guidelines*. The impact of the collapse of communism in the *Examination Guidelines* indicates that South Africa and the USSR must be done in-depth.

(q) Share model marked scripts with top performing learners to reinforce an understanding of the demands of argumentative essays. This should be done to expose them to a high standard of argumentative essays, not to encourage rote learning.

(r) Broaden and acquire more knowledge, by referring to more than one textbook in

preparation for lesson presentations. Teachers should be aware of new resource materials such as media articles or newspaper supplements. Radio and TV features can also be used productively. Visit the DBE website as it has useful information on *Working with Sources* and the SBA document. Go to www.dbe.gov.za and follow the links for the NSC.

(s) Sharpen paragraph-writing skills by ensuring that learners do the following:

- Read the question and underline the key words.
- Study all sources to gain a thorough understanding of them.
- Underline the words in written sources and incorporate them in the writing of paragraphs.
- Start a paragraph with an opening statement that affirms or opposes the question and conclude the paragraph with a closing statement that supports the opening statement.
- Learners should not copy directly from the sources but use their own words, e.g. *According to Source 1A …*
- Ensure that responses are concise and to the point by structuring short sentences to frame the paragraph.
- Do not summarise information from sources without responding to the question.
- Always respond to the question when writing a paragraph.

(t) Supplement resources/notes on the section: *The End of the Cold War and a New World Order*. Teachers must focus on all the bullets in this section.

(u) Encourage learners to use the 5 Ws in all historical inquiries, as listed below – so that you teach for understanding:

Question to ask	Purpose
Who?	To gain knowledge about historical figures
What?	To equip learners with historical knowledge
When?	To study historical periods
Where?	To learn where historical events took place
Why?	To learn why historical events took place

On completion of a topic or specific content focus, learners should be trained to acquire skills by asking them to apply the 5 Ws to the content being taught.

(v) Develop the required essay-writing techniques by:

- Coaching learners on how to unpack the question posed by identifying four key aspects namely, the action verb used (e g. Explain to what extent…, Do you agree? or Critically discuss), content focus, context of the content focus and time frame.
- Underlining the key words in the question. All argumentative essay questions demands that a stance be taken, this must be stated in the introduction.
- Training learners on the stages of essay writing:
  - Introduction: Stance and contextualisation.
  - PEEL method to be applied in the body of the essay – in each paragraph.
  - Line of argument: How the event contributed to the question (Link).
  - This will prevent the learners from copying the question statement as a line of argument.
  - Conclusion to link with the introduction.
- Using the *PEEL* writing template listed below to teach learners how to write an argumentative essay:

- **Point:** Each paragraph should start with the main point that addresses the question and sustains the line of argument that was made in the introduction.
- **Explanation:** Explain the main point/unpack what it is all about by demonstrating how it relates to the question posed (line of argument).
- **Example/Evidence:** Select and provide appropriate examples/evidence to support the line of argument.
- **Link:** Ensure that the concluding statement in each paragraph is linked to the line of argument taken in the introduction.

(w) Interact with relevant resources such as books, historical journals, internet sites, DVDs, *YouTube* videos, *Google*, *SA History Online (SAHO)*, the *History Channel*, television news channels and newspapers in order to meaningfully convey the prescribed content to learners.

(x) Instil the following steps when teaching learners how to compare evidence in two sources to answer questions on either similarities or differences:

- Read the question thoroughly and underline the main point.
- Study the contextualisation of both sources and underline their main contexts.
- Check the author and the purpose of each source, after studying the contextualisation of the source. This will give a clue about the perspective and intention of the source, which could then be compared to the other source.
- Detect opposing viewpoints by identifying the rival organisations or ideologies that the two sources represent. If opposing viewpoints form part of the contextualisation of the two sources that are compared, learners must underline both viewpoints, because the different perspectives displayed by each source will already provide the learner with one option to possible responses.
- Familiarise themselves with the information in the sources mentioned. The 5 Ws stated earlier can be used in this regard.
- Have a clear understanding of what a visual source entails by finding dates, numbers, historical figures, facial expressions, text or any other object relevant to the question.
- Provide the required responses for the question in either of the following ways:
  - In answering a question about similarities, learners could use the following: *Both sources refer to …* or *Source 1A mentions …* and *Source 1B shows …*
  - When comparing information for differences or contrast, it is crucial that learners state: *Source 1A says … WHILE Source 1B states …* or *In Source 1A we read… WHILE Source 1B shows …* or *Source 1A is written from a communist perspective (Russian point of view) WHILE Source 1B is written from a capitalist perspective (US point of view)*.
- Highlight the point that will be credited for each response that refers to both sources, i.e. 2 (two) marks. To get full marks in a question with a mark allocation of (2 x 2) (4), learners should provide TWO responses that refer to both sources, but on two different aspects.

Subject advisors should:

(a) Assist teachers with an understanding of the expectations of the *Examination Guidelines*.

(b) Thoroughly study and understand the 2024 Diagnostic Report, and conduct workshops with teachers on its findings and recommendations.

(c) Plan, prepare and conduct intensive content and assessment workshops on problematic areas as identified in this report with FET History teachers.

(d) Conduct assessment training on how to mark low order, middle order, and higher-order source-based questions (extraction; interpretation/analysis; usefulness/reliability/ limitations/comparison and paragraph writing) and essay questions. A sample of learner responses should be used to train teachers on how to use the levels of rubrics and matrix to assess paragraphs and essays correctly. Orientate teachers on the principles and criteria of how to mark source-based, paragraph and essay questions which are found on pages 2 to 6 of the NSC November 2024 Marking Guidelines.

(e) Vigorously monitor and quality assure the assessment tasks administered by teachers.

(f) Develop appropriate resource materials with which both teachers and learners can interact on an ongoing basis.

(g) Train teachers on how to set quality assessment tasks to ensure standardisation as per the Programme of Assessment.

(h) Encourage teachers to show learners how to write original argumentative essays and to avoid preparing essays for learners at school, circuit and district level.

SUGGESTIONS FOR TEACHING RELIABILITY, USEFULNESS AND LIMITATIONS OF A SOURCE:

For proper evaluation of these aspects, the contextualisation of the source should include the following:

- Who the author (owner) of the source is: this should not only address the name but also the position or profile of the author.
  - Identifying the author as a chairperson of an institution or as the President of a country enhances the *reliability* or *usefulness* of a source.
  - A source by an author from a rival ideology might suggest *NOT Reliable* or *NOT Useful* depending on the context of the question./If the source is biased/one-sided, that would be a *Limitation* of the source – again, depending on the context of the question.
- When (date) the source was written:
  - It is important to check whether the date of the source was at the time of the event or whether it was too far away from the time of the event; the date of a source that is very close to the event can be regarded as *Reliable* or Useful, though this is not always the case because the source can still be biased.
  - A source far removed from the time of the event, giving a perspective different from the original event might be a deliberate distortion, suggesting *Limitation* of the source.
- Where (the venue/place) the source was created:
  - A speech given in an official venue, e.g. Parliament, or at an official function held anywhere, would give credit to the *Reliability* or *Usefulness* of a source.
  - Publications in the US national newspapers like *New York Times* or *The Washington Post* might be pro-capitalist *(Reliable or Useful)* or be anti-communist *(Not Reliable of Not Useful)* depending on the context of the question).
  - Publications in newspapers in the Soviet Union, e.g. *Pravda* or *Izvestia*, might be pro-communist or anti-capitalist, depending on the context of the question.
- The purpose of writing (publishing) the source or why the source was published:
  - If the purpose is to strengthen internal processes of an institution or to outline how a project would unfold, that could be positive *(Reliable or Useful)*; but if it paints a

negative picture about a rival ideology, it could be considered as full of propaganda and therefore be regarded as biased *(having limitations)*.
    - Is the source an opinion piece of writing (biased) or factual information *(Reliable/Useful)*?
- Can the information be independently **corroborated**?
    - Refer to other sources within the Addendum that corroborate information in the question *(Reliability or Usefulness)*.

Teacher Development should:

(a) Identify teacher needs and gaps as outlined in the 2024 Diagnostic Report.

(b) Assist teachers on how to impart knowledge and differentiate extraction from interpretation skills. Learners are found to be paraphrasing when they are supposed to extract, and they extract when they are supposed to interpret.

(c) Ensure that new teachers are supported and guided on subject content and teaching methodology.

(d) Train newly appointed teachers on how to mark Level 1 (extraction), Level 2 (interpretation/analysis), Level 3 (4 marks responses), and argumentative essay questions.

(e) Prepare teachers to apply the principle of Language Across the Curriculum (LAC) in their subject.

(f) Train school principals on the implementation of quality management systems (QMS) that, among others, would include management of curriculum implementation.

CHAPTER 8

LIFE SCIENCES

The following report should be read in conjunction with the Life Sciences question papers of the November 2024 NSC examinations.

8.1 PERFORMANCE TRENDS (2020–2024)

The number of candidates who sat for the Life Sciences examination in 2024 decreased by 4 302 compared to that of 2023.

There was a pleasing improvement in the pass rate this year. Candidates who passed at the 30% level improved from 75,6% in 2023 to 80,8% in 2024. There was a significant improvement in the pass rate at the 40% level over the past two years from 52,3% to 61,2%.

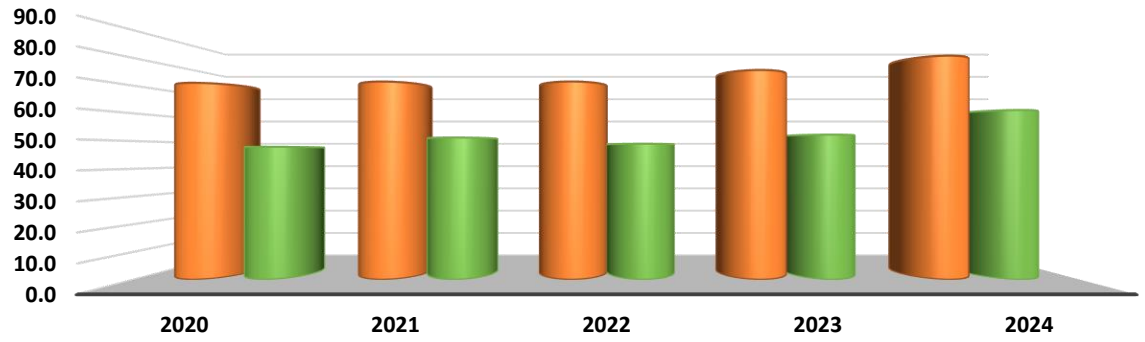
The percentage of distinctions (80% and over) increased from 2,3% in 2023 to 4,0% in 2024. Given the size of the 2024 cohort, this converts to an increase in the total number of distinctions from 8 718 to 14 989.

The various commendable support programmes employed by teachers, subject advisors and provincial education departments were continued in 2024. The resourcefulness and diligence of the above-average candidates also contributed to the overall improvement in the subject.

Table 8.1.1 Overall achievement rates in Life Sciences

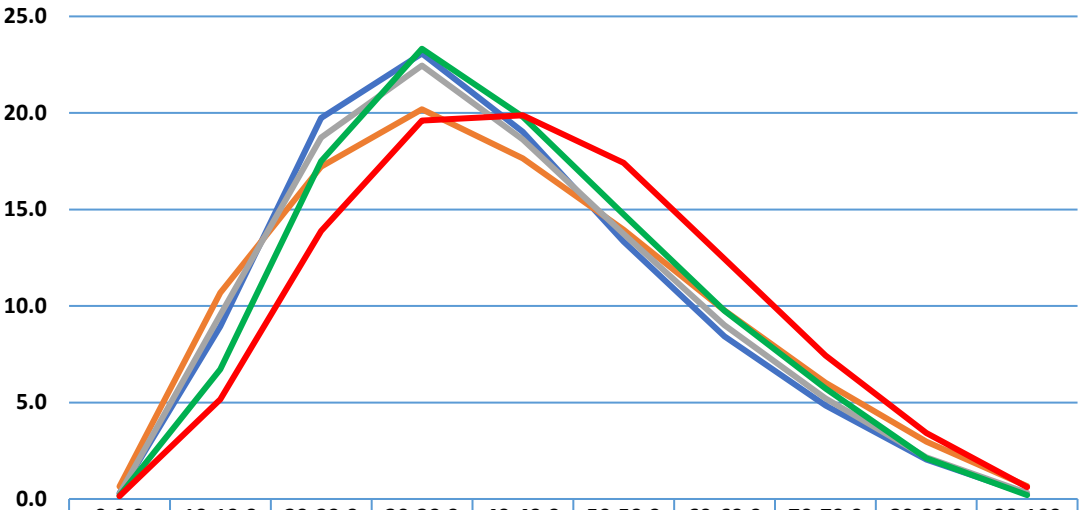
Year	No. wrote	No. achieved at 30% and above	% achieved at 30% and above	No. achieved at 40% and above	% achieved at 40% and above
2020	319 228	226 700	71,0	153 028	47,9
2021	384 216	274 584	71,5	197 017	51,3
2022	399 007	285 217	71,5	195 620	49,0
2023	379 024	286 708	75,6	198 309	52,3
2024	374 722	302 793	80,8	229 361	61,2

Graph 8.1.1 Overall achievement rates in Life Sciences (percentage)



	2020	2021	2022	2023	2024
% achieved at 30% and above	71.0	71.5	71.5	75.6	80.8
% achieved at 40% and above	47.9	51.3	49.0	52.3	61.2

Graph 8.1.2 Performance distribution curves in Life Sciences (percentage)



	0-9.9	10-19.9	20-29.9	30-39.9	40-49.9	50-59.9	60-69.9	70-79.9	80-89.9	90-100
2020	0.3	8.9	19.7	23.1	19.0	13.3	8.4	4.9	2.0	0.3
2021	0.6	10.7	17.2	20.2	17.6	14.0	9.8	6.0	3.0	0.7
2022	0.3	9.5	18.7	22.5	18.6	13.7	9.0	5.2	2.2	0.3
2023	0.2	6.7	17.5	23.3	19.8	14.7	9.8	5.7	2.1	0.2
2024	0.1	5.2	13.9	19.6	19.9	17.4	12.4	7.4	3.4	0.6

General comments on Paper 1 and Paper 2

Teachers need to ensure that candidates have basic mathematical skills by providing them with enough practice during the FET Phase. These skills should be assessed from Grade 10 to guarantee a better understanding of mathematical applications by Grade 12. Candidates should also be discouraged from using the term 'directly proportional' as this is not credited in Life Sciences. Candidates need to describe the relationship by explaining the changes (increase/decrease) that take place.

An attempt must be made to improve learners' handwriting as many candidates have an illegible handwriting which makes marking difficult. Teachers need to apply for concessions for these candidates as their poor handwriting is a disadvantage to them.

In both Papers 1 and 2, candidates are expected to read short passages on different topics and then apply their knowledge on the given topic. Candidates faced a challenge in synthesising relevant details from the text provided. This meant that they could not form a coherent paragraph, which reflected their understanding, from the information given. Teachers need to expose learners to these types of questions from Grade 10 to Grade 12 to enable them to read and extract relevant information, apply knowledge and articulate precise responses. Learners must be taught not to be intimidated by these questions and should practise active reading and comprehension skills.

It is important for learners to improve their conceptual understanding of key biological processes, as these underpin their ability to answer higher-order questions. Teachers should reinforce foundational concepts through diverse teaching methods and encourage active participation.

8.2 OVERVIEW OF CANDIDATES' PERFORMANCE IN PAPER 1

General comments

(a) Many candidates performed very well in Q1 as it consisted mainly of level A and B questions. Most of the learners attempted to answer all questions. Very few questions were left unanswered.

(b) A number of candidates disregarded the importance of correct spelling. If the incorrect spelling changed the meaning of the response, candidates lost marks, for example:
- *Ureter* instead of *urethra* Q1.4.1(a)
- *Epidermis* instead of *epididymis* Q1.4.1(b)
- *Syrup* instead of *stirrup* Q1.2.4
- *Ciliary* instead of *circular muscles* Q3.2.3.

(c) Poor performance is still evident in questions based on scientific investigations, despite the support provided in the diagnostic reports of previous years. More scientific investigation questions must be included during informal and formal assessments, as well as during revision sessions. Practical application through understanding is important to include in all teaching.

(d) Many candidates did not know how to calculate a *percentage increase*, even though a detailed summary of the different types of calculations was given in the diagnostic report of 2023.

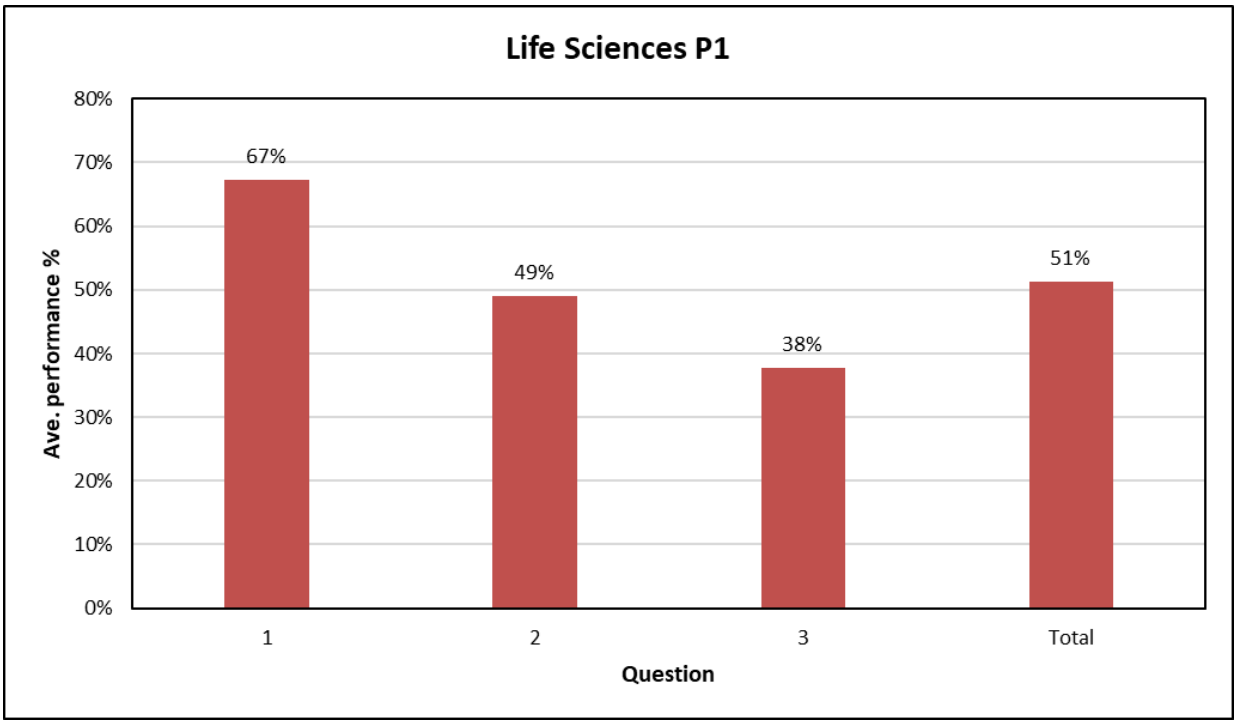
(e) As indicated in previous reports, the sections on *reproductive strategies* and *plant responses to the environment* were poorly answered. These are relatively short topics, and it appeared as if some teachers merely glossed over them. It is important to concentrate on these two topics, as they are a compulsory inclusion in the paper for 8 and 13 marks respectively.

8.3 DIAGNOSTIC QUESTION ANALYSIS FOR PAPER 1

Based on the item analysis, the weakest performance by candidates was recorded in the sub questions on the *eye (cataracts and long-sightedness)*, *homeostasis (scientific investigation)* and *plant responses to the environment (scientific investigation)*.

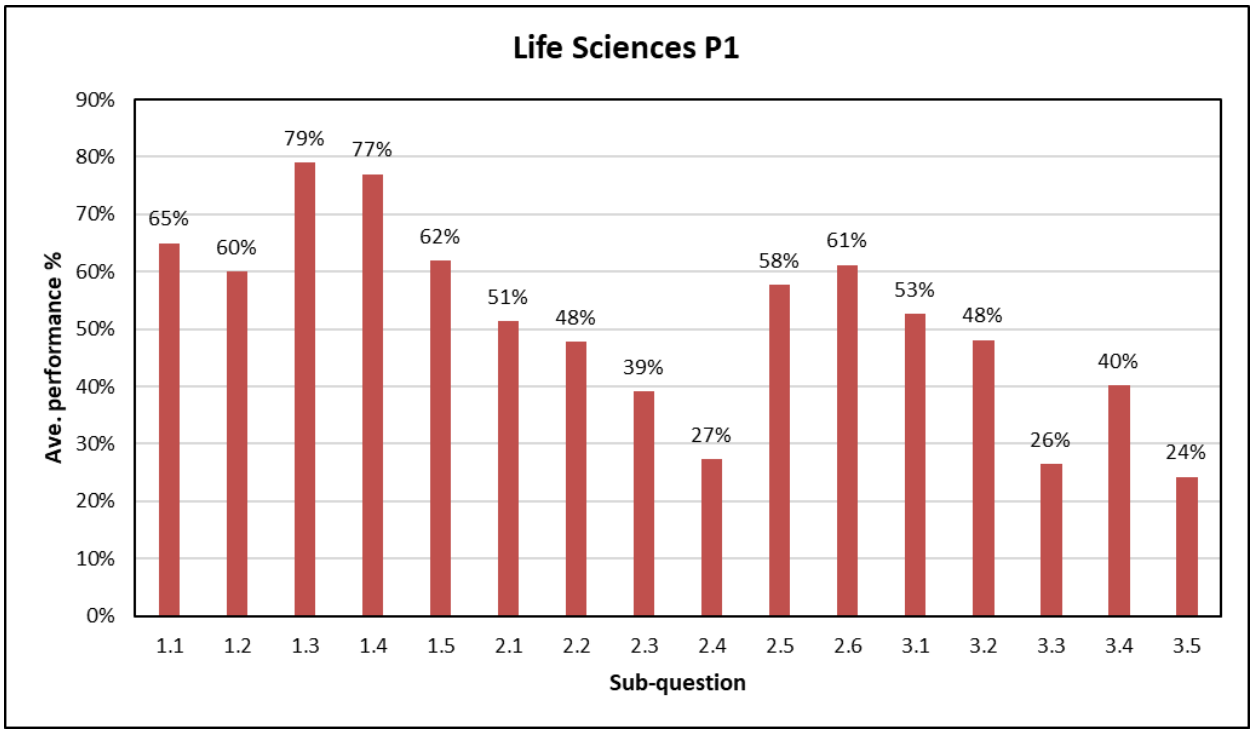
The following graph is based on data from a random sample of candidates' scripts. While this graph might not accurately reflect national averages, it is useful in assessing the relative degrees of challenge of each question as experienced by candidates.

Graph 8.3.1 Average performance per question in Paper 1



Q	Topics
1	Multiple choice, Terminology, Matching items, Male reproductive system, Homeostasis (endocrine glands and skin)
2	Female reproductive system, Menstrual cycle, Cataracts, Long-sightedness and Neurons.
3	Reproductive strategies, Eye (pupillary mechanism), Scientific investigation on insulin and blood glucose levels, Homeostatic control of thyroxin (negative feedback) and Scientific investigation on the effect of auxins.

Graph 8.3.2 Average performance per subquestion in Paper 1



Subq	Topic	Subq	Topic
1.1	Multiple-choice question	2.4	Long-sightedness
1.2	Terminology	2.5	Neurons – types
1.3	Matching items	2.6	Neurons – analysis of data
1.4	Male reproductive system	3.1	Reproductive strategies
1.5	Homeostasis (endocrine glands and skin)	3.2	Eye (pupillary mechanism)
2.1	Female reproductive system	3.3	Scientific investigation on insulin and blood glucose levels
2.2	Menstrual cycle	3.4	Homeostatic control of thyroxin (negative feedback
2.3	Cataracts	3.5	Scientific investigation – plant responses on auxin

8.4 ANALYSIS OF CANDIDATES' PERFORMANCE IN EACH QUESTION IN PAPER 1

QUESTION 1: MULTIPLE CHOICE, TERMINOLOGY, MATCHING ITEMS, MALE REPRODUCTIVE SYSTEM, HOMEOSTASIS (ENDOCRINE GLANDS AND SKIN)

Common errors and misconceptions

(a) As indicated in previous reports, some candidates did not read nor follow the instructions as stated in the questions, e.g., they chose more than one option in the MCQs.

- In Q1.1 candidates performed well except for Q1.1.10 where they had to apply their knowledge. They were not familiar with the pathway of the nerve impulses for balance. Some candidates did not know which part of the brain was involved in balance and gave the answer as C (cerebrum), instead of B (cerebellum).

(b) As spelling continues to be a problem, the following points in Q1.2 mentioned in previous reports are still valid. Candidates:

- Wrote *umbilical artery/vein* instead of *umbilical cord* in Q1.2.1; *peripheral* nervous system instead of *autonomic* nervous system in Q1.2.2, some also wrote ANS which is not a biological term and was not credited; provided *maculae* as a response, instead of *cristae* or gave both answers in Q1.2.3.
- It was also evident that the individual bones of the ossicles in Q1.2.4 had not been well taught. Also, in Q1.2.5 *geotropism* was the only correct answer for a growth reaction in response to gravity. Some candidates wrote positive/negative geotropism which was not credited. Knowledge of the basic functions of plant hormones in Q1.2.7 was also lacking.

(c) Some candidates only provided the letter or the name of the part in Q1.4.1. A few candidates could not spell *urethra* and were not able to differentiate between the *epididymis* and *vas deferens*.

(d) In Q1.5 some candidates had difficulty in:

- Q1.5.1 – differentiating between exocrine and endocrine glands;
- Q1.5.2 – linking both the sweat glands and the blood vessels to thermoregulation and incorrectly identified the hypothalamus, which was not one of the structures labelled on the diagram.
- Q1.5.3 – (a) identifying the hormone and in (b) giving the target organ responsible for water regulation. They referred to the renal tubules and cortex instead.

QUESTION 2: FEMALE REPRODUCTIVE SYSTEM, MENSTRUAL CYCLE, CATARACTS, LONG-SIGHTEDNESS AND NEURONS.

Common errors and misconceptions

(a) In Q2.1, which was based on female reproductive system, candidates lost marks because they:

- Incorrectly identified the structure as the *Graafian follicle* instead of the *ovary* in Q2.1.1 (b);
- Stated in Q2.1.2 that there were 'many sperm' in the fallopian tube although there were only a few sperm drawn in the diagram – the correct reason was that *'the sperm were in the fallopian tube/close to the ovum'*;
- Left out key words when explaining *oogenesis* in Q2.1.3. The following were common errors:
  - 'Cells in the ovary undergo mitosis' instead of 'diploid cells in the ovary undergo mitosis.'
  - 'One follicle enlarges and undergoes meiosis' instead of 'one cell in the follicle' undergoes meiosis.
  - 'To produce an ovum' instead of 'one of the four cells produced forms a haploid ovum'.
- Could not present their responses in a cause-and-effect way in Q2.1.4. and often gave the effect of the strategy without the cause. They also confused the concepts 'increasing chances of fertilisation' in Q2.1.2 (b) with 'reproductive success' in Q2.1.4.

(b) Some candidates performed well in Q2.2. However, many candidates lost marks in:
- Q2.2.2 because they could not explain why FSH increased from day 24, but rather explained the function of FSH. FSH increased because the levels of progesterone decreased and therefore, the production of FSH by the pituitary gland was no longer inhibited.
- Q2.2.4 because they were unable to calculate a percentage increase. This was highlighted in the November 2023 Diagnostic Report.
- Q2.2.5 by stating that the *progesterone* stays constant, instead of mentioning that it remains high, or it will increase.
- Q2.2.6 because they could not explain what caused the increase in progesterone from day 20, when a female is pregnant. They explained the function of progesterone in a pregnant female. Some candidates did not link the *corpus luteum not degenerating* to *an increase in progesterone*. Also, that the *developing placenta* caused an *increase in progesterone*.

(c) In Q2.3.2 candidates had difficulty using the information in the passage and instead gave a generic description of what cataracts were. Some answered the whole question using quotes from the text without adding their own explanation, while others did not use the text at all. Candidates were required to extract the quote that 'protein structures in the eye start to disintegrate and clump together' and then explain how this would lead to vision loss. They also did not know that if the lens becomes cloudy, light cannot pass through to the retina. They instead incorrectly stated that 'light cannot enter the eye'. Some candidates did not score full marks, because they left out the part which referred to 'stimuli will not be converted into impulses.'

(d) Q2.4 was poorly answered. In Q2.4.1 most candidates referred to the lens instead of how the eyeball affected vision. In Q2.4.2 they had difficulty explaining why the convex lenses helped to improve vision. Convex lenses cause light to be refracted *more,* thereby causing the image to fall on the retina.

(e) Many candidates performed well in Q2.5. In Q2.5.1 some still referred to the type of neuron as *multipolar*, instead of a *motor neuron*. In Q2.5.2 and Q2.5.3 they referred to outgrowths instead of *dendrites*. In Q2.5.5 some candidates referred to the disorder as *Alzheimer's disease* instead of *Multiple sclerosis*.

(f) Poor performance in Q2.6 can be attributed to the fact that candidates did not understand what was expected of them. In Q2.6.2(a) some candidates provided numerical comparisons, e.g. myelinated neurons have an impulse speed of x m/s while unmyelinated neurons have y m/s instead of describing the general trend. In Q2.6.2(b) candidates still gave the trend in the graph instead of the relationship between axon diameter and impulse speed. A number of candidates still referred to direct proportionality, as was mentioned previously.

QUESTION 3: REPRODUCTIVE STRATEGIES, EYE (PUPILLARY MECHANISM), SCIENTIFIC INVESTIGATION ON INSULIN AND BLOOD GLUCOSE LEVELS, HOMEOSTATIC CONTROL OF THYROXIN (NEGATIVE FEEDBACK) AND SCIENTIFIC INVESTIGATION ON THE EFFECT OF AUXINS.

Common errors and misconceptions

(a) Many learners performed well in Q3.1. Some candidates:
- Did not read the instruction to quote from the passage and gave a definition of *oviparous* in Q3.1.1;

- Referred to advantages for embryos/foetus instead of gametes in Q3.1.2;
- Confused *altricial* development with *precocial* development in Q3.1.3; and
- Found it difficult to make the connection between the amount of yolk in the egg and the degree of development of the chick in Q3.1.4. They did not relate the fact that birds that have altricial development have very little yolk in their eggs. This meant that the chick's incubation period would be short because there would not be enough nutrition and they would therefore not be fully developed when born.

(b) Q3.2 was well answered. Some candidates gave a generic description of a *reflex action* without mentioning light as the stimulus in Q3.2.2. In Q3.2.3 a number of candidates referred to *ciliary muscles* instead of *circular muscles*. Candidates gave both mechanisms in dim light and bright ligh in which case only the first answer was marked.

(c) Many candidates performed poorly in Q3.3. They lost marks because:
- In Q3.3.1 they provided generic responses and failed to link the function of the control to the investigation;
- In Q3.3.2 they could not describe how insulin decreased blood glucose levels; they described the mechanism of insulin production by the pancreas, without linking it to the absorption and conversion of glucose by the cells/ liver/ muscles;
- They did not understand how to use the data to explain the answer in Q3.3.4. Many candidates simply compared Y to the normal limits and their answers were not specific: they failed to state the times at which glucose was within normal limits.

(d) In Q3.4.1 some candidates quoted from the stem above the diagram and gave the answer as *homeostasis* instead of *negative feedback mechanism*. They read the negative feedback diagram in Q3.4.3 incorrectly. They had to follow the lines and the arrows to understand the flow of hormones between the two glands. Q3.4.4 was poorly answered. Candidates had difficulty explaining and interpreting the questions on how a decreased metabolic rate reduced cellular respiration causing less glucose use and more storage. Candidates referred to nutrients as food/calories.

(e) Q3.5 showed the lowest performance in the paper because:
- Most candidates wrote the *effect of auxin as the independent variable* in response to Q3.5.1(a). This was incorrect as the effect of auxin is in fact the growth of the lateral branches. In Q3.5.1(b) candidates described how the variables were controlled (dividing the species into three groups, keeping the plants in darkness for 72 hours) rather than what the variables were (light exposure, duration in darkness and plant species). Candidates wrote about phototropism, yet the plants were kept in darkness for 72 hours. They wrote what they had learnt and struggled to apply their knowledge to a new scenario.
- Many candidates wrote 'no growth' in response to Q3.5.2(b). This was incorrect. There would be no upward growth but there would still be growth of lateral branches.
- Candidates were required to answer that each group would have had four plants which made it a sufficient sample size to be reliable in Q3.5.3. Many candidates referred to 12 plants, but the three groups of plants were treated differently, therefore this was an incorrect answer. (Their response did not follow from the stem.)
- Candidates wrote about *phototropism* instead of applying their knowledge to the context given in Q3.5.4. Many candidates could not link the agar- containing auxins with the auxins ability to diffuse through the agar. They could identify the function of auxins in the role of growth but not how this growth was brought about through cell division/mitosis/cell elongation/cell growth.

Suggestions for improvement on teaching content and concepts for P1

(a) As elaborated in previous diagnostic reports, Paper 1 is about the physiology of humans; therefore, diagrams of different structures/organs are an integral part of this paper. The structures/organs are best taught using annotated diagrams. Diagrams without labels should be given to learners to identify the parts and their functions.

(b) The use of the *2021 Examination Guidelines* is a vital teaching tool that should be consulted when teaching. The *Examination Guidelines* contain some explanations for concepts that are meant to guide teachers as to the depth of understanding candidates require e.g., *oogenesis*, *spermatogenesis*. These concepts should be taught as per the guidelines and not as they are presented in some textbooks. The same applies for other terminology e.g. *goitre* – learners refer to Grave's disease, which is incorrect.

(c) There needs to be a greater emphasis on the teaching and learning of appropriate terminology related to the various topics, together with the correct spelling of these terms. Consult the *2021 Examination Guidelines* for the correct terminology to teach and assess.

(d) Teachers need to emphasise instructions to questions, especially in Q1.2 where the correct biological term is required. Learners should avoid abbreviations and acronyms of terms in response to this question, as these will not be credited.

(e) Teachers should emphasise the importance of focusing on visible or structural factors when addressing questions about the female reproductive system. By focusing on the specific structures, learners will understand the biological processes more clearly.

(f) Teachers need to use diagrams when explaining ovulation to show learners that the ovum is released from the ovary into the Fallopian tubes. This will prevent learners from identifying the ovary as the *Graafian follicle*. Learners must be sensitised to the fact that the diagrams they encounter in the examination may differ slightly from the ones they encounter in the classroom.

(g) Learners should be encouraged to read questions with proper understanding. In Q2.2.3 candidates were instructed to use data from the table to explain their answers. They could not refer to the glucose level as normal for Y, without specifying the times as well. Learners need to learn how to use the data from graphs and tables as evidence, in their explanations.

(h) Teachers should teach in the format:
   (i) What is the structure?
   (ii) What is its function?
   (iii) How is the function affected when the structure is damaged?

(i) Teachers need to emphasise that a reflex action is a rapid, involuntary action in response to a stimulus.

(j) Teaching should be differentiated to accommodate all cognitive levels.

(k) Teachers must place more emphasis on scientific investigations and their design. Learners should be taught the value of each design element and how it contributes to a valid investigation.

(l) Wherever possible, investigations involving plant responses to the environment should be done. If not, then learners must be exposed to the practical design of these experiments through worksheets, notes, slides, and past examination papers. More attention should be paid to the types of variables (*dependent, independent* and *controlled*), the implementation of reliability, accuracy and validity, as well as the controls.

(m) A number of Afrikaans terms have become obsolete, and teachers and learners should be discouraged from using them. This has often been mentioned in previous reports.

Afrikaans words that should not be used in teaching

CORRECT TERM	TERMS NOT TO USE
Fallopius-buis	Eierleier
Goiter	Kropgeswel
Vas deferens	Spermbuis
Akson en dendriete	Uitloper(s)
Epididimus	Bytestis
Diabetes	Suikersiekte
Tiroïedklier	Skildklier
Timpanium	Oordrom
Koglea	Slakkehuis

(n) Scientific skills must be emphasised from Grade 10. This will strengthen critical thinking and problem-solving skills.

(o) The idea of increased glucose absorption and utilisation during respiration must become a bigger focus area when presenting this content in the classroom. This can start in Grade 11. In general, teachers must emphasise that hormones inhibit or stimulate a response in an *effector/target organ* and do not perform that response themselves.

(p) When teaching *homeostasis* and the *endocrine system,* emphasis must be placed on the words 'more'/'less' (whichever one is applicable) as well as changes that may occur in the blood, body or skin.

(q) Learners must be exposed to various types of questions with the different verbs (*explain*, *discuss* and *describe*). Questions focusing on c*ause* and *effect* must also be dealt with properly in class.

(r) Learners must not just study past marking guidelines, as the context of the question can change. Instead, teachers must ensure that learners have a sound understanding of the knowledge that they have to apply to different situations. Teachers should not just teach content but stimulate learners' cognitive skills.

(s) Learners must be taught to read the questions properly and be specific in answering them.

(t) Feedback after formal assessment is very important for candidates to know where and how mistakes were made.

8.5 OVERVIEW OF CANDIDATES' PERFORMANCE IN PAPER 2

General comments

(a) Wherever there was a higher difficulty level in the question paper, it was either due to stimulus difficulty or response difficulty. Candidates appeared to have been more comfortable with content than before, but were missing the mark when they had to provide the specific responses required to answer a question successfully and completely.
This may be because they did not:

- Read the stem of the question;
- Pay attention to the instructional verb of each question;
- Apply their knowledge to a specific context or scenario;
- Present their responses in the expected scientific notation;
- Base their responses on the data, diagram, texts or graphs provided;
- Read or follow the instructions of each question/sub-question;
- Pay attention to correct spelling.

(b) Skills associated with designing and interpreting a scientific investigation appeared to be underdeveloped. The investigation question tested candidates' ability to analyse and evaluate procedures and data. They were also expected to pre-empt the planning steps of the investigation. All these questions required higher order cognitive skills; the average candidate found these questions challenging.

(b) Candidates generally fared well in questions that required brief responses but struggled to articulate accurate responses for questions that required extended writing, e.g. Q2.1.2; Q2.3.3; Q2.4.3; Q3.1.2; Q3.4.2 and Q3.5.3.

(d) Producing a drawing that detailed the processes and products of meiosis proved to be problematic. Candidates did not understand the process of meiosis. This topic is studied regularly, however, candidates struggled to apply their knowledge.

(e) There is a notable and encouraging improvement in graph drawing skills. Candidates, however, still struggle to formulate a comprehensive caption for the title of their graphs.

(g) There are sections of the content that are poorly understood by candidates. These are topics that feature later in the Annual Teaching Plan and are generally glossed over by teachers. The section on *evolution*, in particular *human evolution*, is a casualty of this. Furthermore, many teachers struggle with understanding *evolution,* and this was evident from the poor performance of the candidates.

(h) The following topics in Paper 2 also appeared not to have been taught well, either due to lack of teacher development or due to infrequency of testing in previous examinations:

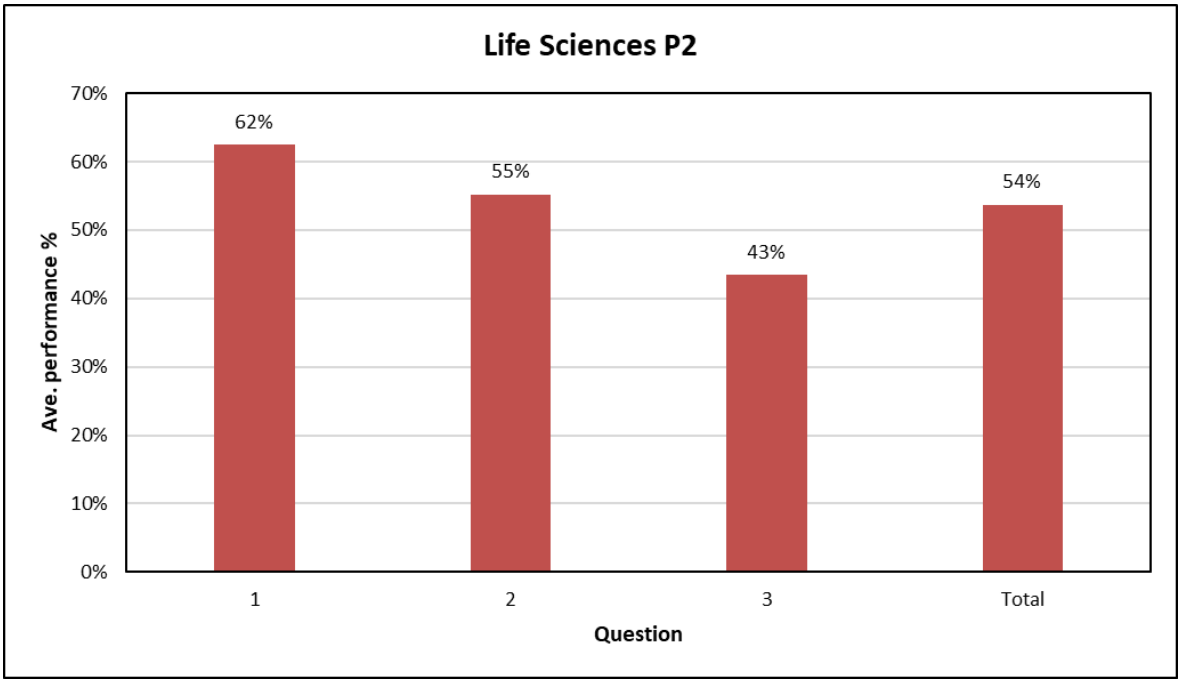
- Genetic engineering;
- Phylogenetic trees;
- Scientists and their discoveries; and
- The Out-of-Africa hypothesis.

8.6 DIAGNOSTIC QUESTION ANALYSIS FOR PAPER 2

Based on the item analysis, the weakest performance by candidates was recorded in the subquestions on *Genetic engineering*, *Human Evolution* and *Natural selection*.

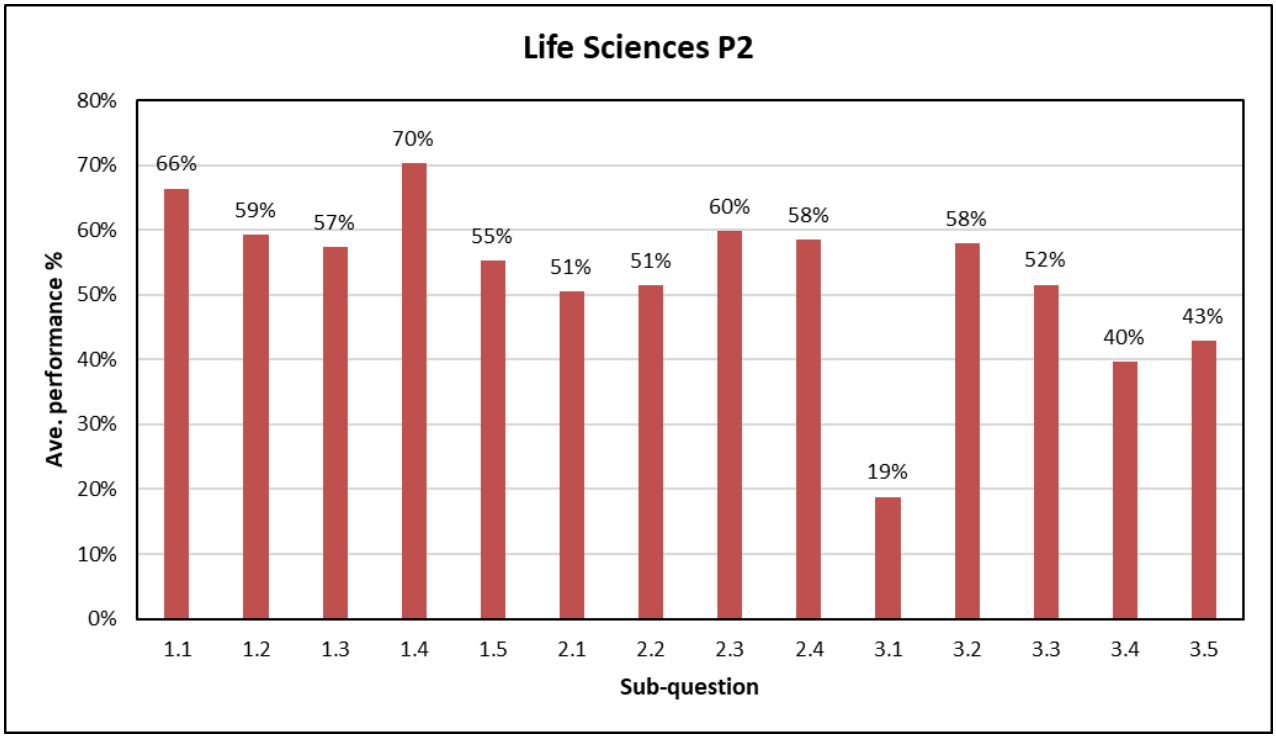
The following graph is based on data from a random sample of candidates' scripts. While this graph might not accurately reflect national averages, it is useful in assessing the relative degrees of challenge of each question as experienced by candidates.

Graph 8.6.1 Average performance per question in Paper 2



Q	Topics
1	Multiple choice, Terminology, Matching items, DNA replication, Dihybrid cross
2	Protein synthesis, meiosis, inheritance of blood groups, pedigree diagram and sex-linked monohybrid cross
3	Genetic engineering, phylogenetic tree, scientific investigation – evolution/genetics, human evolution, natural selection

Graph 8.6.2 Average performance per subquestion in Paper 2



Subq	Topic	Subq	Topic
1.1	Multiple-choice question	2.3	Inheritance of blood groups
1.2	Terminology	2.4	Pedigree diagram and sex-linked monohybrid cross
1.3	Matching items question	3.1	Genetic engineering
1.4	DNA Replication	3.2	Phylogenetic tree
1.5	Dihybrid cross	3.3	Scientific investigation – Evolution/genetics
2.1	Protein synthesis	3.4	Human Evolution
2.2	Meiosis	3.5	Natural selection

8.7 ANALYSIS OF CANDIDATES' PERFORMANCE IN EACH QUESTION IN PAPER 2

QUESTION 1: MULTIPLE-CHOICE, TERMINOLOGY, MATCHING ITEMS, PEDIGREE DIAGRAM, PROTEIN SYNTHESIS

Common errors and misconceptions

(a) Most candidates performed well In Q1.1, except in Q1.1.5, Q1.1.8 and Q1.1.9.

- In Q1.1.5 many candidates saw the word 'gradual' and immediately went to the option '*punctuated equilibrium*' since it's definition also included the word 'gradual';
- In Q 1.1.8, most candidates confused the processes and products of *mitosis* and *meiosis*;
- In Q1.1.9 a number of candidates did not know the South African scientists and the fossils that each one discovered.

(b) In Q1.2 some candidates lost marks because they:
- Did not give the correct and complete biologically accepted abbreviation in Q 1.2.1 and Q1.2.4 for *DNA* and *tRNA*;
- Confused the term *aneuploidy* with *haploid* in Q1.2.2. The word 'condition' in the question may have led candidates to believe that a disorder was being referred to;
- Still confused the terms *centriole, centrosome, chromosome and centromere* in Q1.2.3;
- Used the terms '*DNA profile*' and '*DNA profiling*' interchangeably in Q1.2.5; whereas one referred to an image and the other referred to a process;
- Confused the terms *species* and *population* in Q1.2.7; this was due to the similarity in their definitions;
- Failed to indicate whether the phase they had identified in Q1.2.8 occurred in *meiosis I* or *meiosis II*

(c) Most candidates performed well in Q1.3. Some candidates struggled with the history of the discovery of DNA in Q1.3.2, even though the scientists involved are specifically named in the *Examination Guidelines* (pg. 7), as well as the *CAPS* document. The controversy regarding the *earlier* recognition of the scientists might have stumped the candidates. In Q1.3.3 many candidates chose the incorrect option as they were not familiar with the term *karyokinesis* in cell division.

(d) Q1.4 was one of the better answered questions in the paper. In Q1.4.2(b) some candidates named the individual components of the labelled structure instead of the 'collective' term that was asked for. A few candidates identified the phase in Q1.4.3 as *interphase I* or *interphase II*, however, *interphase* does not occur separately in *meiosis I* and *meiosis II;*

(e) Some candidates listed the dominant *alleles* in Q1.5.2, instead of listing the dominant *characteristics*. Furthermore, candidates only listed the colours red and black instead of giving the full description of the characteristic, viz. 'red spots and black eyes'. When presenting the genotypes in Q1.5.3(a), candidates lost marks for the incorrect presentation of the *alleles*, e.g. *ReRe* instead of *RRee*. In Q1.5.3(c) candidates were unable to formulate the '*genotype of the gametes' (re)* in a dihybrid cross and gave the *genotype of somatic cells (rree)* instead.

QUESTION 2: PROTEIN SYNTHESIS, MEIOSIS, INHERITANCE OF BLOOD GROUPS, SEX-LINKED GENETIC CROSS

Common errors and misconceptions

(a) A few subquestions in Q2.1 proved to be challenging for candidates because:
- Some candidates could not identify the process represented by the diagram and described *DNA replication* instead of *transcription* in Q2.1.2. This description is given in the *Examination Guidelines* and was of a lower cognitive demand. Candidates lost marks for omitting important information such as DNA *double helix, RNA nucleotides* and that only one strand was used as a template;
- Many candidates lost marks in Q2.1.4, as they gave the *complementary base sequence* for strand 1, instead of that for strand 2 (where *triplet Z* occurs);
- In Q2.1.5 many candidates were unable to interpret the *codon* table and its relation to the diagram. The first and last *amino acids* in the sequence were requested, however, candidates did not refer to the stem of the question which indicated that the sequence of bases should be read from left to right. This

question required multi-step application and was pitched at a higher cognitive level.

(b) Q2.2 depended heavily on the correct application of biological terminology. Most candidates lost marks for using the terms incorrectly as follows:

- Identified the phase incorrectly or simply writing '*anaphase*', instead of a*naphase II* in Q2.2.1;
- Used the terms *chromosomes, chromatids, centromeres* and *centrioles* incorrectly in Q2.2.2. and not making the distinction that *homologous chromosome pairs* separate in *anaphase I* and a single *chromosome* separates in *anaphase II.*
- Wrote *'centromere'* instead of *'centriole'* or *'centrosome'* in response to Q2.2.3(a) and 'springle', 'spingle' or 'sprindle' instead of *'spindle'* as an answer to Q2.2.3(b)*;*
- Used colloquial terms like 'side' or 'ends' instead of referring to the *'poles'* of a cell.
- In Q 2.2.5 candidates were unable to work out the number of *chromosomes*, their arrangement and genetic configuration in order to successfully produce the correct drawing. Many candidates re-drew the diagram from the question paper and included labels they were mandated to exclude.

(c) Q2.3.3 was poorly answered by many candidates who referred to the inheritance of a *blood group* rather than to the inheritance of an *allele* and described a *dominant blood group*, rather than a *dominant allele*. Candidates failed to describe the inheritance of *alleles* from both parents and also used the incorrect notation for the *alleles* and lost marks for this.

(d) Candidates performed very well in Q2.3.4. Most candidates scored full marks for the drawing of the graph. However, some learners lost marks for unequal spacing between bars and the incorrect use of a scale on the Y-axis. Many candidates also lost marks for an incomplete caption.

(e) Q2.4 showed varied candidate performance across the sub-questions. Many candidates lost marks in Q2.4.3 and Q2.4.4.

- In Q2.4.3 candidates were unable to explain how the presence of *recessive alleles* on the *gonosomes* of males and females would result in the inheritance of the disorder. Most of them only stated the type of *gonosomes* found in males and females. They failed to state that males only needed one *recessive allele* to have the disorder while females needed two *recessive alleles*. Candidates were also unable to explain the inheritance of the disorder in terms of the masking of the *recessive allele;*
- In Q2.4.4 candidates lost marks for the incorrect wording of the *phenotype* – they did not include the gender and gave an incorrect representation of the *genotype*. Some candidates still used the term 'fusion' instead of 'fertilisation' incorrectly, despite this being reported in the diagnostic report of 2023. Also, the *P2* and *F2* generations were not indicated by most candidates.

QUESTION 3: GENETIC ENGINEERING, PHYLOGENETIC TREE, SCIENTIFIC INVESTIGATION (EVOLUTION/GENETICS), HUMAN EVOLUTION NATURAL SELECTION

Common errors and misconceptions

(a) Q3.1 ranked as the lowest scoring question in the paper. Most candidates lacked a fundamental understanding of the basic steps involved in *genetic modification*. A specific scenario of *Bt corn* was given, however, most candidates confused this with

DNA recombinant technology that is used to mass produce products like insulin. Candidates who had some understanding of genetic engineering described how the Bt toxin was mass produced by bacteria. Q3.1. was of a higher cognitive demand and gauging from candidates' responses, this was clearly a question that separated the level 7 candidate from the rest.

(b) Q3.2 required the interpretation of a *phylogenetic tree*. This topic is taught from Grade 10 to Grade 12. Some candidates displayed a clear lack of understanding that species that shared the *most recent common ancestor* were the most closely related. Most candidates who lost marks in this question could not correctly interpret a *phylogenetic tree* and identified *Orangutans* as the species most closely related to *Old-world monkeys* in Q3.2.2 and Q3.2.3. They did not trace the lines of origin back to *gibbons* and instead chose the species that was indicated next to *Old-world monkeys* on the diagram. Candidates fared much better in Q3.2.5. However, the expression of a few technical criteria caused their responses to be incorrect.
These included:

- Writing long arms instead of long *upper* arms;
- Referring to other body parts, when the question specifically required differences in the upper limbs;
- Discussing the significance of *bipedalism;* and
- Providing incomplete descriptions, e.g. '5 fingers', instead of '5 fingers per limb', or simply saying 'nails', rather than specifying 'have nails instead of claws'.

(c) The scientific investigation questions in Q3.3 was of a high cognitive demand. Most candidates struggled with the analysis and evaluation of the procedure and their results. The challenges faced in each sub-question are listed below.

- Many candidates lost a mark in Q3.3.1 for writing the independent variable as the 'influence' of the type of milk. The '*influence* of the type of milk' is the 'height of the children' which is in fact, the dependent variable. Some candidates incorrectly took the headings of the table to describe the variables.
- In Q3.3.3 candidates did not differentiate between planning steps and the procedure and merely copied the first bullet of the procedure as their response.
- The poor performance of candidates, in response to Q3.3.4 and Q3.3.5 confirmed that most candidates did not grasp the concept of evaluating the validity of an investigation.
- In Q3.3.6 candidates lost marks because they provided generic responses to how reliability could be improved, such as 'increase sample size,' without applying it to the context of the investigation.
- Candidates were asked to provide a conclusion for the investigation in Q3.3.7. Many candidates did so unsuccessfully as they provided an analysis of the results, rather than linking the results to the aim of the investigation. Depending on how the results are presented, an analysis of results may sometimes provide the conclusion, but this is not always the case. Candidates must read and comprehend the context of each investigation and not apply generalised rules.

(d) Q3.4 was set at a lower cognitive level, but still caused candidates to lose marks because they:

- Did not correctly describe the role of fossils in supporting the '*Out of Africa' hypothesis* in Q3.4.1 and Q3.4.2. Key words such as 'oldest' and 'only' were either omitted or used incorrectly in the descriptions. Some candidates referred to evidence for human evolution rather than evidence for the '*Out-of-Africa hypothesis*'.
- Listed the differences between the *Homo erectus* and *Homo sapiens* outside of the ones mentioned in the passage in Q3.4.3. They also did not align the

differences per row in the table e.g., they listed brain size in the first column and compared it to brow ridges in the second column.
- Incorrectly described the position of the *foramen magnum* as being 'in the middle' or 'central' rather than 'in a more forward position'.

(e) Candidates' inability to read with comprehension was clearly evident in their responses to Q3.5.3. Many candidates lost marks because they:
- Gave a generic response to describe *natural selection* rather than applying it to the given scenario;
- Used the terms '*favourable and unfavourable characteristics'* without qualifying them in the context of the question;
- Could not identify the characteristic in wolves that was the source of variation and incorrectly identified the variation as '*resistance to radiation'* rather than *'immunity to cancer*';
- Referred to evolution of the '*species*' rather than to evolution of the '*population*';
- Omitted to mention that the *allele* for *immunity to cancer* was passed on to offspring and instead incorrectly stated that the *characteristic of immunity to cancer* was passed on;
- Incorrectly stated that the wolf *population* would now have the characteristic of immunity instead of stating that the next generation had a *higher proportion* of wolves with immunity.

Suggestions for improvement on teaching content and concepts for P2

(a) A significant number of marks in Paper 2 are allocated to the topic of *meiosis*. The list below provides a few tips on how the teaching of this topic can be improved.
- Before commencing with content delivery of *meiosis*, teachers must do a thorough revision and baseline testing of learners' knowledge of *mitosis* (Grade 10). Once the section on *meiosis* is taught, teachers must then highlight the similarities and differences between
  - *meiosis* and *mitosis*;
  - *meiosis I* and *meiosis II;*
  - *meiosis II and mitosis.*
- When describing the behaviour of *chromosomes* during *meiosis*, learners must be specific as to whether they are referring to a *homologous pair* of chromosomes or to a single *chromosome.*
- It should be pointed out to learners that *interphase* is a phase between *meiotic divisions,* and it is therefore incorrect to refer to *interphase I and interphase II.* However, all other phases of meiosis that need to be identified, must be followed by the number I or II;
- Learners must be given classwork and homework exercises that enable them to use features of a meiosis diagram to identify the specific phases and be able to identify the preceding or following phases;
- Teachers must allow learners to practise the drawing of *chromosomes* and *chromatids* using shading to show the effects of *crossing over* and *independent assortment.*

(b) The differentiation between the scientists responsible for the discovery of *DNA* and those responsible for the discovery of key *fossils* was raised in the *Diagnostic Report* of 2023. Reference should be made to this document on the following link:

https://www.education.gov.za/LinkClick.aspx?fileticket=X4BWNU0gxUU%3d&tabid=92&portalid=0&mid=4359

The following issues were also reported on in the *Diagnostic Report* of 2023, but continued to be a challenge in the 2024 examination:

- The correct genetic notation for blood groups;
- The steps in DNA replication;
- The genotypes of gametes in a dihybrid cross;
- Knowledge that natural selection occurs in a population and not in a species;
- Characteristics in natural selection are 'favourable' and not 'desirable';
- Providing generic responses in questions on *validity* and *reliability* in scientific investigations;
- The names of scientists and the fossils that they discovered.

(c) Learners should be given a list of the correct convention of writing:

- Abbreviations for the nucleic acids e.g., DNA, RNA, mRNA and tRNA;
- The genotypes of the different blood groups as in the table below:

Phenotype (Blood group)	Genotype
A	Homozygous - (I^AI^A) Heterozygous - (I^Ai)
B	Homozygous - (I^BI^B) Heterozygous - (I^Bi)
AB	Heterozygous - (I^AI^B)
O	Homozygous - (ii)

(d) Learners need to understand the concept of the DNA *double helix* in order to fully comprehend the beginning stages of *replication* and *transcription*. The term 'double helix' means that DNA has two 'strands', which are twisted into a spiral configuration, hence the separate points of 'the DNA molecule unwinds' and then 'unzips through the breaking of the hydrogen bonds'.

(e) Learners must engage in activities that allow them to distinguish between the following similar-sounding terms:

- chromosome
- centrosome
- centromere
- centriole
- chromatin
- chromatid

These terms are especially relevant to 'biological terminology' and 'match the columns' activities.

(f) It must be noted that all descriptions of cellular processes and structures refer to *eukaryotic* cells, unless otherwise stated, e.g. in *recombinant DNA technology* or the development of *resistance in viruses and bacteria*.

(g) Teachers must assist learners to create a list of definitions that distinguishes between the following terms:

- *species* and *population;*
- *DNA* and *RNA;*
- *DNA profile* and *DNA profiling;*
- *karyokinesis* and *cytokinesis;*
- *DNA replication* and *transcription;*
- *transcription* and *translation;*

- *monohybrid* and *dihybrid;*
- *phenotype* and *genotype;*
- *alleles* and *characteristics;*
- *codon* and *anticodon.*

(h) Learners must be instructed on the correct convention of writing the genotypes for a dihybrid cross and teachers must emphasise that:
- The alleles for a particular characteristic have to be written together, e.g., RRee and NOT ReRe;
- There should be no space or 'X' between the alleles for the two characteristics, e.g. *RRee* and not *RR ee*, as the latter may imply two different genotypes.

(i) When teaching a dihybrid cross in genetics, teachers must emphasise the difference between the genotype of an individual or somatic cell and the genotype of a gamete. The table below summarises the *genotypes* assigned in a *Dihybrid cross*.

GENOTYPE OF …	NUMBER OF ALLELES	EXAMPLE
Individuals	Have two alleles for each characteristic	RRee
Gametes	Have one allele for each characteristic	Re

(j) When conducting internal assessments, teachers must insist that learners give full descriptions for *phenotypes*, indicating the characteristic as well, e.g. 'Red spots and black eyes' and not just 'red and black'.

(k) Teachers need to expose learners to a diversity of diagrams representing *protein synthesis,* so they are comfortable with all the different approaches. Also, both *codon* and *anticodon* tables must be practised on.

(l) Learners are competent at doing genetic crosses to establish the possible *phenotypes* in offspring, but struggle to articulate the inheritance pattern when asked for an explanation. Teachers must provide opportunities for this in SBA tasks and tests. The following general criteria may be followed, depending on the context:
- Establish the phenotype of the offspring;
- Formulate the genotype of the offspring;
- Give the phenotype and genotype of each parent; and
- Indicate which allele was inherited from each parent.

(m) The teaching of biotechnology appears to pose a challenge. Genetic modification as a topic is poorly understood. Learners can be assisted in understanding the process, if it is broken down as follows:
- The desirable characteristic/product, e.g. production of the Bt toxin;
- The source of the gene responsible for the desired characteristic, e.g. the bacterium;
- Where the gene is transferred to, e.g. the maize plant;
- The effect of the gene in the second organism; and
- The resultant product, e.g. insect resistant plant.

(n) The successful interpretation of phylogenetic trees can only be mastered through practice and teachers need to provide as many examples, formats and opportunities for learners to do so. The following features, inter alia, need to be emphasised:
- Species that occur in present time;
- Points of extinction of species;
- Species that exist during the same period;

- The difference between a common ancestor and the most recent common ancestor and that species that have a more recent common ancestor are more closely related.

(o) The section on evolution comprises 36% (54 marks) in Paper 2. Evolution, in particular human evolution, is taught towards the end of the academic year and as such is often glossed over. This may explain the lower performance in Q3.

Teachers must ensure that sufficient time and effort is placed on the delivery of this content to prepare the learners adequately. The question on the Out-of-Africa hypothesis was pitched at a lower cognitive level, yet candidates could not achieve maximum marks.

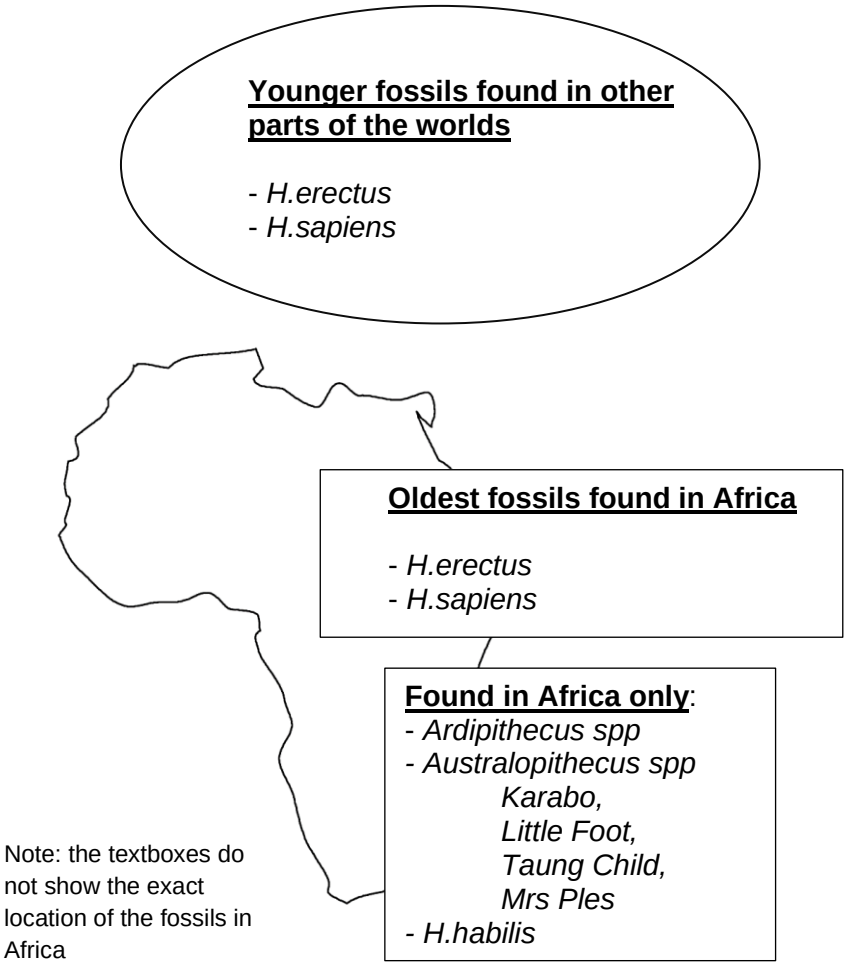
Some teachers encourage the studying of the content from the *Examination Guidelines*, rather than ensuring that the learners understand the content. This causes learners to fumble when they cannot recall correctly, or a different context is presented.

Teachers could also use mnemonics to enable the recall of the evolutionary sequence of fossils, e.g. 'hes' for *habilis, erectus and sapiens* representing the 'Homo' genera.

Since many learners are visual or spatial learners, a valuable strategy to understanding the use of fossil evidence for the Out-of-Africa hypothesis would be to use a map of the continents, showing which fossils occurred on which continents. Using the image and the relative ages of the fossils, they must explain to learners *how* and *why* scientists made the deductions they did. If learners understand the logic, their recall will be more effective.

The diagrammatic representation shown below is only an example and teachers must produce their own images.

Diagrammatic representation of the Out-of-Africa Hypothesis



(p) Learners seem to have a good overview of the dynamics of natural selection, but struggle to identify the details specific to the scenario given. Teachers must present learners with as many different scenarios as possible and ensure that they are able to identify:

- The population concerned, e.g. the wolves;
- The variation that occurs within the population, e.g. mutation/immunity to cancer;
- The favourable characteristic, e.g. mutation/immunity to cancer;
- The unfavourable characteristic, e.g. no mutation/immunity to cancer;
- The selection pressure/change in the environment, e.g. high radiation;
- The allele that is passed on (not the characteristic);
- The higher proportion of which variant in the next generation, e.g. those with the mutation/immunity to cancer.

General suggestions for improvement for Paper 1 and Paper 2

(a) The *CAPS* document, *Examination Guidelines* and *ATP*s provide the framework for content delivery. Teachers must use their discretion and the information in approved textbooks to determine the aspects that are crucial to the understanding of content, e.g. none of the aforementioned documents mentions the term *karyokinesis*, yet it is crucial to the understanding of meiosis that this term be utilised. Similarly, the exact

anatomical structures in the nervous system are not mentioned, but knowledge of these structures is crucial to the understanding of the content.

(b) Life Sciences is a science subject and therefore the correct representation and notations are important, e.g. tRNA is the accepted abbreviation for transfer RNA and not TRNA. Genotypes and genetic crosses have to be given with the correct scientific representation. Full phenotypic descriptions must be given. The descriptions given in the key to a pedigree diagram must be used to indicate the phenotypes when requested.

(c) Many of the errors and misconceptions that presented themselves in candidate responses in the November 2024 examinations have been highlighted in previous Diagnostic Reports. This indicates that this document is not being used as a remedial tool. The past reports may be accessed using the link below:

https://www.education.gov.za/?fileticket=4JVOD_6ncds%3D&tabid=92&portalid=0&mid=4359

(d) There is clear evidence that many learners have been effectively taught and that they have learnt the necessary material, however, due to stimulus difficulty and response difficulty, they are unable to obtain the maximum marks per question. Learners must be taught not only to reproduce what they recall of the content, but to ensure that their responses accurately answer the questions asked. An example of this is from Paper 1 where candidates were able to describe the features of the *uterus*, but not its suitability for *implantation*.

(e) Learners must be made aware that data response questions require them to use the data, extract, texts, diagrams or scenarios provided, to answer the questions. They should consider the context and not provide generic responses.

(f) Scientific investigations are a pivotal assessment tool for higher-order questions and are present in both Papers 1 and 2. Learners who are able to master the typical questions based on a scientific investigation will definitely perform well in Life Sciences. The questions that are asked generally require candidates to:

- Identify the independent variable;
- Identify the dependent variable;
- Identify the controlled variables;
- Define a control;
- Express the need for a control;
- State the aim of the investigation;
- List the planning steps for the investigation;
- Suggest how to improve the validity of the investigation;
- Suggest how the reliability of the results can be improved;
- State a conclusion;
- Evaluate the procedure.

Learners must ensure that they do not give generic responses but respond to the specific procedure and data provided. Candidates may be asked, for example, how to improve the reliability, or how the scientists improved that reliability. In the latter case, they must indicate how the reliability for *each group* was improved. Reference can be made to previous diagnostic reports that give the specific descriptions of the requirements mentioned above.

(g) Learners must master the skill of drawing graphs as this may be assessed in one or both papers. The criteria for assessing the different types of graphs may be accessed from the official national Marking Guidelines and given to learners for self-assessment of the graphs that they have drawn. The one area that learners struggle with is the graph caption/heading. Headings in a graph must mention both variables and any other specific details of the data provided. The term 'versus' (or vs) should not appear in the graph caption.

(h) It is clear that learners do not understand how to interpret a graph, or the data given in a tabular form. They are proficient at reading off values but are unable to identify and explain trends. When describing the trend in a graph, learners must begin with the independent variable and see how its values affect the dependent variable. Learners must understand that they should not describe the data as being directly proportional or indirectly proportional. This is not accepted as a description, since direct proportion means an increase or decrease at a constant rate, which is rarely the case with biological data.

(i) Learners should be provided with the relevant sections of the official *2021 Examination Guidelines* before a particular topic is taught. Too often, learners are presenting information that is outside the scope of the curriculum and examinable content which may not specifically be the required response. Learners can also use the *Examination Guidelines* as a tick list to guide their studies.

(j) The format of internal and provincial examinations as well as the criteria in the Marking Guidelines should follow the format and layout of the national examination from Grade 10 onwards. This will familiarise learners on how to present their responses for multiple choice questions, biological terminology etc., as well as sensitise them on how these concepts are marked.

(k) Internal and provincial assessments must include questions of higher cognitive levels, as prescribed in the *CAPS*. They should also include questions that require extended writing and articulation of responses.

(l) Biological terminology is crucial to the general understanding of *all* the questions in Life Sciences, and not just for Q1.2. In order to consolidate biological terminology, the approach should be:

- First provide the description and the learner must give the term; and
- Next, provide the term and allow the learners to give the associated description.

(m) The instructional verbs in a question determine the depth of the expected response. When candidates are asked to 'describe', then reasons may not always be required, however, when they are asked to 'explain', then reasons must be provided. Learners must be taught to underline the instructional verb, so that they are alerted to the required response.

(n) Learners must be encouraged not to express their responses in a negative form, e.g*. 'use the data to explain which group has healthy individuals',* candidates responded with an explanation for which group had the unhealthy individuals*.*

(o) Subject advisors should facilitate the administration of topic tests to ensure the tempo and completion of the relevant sections. These may be extracted from previous examination papers and used as informal assessments.

(p) The following topics are often neglected and not given the necessary attention:

- Reproduction in vertebrates;
- Plant responses to the environment;
- Genetic engineering (biotechnology, stem cell research, cloning);
- Human evolution.

These topics have to be assessed in every national examination and should be emphasised in the classroom. Teachers and subject advisors must plan effectively so that these topics are covered and reinforced thoroughly.

CHAPTER 9

MATHEMATICAL LITERACY

The following report should be read in conjunction with the Mathematical Literacy question papers of the November 2024 examinations.

2.1 PERFORMANCE TRENDS (2020–2024)

The number of candidates who wrote the Mathematical Literacy examination in 2024 increased by 20 906, compared to that of 2023.

There was a slight increase in the pass rate this year. Candidates who passed at the 30% level increased from 82,3% in 2023 to 86,1% in 2024. There was a corresponding increase in the pass rate at the 40% level over the past two years from 56,7% to 62,1%.

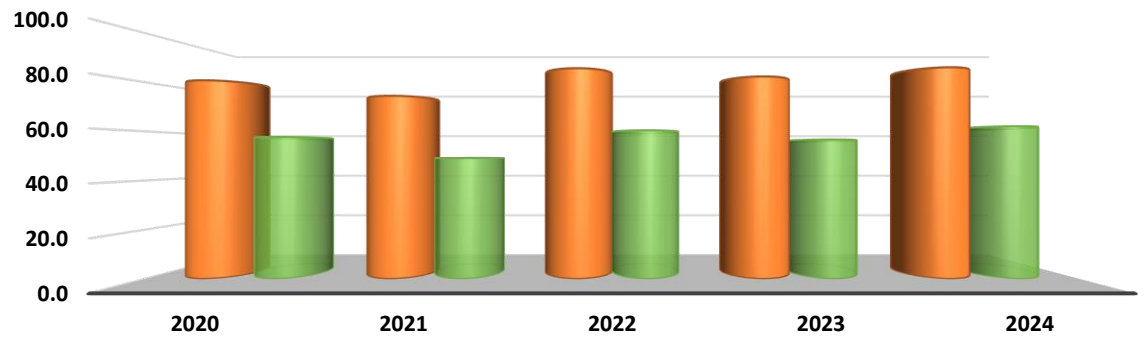
There was a slight improvement in the percentage of distinctions over 80%, which increased from 2,1% in 2023 to 2,8% in 2024. Given the increase in the size of the 2024 cohort, this converts into an increase in the total number of distinctions from 8 859 to 12 397.

The various support programmes employed by teachers, subject advisors and provincial education departments were continued in 2024. The resourcefulness and diligence of the above-average candidates contributed to the overall results in the subject.

Table 9.1.1 Overall achievement rates in Mathematical Literacy

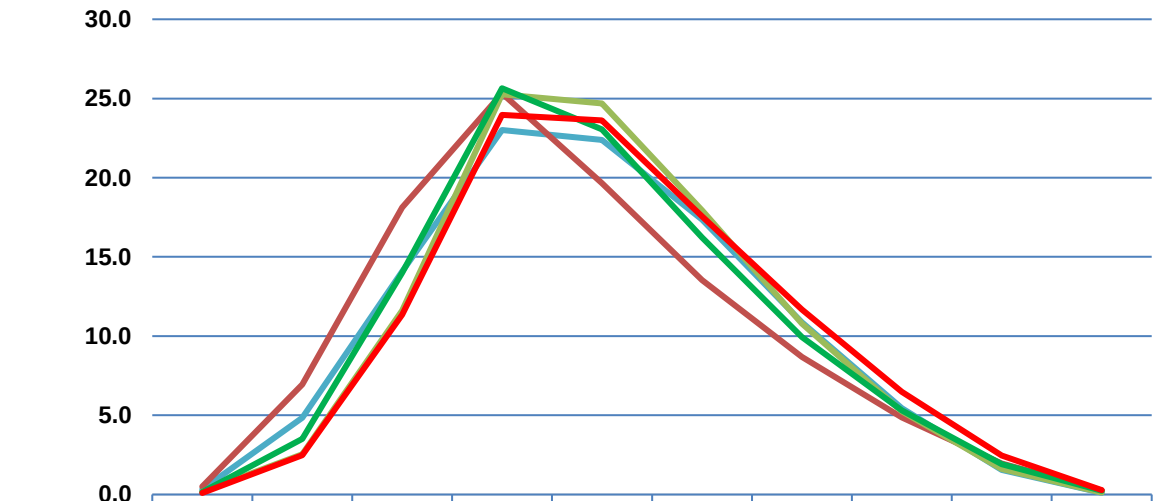
Year	No. wrote	No. achieved at 30% and above	% achieved at 30% and above	No. achieved at 40% and above	% achieved at 40% and above
2020	341 363	275 684	80,8	197 131	57,7
2021	441 067	328 382	74,5	216 692	49,1
2022	450 005	385 515	85,7	271 830	60,4
2023	421 835	347 227	82,3	239 045	56,7
2024	442 741	380 994	86,1	274 895	62,1

Graph 9.1.1 Overall achievement rates in Mathematical Literacy (percentage)



	2020	2021	2022	2023	2024
% achieved at 30% and above	80.8	74.5	85.7	82.3	86.1
% achieved at 40% and above	57.7	49.1	60.4	56.7	62.1

Graph 9.1.2 Performance distribution curves in Mathematical Literacy (percentage)



	0-9.9	10-19.9	20-29.9	30-39.9	40-49.9	50-59.9	60-69.9	70-79.9	80-89.9	90-100
2020	0.3	4.8	14.1	23.0	22.4	17.4	10.9	5.5	1.6	0.1
2021	0.5	6.9	18.1	25.3	19.6	13.5	8.7	4.9	2.0	0.3
2022	0.2	2.5	11.6	25.3	24.7	17.9	10.8	5.3	1.6	0.1
2023	0.2	3.5	14.0	25.6	23.0	16.2	9.9	5.3	1.9	0.2
2024	0.1	2.5	11.4	24.0	23.6	17.5	11.7	6.5	2.5	0.3

9.2 GENERAL COMMENTS ON PAPER 1 AND PAPER 2

(a) Candidates are making the same mistakes highlighted in the 2022 and 2023 examinations (Diagnostic Reports). The reason for highlighting common errors in a diagnostic report is to use the advice given and to make sure that the learners do not make the same mistakes as the previous year's candidates.

(b) The information, advice and errors highlighted in this Diagnostic Report aims to assist teachers with the planning of daily tasks to ensure that learners not to make the same mistakes as the previous year's candidates.

(c) Past question papers are to be used as a resource to assist learners to prepare for the examinations. Teachers should refrain from only focusing on past examination papers in class.

(d) **The importance of formative testing:** Short, informal formative tests must be used to build the confidence of learners in all topics. If learners do their corrections, it provides them with immediate feedback and an understanding of the mark allocation. The less challenging sections in each of the questions in the NSC Mathematical Literacy papers, particularly Question 1, can be used as confidence boosters.

(e) **Previous recommendations: Candidates seem to have not taken heed of previous recommendations.** Teachers should consult past Diagnostic Reports to establish if some topics or concepts are repeatedly indicated as problematic to most learners. For example, it has been noted over time that learners' basic mathematical knowledge is problematic, and this includes learners' inability to work with large numbers or understand the concept of time.

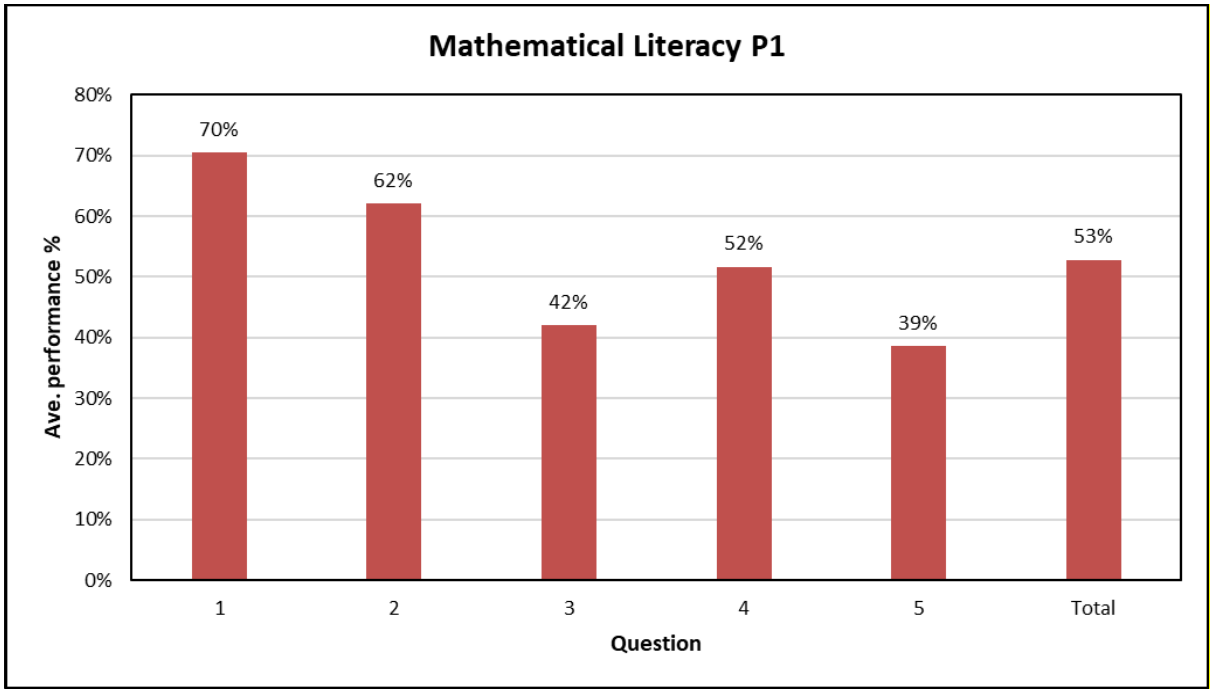
(f) Candidates once again lacked the skill of reading information from a graph, table, etc. These should be practised and integrated into classroom and homework activities throughout the FET phase.

9.3 OVERVIEW OF CANDIDATES' PERFORMANCE IN PAPER 1

General comments

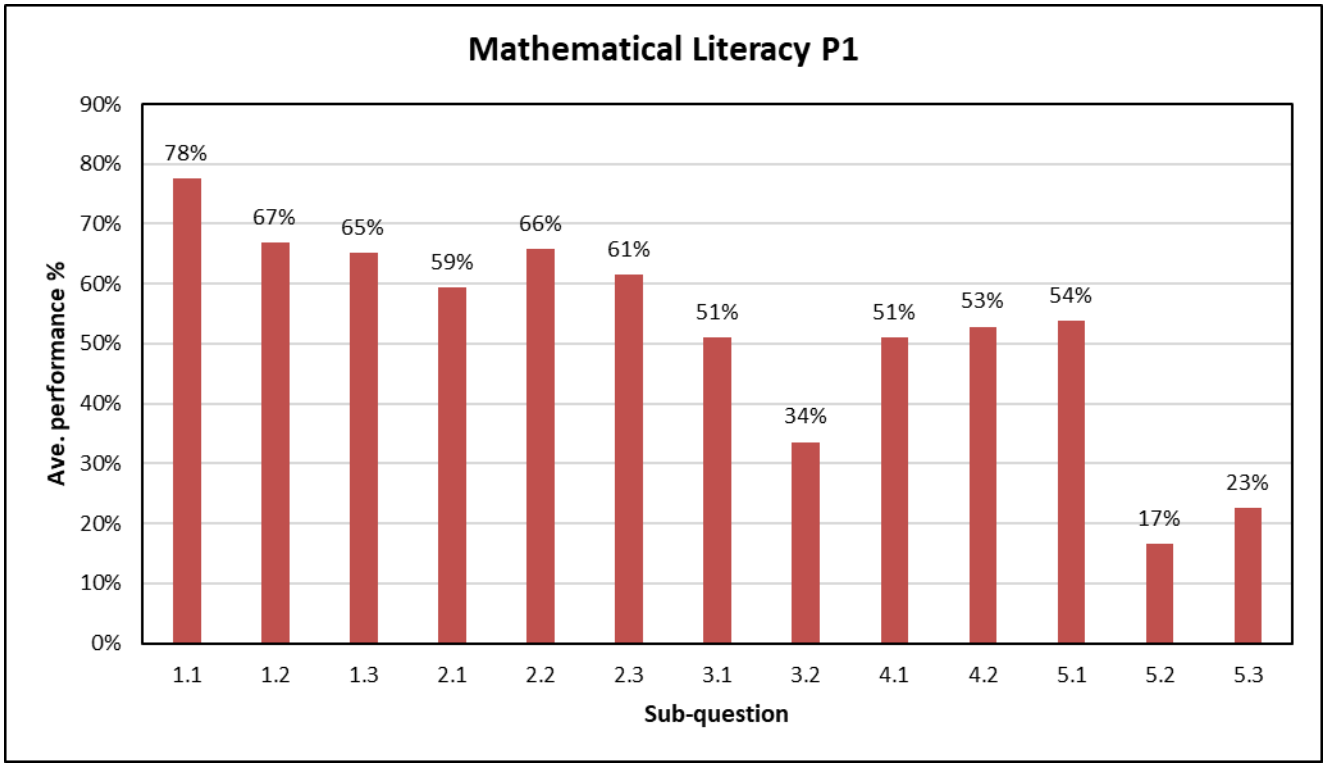
(a) The 2024 question paper was set according to the 2021 *Examination Guidelines*. The Application Topics tested in Paper 1 are: Finance, Data Handling and Probability. Question 1 was based entirely on short contexts with all questions pitched at level 1.

Graph 9.3.1 Average performance per question in Paper 1 2024



Question	Topic	Ave. performance %
1	Finance & Data Handling	70%
2	Finance & Probability	62%
3	Data Handling	42%
4	Finance, Data Handling & Probability	52%
5	Finance & Data Handling & Probability	39%
Total		**53%**

Graph 9.3.2 Average performance per subquestion in Paper 1 2024



Subquestion	Topic	Ave. performance %
1.1	Finance	78%
1.2	Finance	67%
1.3	Data Handling	65%
2.1	Finance	59%
2.2	Finance	66%
2.3	Finance	61%
3.1	Data Handling	51%
3.2	Data Handling	34%
4.1	Finance	51%
4.2	Probability, Finance & Data Handling	53%
5.1	Finance & Data Handling	54%
5.2	Finance	17%
5.3	Finance & Data Handling	23%

QUESTION 1: SHORT CONTEXTS (INTEGRATED LEVEL 1 QUESTIONS ONLY)

Common errors and misconceptions

(a) In Q1.1.4 candidates could not write or express a probability of 0,56 as a simplified fraction.

(b) Most candidates in Q1.1.5 struggled to estimate the total number of voters for School X and School Y by reading from the bar graph.

(c) In Q1.2.1 candidates could not identify the food item that showed a decrease month-on-month and year-on-year.

(d) In Q1.2.3 candidates did not know that a dozen means 12 or to convert from 1,5 dozen to 18.

(e) Some learners struggled to differentiate between fractions and ratio in Q1.2.4.

Suggestions for improvement

(a) Teachers should give learners enough practice with the basic skills topics, within a context. Basic skills topics in Mathematical Literacy need to be revised in Grade 11 and Grade 12.

(b) Teachers should create opportunities in the classroom for learners to interpret and use various numbering conventions in different context (e.g. dozen, century, etc.)

(c) Reading information from tables, graphs and documents needs to be practised more often. Learners must be given activities on how to read information with insight from texts, graphs, and tables.

QUESTION 2: FINANCE

Common errors and misconceptions

(a) In Q.2.1.3 candidates could determine the amount for block 1. They struggled to calculate the electricity consumption for Block 2.

(b) Candidates in Q2.2.2 still struggled with VAT calculations, particularly regarding the concepts of **VAT inclusive** and **VAT exclusive**. When given VAT inclusive, candidates calculate 15% of a VAT inclusive amount.

(c) In Q2.2.3 most candidates did not convert 7 years to 84 months before they multiplied the monthly payment. Most candidates multiplied by 7 or 12.

(d) Candidates, in Q.2.3.1, used the monthly income to identify the tax bracket, most candidates did not multiply by 12 to get the yearly income.

(e) In Q.2.3.2 most learners could not simplify their calculations using order of operations (BODMAS).

Suggestions for improvement

(a) Teachers should focus on reverse calculations in context and use block tariff system examples integrated into learners' daily activities.

(b) Time formats on financial documents should be practised in class, when teaching this topic.

(c) The personal income tax table is a tariff table. When delivering this content, teachers must scaffold the different steps, i.e.:
- Converting the monthly taxable income to annual taxable income
- Selecting the correct tax bracket
- Substituting correctly into the income tax formula
- Calculating using BODMAS
- Subtracting rebates according to age and medical credits, is applicable.
- Understanding how a tax threshold is calculated.

QUESTION 3: DATA HANDLING

Common errors and misconceptions

(a) Most candidates were unable to calculate the percentage increase, they did not add the original number of stores for Q.3.1.2.

(b) In Q.3.1.3 candidates were able to identify the correct values, however, they did not calculate the number of employees per store correctly.

(c) Candidates in Q.3.2.1 did not have enough knowledge to differentiate between the two mathematical terms, i.e. sample and population.

(d) In Q.3.2.3 the candidates seemed not to clearly understand the concept of *outlier*. They merely described it as the biggest/highest value.

(e) Candidates, in Q.3.2.4(a), could not identify the two values for even numbers and calculated the mean, median and range.

(f) In Q.3.2.4(b) candidates could not calculate the IQR when the outlier was removed, while other candidates failed to identify the new Q1 and Q3 values to calculate the IQR.

Suggestions for improvement

(a) Teachers should start the Application Topic of Data Handling by revising the Data Cycle. Learners must be exposed to questions in the data cycle involving the difference between the terms, population and sample.

(b) Emphasis should be placed on the terminology used in this Application Topic. Terminology must be integrated into learners' daily classwork activities.

(c) The demonstration of the impact caused by removing or adding a value from a data set must be demonstrated to learners during the teaching and learning process.

(d) Every statistical process on data handling is made up of at least six stages and all these stages should be equally taught. Teachers should not only focus on summarising data.

(e) Teachers should pay more attention to level 4 type questions, which require learners to provide verification. Learners must be given opportunities to verify their answers during classroom sessions.

(f) Teachers and subject specialists should develop activities in different 'current' context calculations based on quartiles and IQR values with integrated box-and-whisker plots.

QUESTION 4: FINANCE, DATA HANDLING AND PROBABILITY

Common errors and misconceptions

(a) Writing cost as a formula from a given cost table seemed to be a serious challenge for most candidates in Q.4.1.1(a).

(b) Candidates, in Q.4.1.2(a), could not name the type of graph.

(c) In Q.4.1.3 most candidates were not able to follow 'R1 000 per hour or part thereof'. They multiplied the number of hours for DJ 5-Star by 7 (hours) or 7,5 (hours) instead of 8 (hours).

(d) Some candidates, in Q4.2.1, wrote both incorrect numerator and denominator, while other candidates expressed their answer in a ratio form.

(e) In Q4.2.2 candidates did not arrange the data in ascending order and therefore identified the incorrect median. Some candidates used all the values (2022 and 2023) where the questions specifically asked for the information of 2023.

Suggestions for improvement

(a) Multiple representations of a function need to be incorporated into the teaching and learning of straight-line graphs in a Mathematical Literacy context. For example, the straight line can be described in words, a mathematical equation, table, and graph. Learners must be shown that these linear relationships can be represented in the different formats and learners must be given ample classroom time to practise how to write this linear function into the different representations.

(b) Teachers must expose learners to all financial situations where the term 'or part thereof' is used, e.g. parking tariff systems at shopping malls.

(c) Drawing of a graph remains a problem. Learners must practise on graph paper. Plotting points on a system of axes should be practised where the scale needs to be interpreted first before the points are plotted on the given system of axes.

(d) Measures of central tendencies (mode, mean and median) should be practised with large and very small numbers. After learners have been tested on these concepts on a regular basis, written feedback should be given to learners by the teacher where misconceptions occur.

(e) Reading values of a given table, graph or context should be practised in class. Learners should be given ample time in class to extract values from a scenario and check all the values they have extracted before the do any calculations and when they check the final answer.

QUESTION 5: DATA HANDLING AND FINANCE

Common errors and misconceptions

(a) In Q5.1.1 many candidates were not able to differentiate between balanced, surplus and deficit budget. Most candidates gave balance as an answer.

(b) Reading the values of a pie chart is still challenging for some candidates in Q5.1.2.

(c) In Q.5.1.5 candidates could not convert the amount given to lakh crore to rupees. They did not understand the conversion factors given. Candidates multiplied by 100 000 and not by 100 000 and 100.

(d) In Q.5.2.1 candidates were unable to divide lakh and rupees by 100 and 100 000 for the conversion to lakh crore.

(e) Candidates did not grasp the concept of the various numbering systems. In Q.5.2.2, converting from rands to an unfamiliar currency with similar numerical values was a challenge.

(f) In Q.5.3.1 candidates found it difficult to describe the trend and simply gave the definition of inflation.

(g) Most candidates in Q.5.3.2 did not use the correct percentage and could not apply the concept of inflation by calculating the previous year's price (reverse calculations).

Suggestions for improvement

(a) Three concepts (deficit/balance and surplus) need to be thoroughly drilled with the help of examples and several activities.

(b) Learners should be given examples of reading values from pie charts during contact time and no time should be spent on drawing of pie charts. There should only be focus on the interpretation of pie charts as per the *CAPS* for Mathematical Literacy.

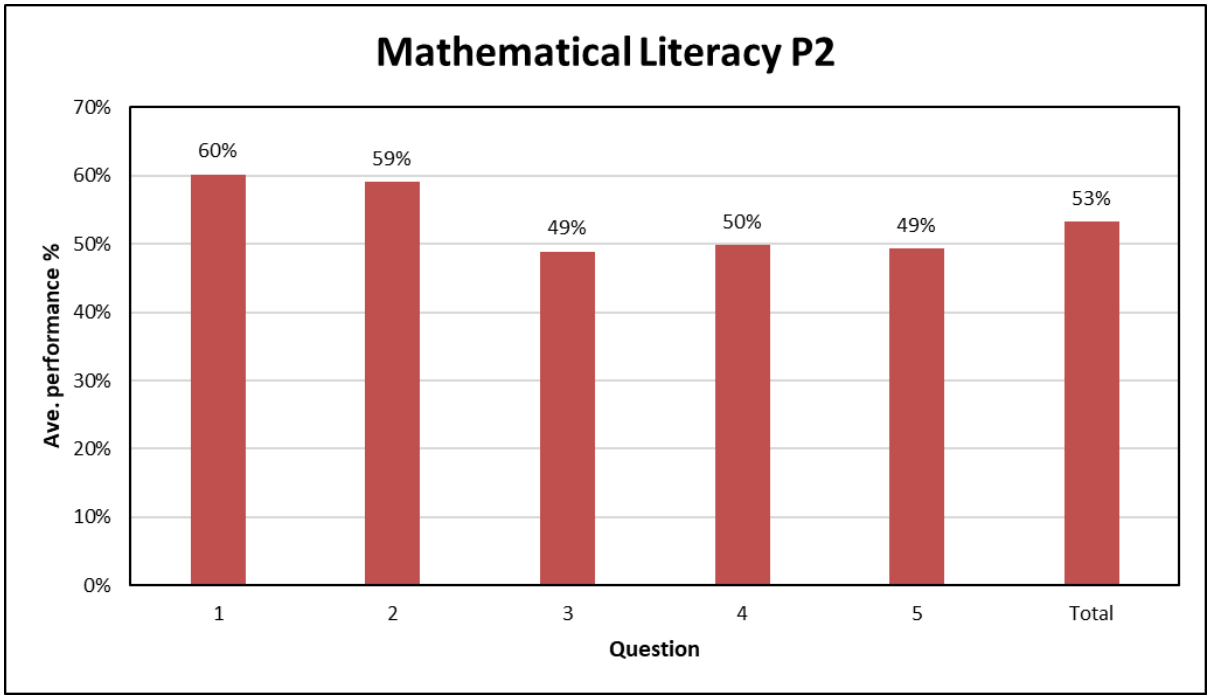
(c) Teachers should expose learners to different activities involving exchange rates in various contexts. Emphasis should be placed on whether to multiply and when to divide when converting from one currency to another for the selected currency conversion factor.

(d) Inflation should be taught in different contexts. Learners should be taught how to calculate the projected amount and the previous years' amounts.

9.5 ANALYSIS OF CANDIDATES' PERFORMANCE IN EACH QUESTION IN PAPER 2

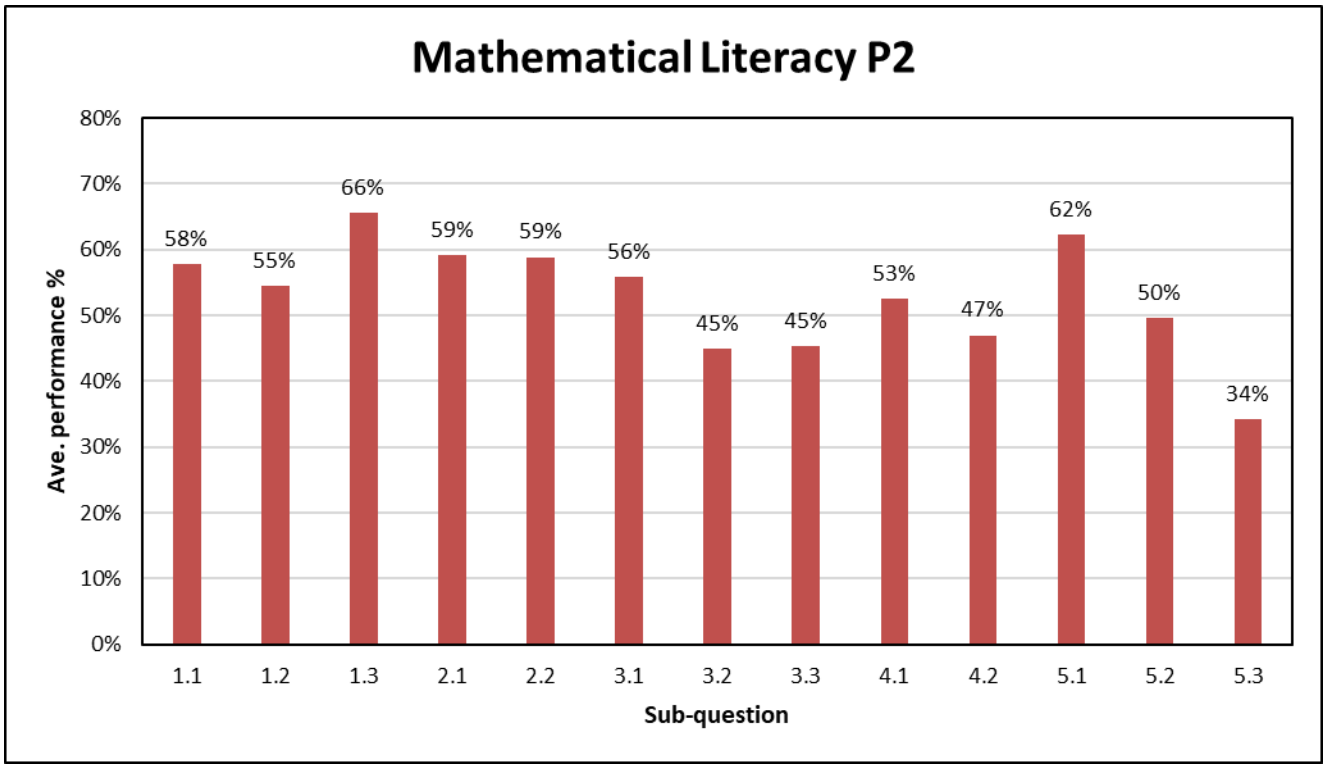
The following graph is based on data from a random sample of candidates. While this graph may not accurately reflect national averages, it is useful in assessing the relative degree of challenge of each question as experienced by candidates.

Figure 9.5.1 Average performance per question in Paper 2 2024



Question	Topic	Ave. performance %
1	Maps, plans and Measurements	60%
2	Maps, plans, and Probability	59%
3	Measurements	49%
4	Measurements, Maps, and Probability	50%
5	Measurements, Maps and plans	49%
Total		**53%**

Figure 9.5.2 Average performance per subquestion in Paper 2 2024



Subquestion	Topic	Ave. performance %
1.1	Measurements, maps and plans	58%
1.2	Measurements	55%
1.3	Maps and plans and other representations	66%
2.1	Maps, plans, and probability	59%
2.2	Maps and plans and other representations	59%
3.1	Measurements	56%
3.2	Measurements	45%
3.3	Measurement and probability	45%
4.1	Measurements, maps and plans	53%
4.2	Measurements and finance	47%
5.1	Measurements, maps and plans	62%
5.2	Measurements	50%
5.3	Measurements, maps and plans and probability	34%

9.6 ANALYSIS OF CANDIDATES' PERFORMANCE IN EACH QUESTION IN PAPER 2

QUESTION 1: SHORT CONTEXTS (INTEGRATED LEVEL 1 QUESTIONS ONLY)

Common errors and misconceptions

(a) Q1.1 was well answered by most candidates but some of them did not follow instructions and instead of writing down the letter, they wrote the definition.

(b) Most learners did not get 1.1.2 correct as they were not able to interpret *elevation*. Most candidates wrote 'F' as an answer.

(c) In Q1.1.4 candidates are still confusing *area* and *capacity*.

(d) In Q1.2.2 hexagonal paving brick was unfamiliar to most candidates, they were not taught how to calculate the volume of hexagonal paving bricks, and therefore they were unable to choose the correct answer. Most candidates gave B as an answer.

(e) In Q1.3.2 candidates wrote 13 × 3 = 39 instead of 3 x 6 = 18. They worked with all the crosspieces instead of the 6 used to assemble the chair seat.

(f) In Q1.3.4 candidates did not read the notes in the text box, which stated that 'the thickness of the wood is the smallest dimension'. Hence, most candidates wrote all the dimensions of the chair support.

(g) In Q1.3.5 candidates struggled with conversions as they are unfamiliar with which appropriate conversion factor to use.

Suggestions for improvement

(a) Learners need to be exposed to elevation maps and taught to link the correct side to the correct elevation.

(b) Learners should be exposed to different types of shapes and how the perimeter area, volume and capacity of these shapes are calculated.

(c) Teachers should make use of open, closed and solid 3D objects to demonstrate how the thickness can be identified.

(d) Teachers are encouraged to use the definition booklets from DBE. Speed tests may be administered on the match questions developed from these terminologies and definitions.

(e) Teachers are encouraged to teach similar explanations/definitions of concepts and teach learners how to match the list of explanations/definitions with concepts.

(f) Teachers need to teach learners reading skills and how to analyse and extract information from contexts.

(g) Learners should practise answering techniques and learn to understand and apply key action words in questions, such as *identify*, *determine*, *name*, and *write down*.

QUESTION 2: MAPS AND PLANS AND PROBABILITY

Common errors and misconceptions

(a) In Q 2.1.1 many candidates had a problem with the definition of an *aerial view*.

(b) Some candidates could not understand the keyword *MAXIMUM* in Q2.1.2.

(c) In Q2.1.3 many candidates could not give a general direction, indicating lack of knowledge on compass direction. Some candidates are still giving directions (by describing a route) and not the general direction.

(d) Q2.1.4 was well answered.

(e) In Q2.1.5 some candidates could not interpret the word exactly as a concept in probability.

(f) The concept of *scale* was a challenge for most learners in Q2.1.6. Some learners lack the skill of using a ruler to measure distance while some do not know the units of measurement on a ruler. Many candidates were unable to convert the 8,2 m to cm or mm. They lack the concept of scale therefore they were unable to determine the scale of the plan.

(g) Many candidates in Q2.2 could not interpret the elevation map.

(h) In Q2.3.1 some candidates still confused general direction with giving directions from one place to another. Some candidates did not look at the point of reference of the North(N) to state the general direction, as the North on the map was not in the most familiar position.

(i) In Q2.3.3 candidates did not read the whole map to see the label for the Pretoria Hotel. Many Pretoria-based candidates used their own knowledge and not the given map as the location of the hotel.

(j) Many candidates in Q2.3.5. identified roads instead of presenting a reason. There was a lack of interpretation of the arrows. Many candidates did not realise that all the roads on the map lead to the Pretoria Hotel and that these could be used by the conference attendees to get to the hotel.

(k) Although many candidates answered Q2.3.6 well, there are still candidates who are struggling with addition of time.

Suggestions for improvement

(a) Learners should be exposed to different kinds of maps including layout plans and elevation maps.

(b) Teachers should emphasise that in determining direction the 'from' becomes the starting point.

(c) Teachers should spend sufficient time on teaching scales and conversion into scale.

(d) Learners must practise measuring accurately using a ruler.

(e) Teach basic terms to describe slopes on elevation maps, such 'ascending/uphill' for an increase in elevation and 'descending/downhill' for a decrease. Even a 'flat' route should be clearly explained to ensure learners understand the concept. A 'flat' route refers to a route or road with no significant uphill or downhill, meaning it remains level throughout.

(f) Workshops should be organised at district levels to share on how to approach the topic on maps and plans to improve learner performance in this topic.

QUESTION 3: MEASUREMENT AND PROBABILITY

Common errors and misconceptions

(a) In Q3.1.1 some candidates experienced problems in subtracting times and could not get a correct answer. The format of writing the duration was also not correct in many cases.

(b) Some candidates, in Q3.1.2, could not correctly interpret the question and just subtracted 1 pillow (11 cm). Some candidates cannot differentiate between *height* and *width*.

(c) In Q3.1.3 some candidates did not know which dimensions to substitute into the formula while others did not even know how to substitute.

(d) A few candidates still struggled with the relationship between *radius* and *diameter* in Q3.2.1.

(e) In Q3.2.3 many candidates did not know that they had to subtract the area of the hole as the hole will not be painted. Most candidates could not convert cm^2 to m^2. Many candidates could not use the spread rate.

(f) Q3.3.1 required candidates to calculate the cube root which is not part of the *CAPS*. Candidates could have scored 3 marks by substituting into the formula and writing the answer in cm, but most candidates could not substitute into the formula.

(g) The *probability* was a challenge to some candidates in Q3.3.2 as candidates had to add values in the numerator.

Suggestions for improvement

(a) Subject advisors need to organise workshops where teachers can share information on how to teach the concepts on measurement.

(b) Teachers are encouraged to use the *CAPS* document and the *Examination Guidelines* to ascertain what learners need to know.

(c) Learners need to practise writing answers with the correct units and should be taught how to convert from one unit to another.

(d) Teachers and learners should bring 3D items to class that can be analysed and interpreted.

(e) Teachers should emphasise that pictures and illustrations given in the scenario are meant to guide learners to make sense of the context. Therefore, learners should analyse the scenario in conjunction with the information provided in every question.

(f) Learners should use calculators with the hour/minute second button so that they do not have to convert time. Teachers must focus on teaching learners how to use this button.

(g) Learners should be taught to first copy the formula as provided in the question then substitute before trying any simplification.

(h) Teachers should develop real-life scenarios for class activities to expose learners to various contexts.

QUESTION 4: MAPS AND PLANS, MEASUREMENT AND FINANCE

Common errors and misconceptions

(a) In Q4.1.1 some candidates were not able to interpret the question and read values in descending order instead of ascending order. They were unable to identify the crude oil that would be third to boil.

(b) Q4.1.2 was well answered. A few candidates misinterpreted the question, they were expected to write down the product that would be extracted. They wrote *extractor pipes* instead of *gasoline/petrol*.

(c) In Q 4.1.3 many candidates experienced a challenge in substituting correctly in the given formula and those who substituted correctly could not simplify the formula by making the unknown the subject of the formula.

(d) Q4.1.4 was poorly answered as most candidates could not interpret the question. Some candidates used 25% instead of 2,5%. Most candidates calculated the surface area of the open cylinder, they did not calculate the area of the pipes.

(e) In Q.2.1 many candidates could not identify that to calculate the bricks, they needed to use the pattern given in the sketch. Some candidates only focused on the bricks shown on the sketch. The side view of the double-brick was also confusing.

(f) In Q4.2.2 only the top performing candidates were able to score full marks, and most candidates calculated the area of one garage door and did not multiply by 2 for two garage doors.

(g) Q4.2.3 was fairly well answered.

Suggestions for improvement

(a) Learners need to be given more exercises that use different formulas and also exercises that focus on simplification, including making the unknown the subject of the formula.

(b) Learners should be taught to distinguish between radius and diameter.

(c) Simple exercises involving increasing or decreasing by a percentage must be practised.

(d) Teachers should teach learners to pay attention to key words in questions as it was mentioned, excluding the area taken up by the pipes.

(e) Questions involving measurement and costing need to be practised.

(f) Class activities should be context based so that learners can develop the skill of solving problems when given scenarios or visual texts.

(g) Districts need to develop question banks (on each topic) which can be used by teachers after teaching the topics.

QUESTION 5: MAPS AND PLANS AND MEASUREMENT

Common errors and misconceptions

(a) Q5.1.1 well answered.

(b) Most candidates performed well in Q5.1.2. Only a few candidates could not interpret the map.

(c) Performance in Q5.1.3 was poor as most candidates could not understand that when given the total distance, they are required to calculate a missing distance. They were expected to add the given values and subtract from the total. Some candidates measured the distance between Perth and Adelaide using a ruler instead of subtracting the given distances from 14 655 km.

(d) Candidates performed well in Q5.1.4. which had a 73% pass rate.

(e) Candidates performed poorly in Q5.1.5. Firstly, as indicated in the previous questions learners lack the skill of substituting in a formula. Secondly, candidates cannot convert time to hours. The question required work in hours and not hours and minutes since speed is in kilometres per hour. Lastly, they could not simplify and make speed the subject of the formula.

(f) In Q5.2.1 most candidates had difficultly interpreting the picture and were unaware that they had to interpret the height of the Uluru from the picture and relate it to the given distance of 1 142 feet.

(g) Most candidates had a challenge in working with 3 ratios in Q5.2.2. Some candidates were able to write the 3 ratios but had a challenge with simplifying the ratio.

(h) Q5.3.1 was poorly answered. The concept of probability as mentioned previously, is still a challenge. Candidates failed to interpret the table with sizes of the Mainland area, Island area and percentage of total area. Most learners wrote 1/8 as the probability that a meteorite randomly fell in Queensland.

(i) Many candidates performed fairly well in Q5.3.2 but some candidates did not even attempt the question. Candidates failed to compare that the total area of the islands of Australia is approximately half of the mainland area of Tasmania.

(j) Q5.3.3(a) This was a fairly well-answered question, as most candidates were able to read the 2 values from the graph and were awarded marks for being able to do so. Some candidates were unable to calculate the population density since the formula was not given.

(k) Q 5.3.3(b) Most candidates performed poorly in Q.5.3.3 (b) as they did not seem to understand the question.

Suggestions for improvement

(a) Maximise contact time since Mathematical Literacy needs to be practised daily.

(b) More time should be spent on the concept of rounding, i.e. rounding off, rounding up and rounding down and the impact of early rounding.

(c) Learners should be given daily practice exercises and corrections need to be done and explained.

(d) Teachers can form clusters where they can frequently share information.

(e) Short classroom tests should be given to learners. These tests should be marked frequently, and timeous feedback should be given.

(f) Even though past question papers have useful questions, they need to be selected according to the topic done at a specific period.

(g) Submission of work must be monitored to introduce a culture of learning discipline and responsibility within the schools.

CHAPTER 10

MATHEMATICS

The following report should be read in conjunction with the Mathematics question papers for the NSC November 2024 examinations.

10.1 PERFORMANCE TRENDS (2020–2024)

The number of candidates who sat for the Mathematics examinations in 2024 decreased by 10 528, compared to that of 2023.

There was a significant improvement in the pass rate this year. Candidates who passed at the 30% level improved from 63,5% in 2023 to 69,1% in 2024. There was a corresponding improvement in the pass rate at the 40% level over the past two years from 43,6% to 47,9%.

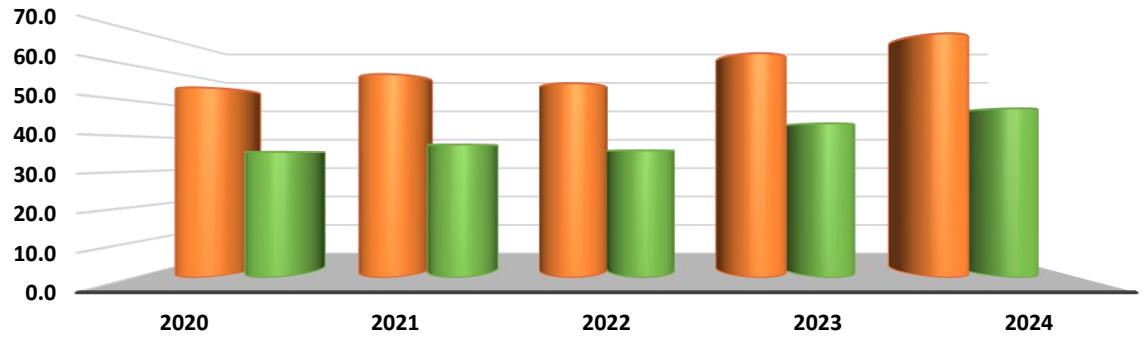
The percentage of distinctions over 80% improved from 3,4% in 2023 to 3,9% in 2024. Despite the decrease in the size of the 2024 cohort, this converts into an increase in the total number of distinctions from 8 909 to 9 808.

The various commendable support programmes employed by teachers, subject advisors and provincial education departments were continued in 2024. The resourcefulness and diligence of the above-average candidates also contributed to the overall improvement in the subject.

Table 10.1.1 Overall achievement rates in Mathematics

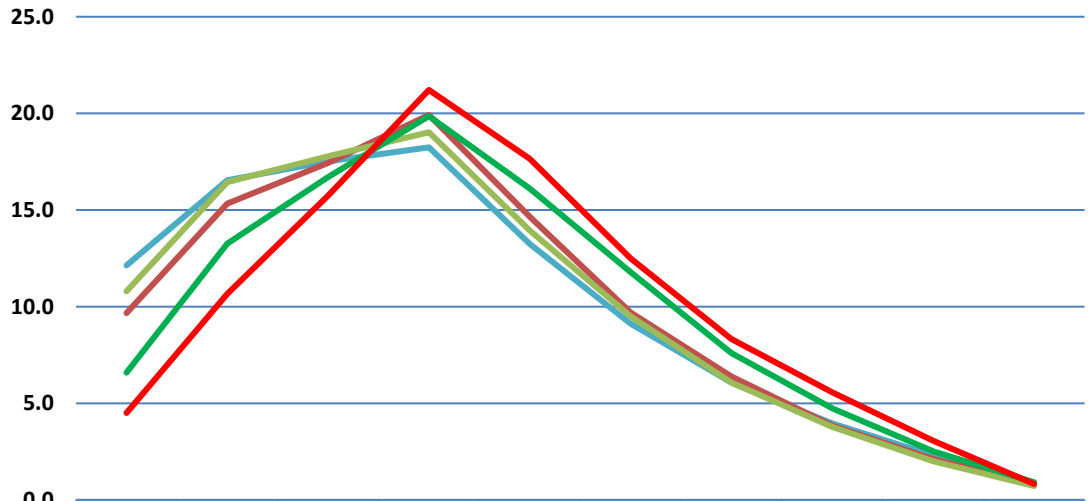
Year	No. wrote	No. achieved at 30% and above	% achieved at 30% and above	No. achieved at 40% and above	% achieved at 40% and above
2020	233 315	125 526	53,8	82 964	35,6
2021	259 143	149 177	57,6	97 561	37,6
2022	269 734	148 346	55,0	97 041	36,0
2023	262 016	166 337	63,5	114 311	43,6
2024	251 488	173 774	69,1	120 430	47,9

Graph 10.1.1 Overall achievement rates in Mathematics (percentage)



	2020	2021	2022	2023	2024
% achieved at 30% and above	53.8	57.6	55.0	63.5	69.1
% achieved at 40% and above	35.6	37.6	36.0	43.6	47.9

Graph 10.1.2 Performance distribution curves in Mathematics (percentage)



	0-9.9	10-19.9	20-29.9	30-39.9	40-49.9	50-59.9	60-69.9	70-79.9	80-89.9	90-100
2020	12.1	16.5	17.5	18.2	13.2	9.1	6.1	3.9	2.3	0.9
2021	9.7	15.3	17.4	19.9	14.7	9.7	6.4	3.8	2.1	0.8
2022	10.8	16.4	17.8	19.0	13.9	9.5	6.1	3.8	2.0	0.7
2023	6.6	13.3	16.7	19.9	16.1	11.8	7.6	4.7	2.5	0.9
2024	4.5	10.7	15.7	21.2	17.6	12.5	8.3	5.6	3.1	0.8

10.2 OVERVIEW OF CANDIDATES' PERFORMANCE IN PAPER 1

(a) The style of questioning was different from previous years as topics (for example, the *inverse function; first principles*) were not in the section of the paper that was predictable.

(b) The focus in the NSC 2024 Mathematics Paper 1 was more on conceptual understanding of topics in comparison to previous years. This may have had an impact on the performance of the candidates.

(c) Many candidates were able to answer the knowledge and routine questions correctly. This suggests that the candidates were well-prepared to deal with these questions. Candidates scored some marks in most of the questions.

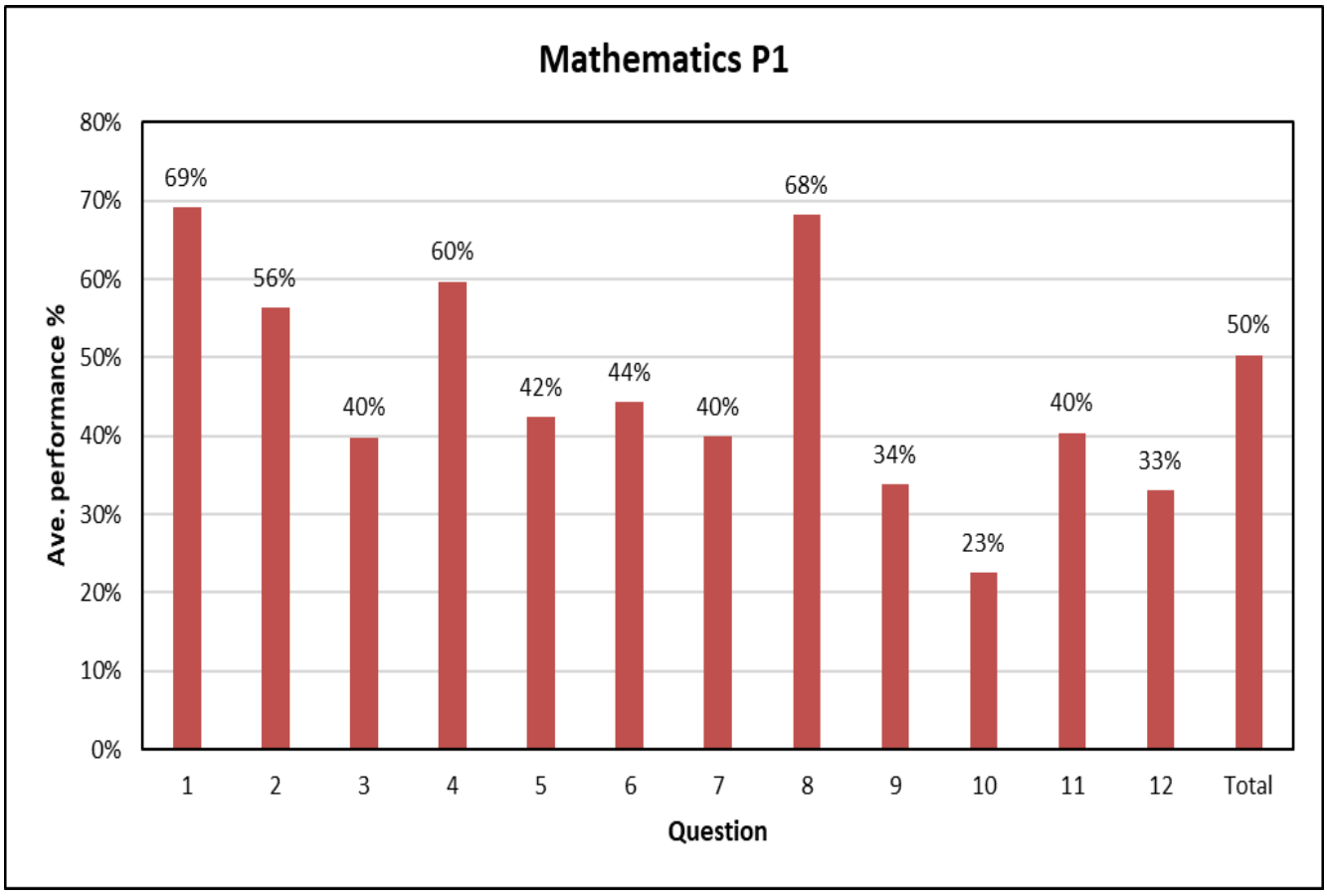
(d) The algebraic skills of the candidates were poor. Most candidates lacked fundamental and basic mathematical competencies which should have been acquired in the lower grades. This became an impediment to candidates when answering complex questions.

(e) While calculations and performing well-known routine procedures form the basis of answering questions in a Mathematics paper, a deeper understanding of definitions and concepts cannot be overlooked. Candidates did not fare well in answering questions that assessed an understanding of concepts.

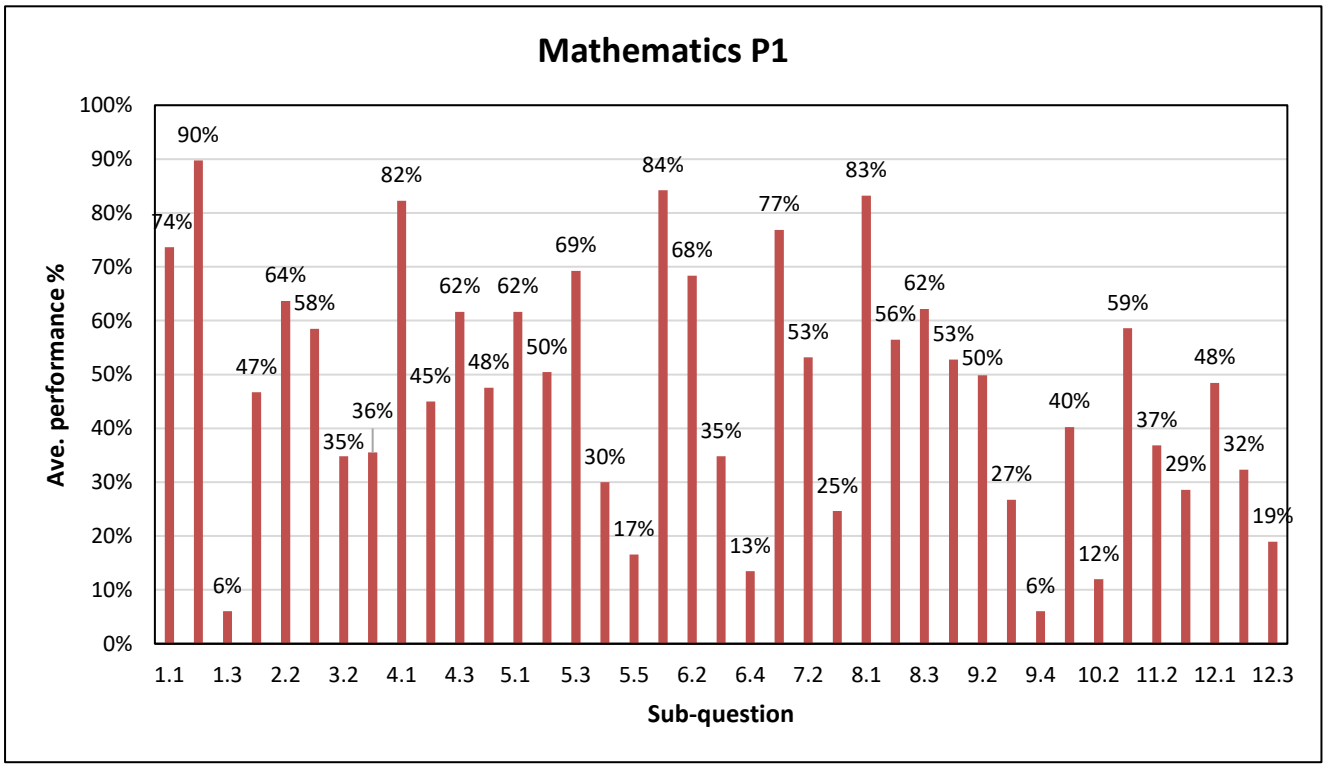
10.3 DIAGNOSTIC QUESTION ANALYSIS OF PAPER 1

The following graph is based on data from a random sample of candidates' scripts. While this graph might not accurately reflect national averages, it is useful in assessing the relative degrees of challenge of each question as experienced by candidates.

Graph 10.3.1 Average performance per question in Paper 1



Graph 10.3.2 Average performance per subquestion in Paper 1



Q	Topics
1	Equations, Inequalities & Algebraic Manipulations
2	Number Patterns & Sequences
3	Number Patterns & Sequences
4	Functions & Graphs
5	Functions & Graphs
6	Functions & Graphs
7	Finance
8	Calculus & Inverse Functions
9	Calculus
10	Calculus
11	Probability
12	Counting Principles

10.4 ANALYSIS OF CANDIDATES' PERFORMANCE IN EACH QUESTION IN PAPER 1

QUESTION 1: ALGEBRA

Common errors and misconceptions

(a) In Q1.1.2 some candidates did not write the equation correctly in standard form, so they substituted incorrectly for the values of '*b*' and '*c*'. The candidates arrived at the

standard form of $2x^2 + 1 - 4x = 0$ and then substituted into the quadratic formula to get $x = \frac{-(1)\pm\sqrt{(1)^2-4(2)(-4)}}{2(2)}$.
If candidates wrote the equation in the correct standard form, another common error was substituting for '*b*' as 4 and not –4.

(b) In Q1.1.3 many candidates treated the inequality as an equation and then struggled to interpret the answer to the question. Other candidates used the word 'and' in the solution which was incorrect. Notation still seems to a problem as some candidates left their answer as $-1 > x > 3$.

(c) In the exponential equation in Q1.1.4, many candidates applied exponential laws incorrectly, arriving at $2^{2x} - 2^{x+2} - 2^5 = 0$ which led them incorrectly to the equation $2x - x + 2 - 5 = 0$, but then to the correct answer of $x = 3$.
Another common error was when candidates did not distinguish between real and invalid solutions: $2^x = 8$ or $2^x = -4$ leading to $x = 3$ or $x = -2$.

(d) In Q1.1.4, there were still a large number of candidates who did not check the validity of their solutions. *x* = –6 needed to be rejected in the answer.

(e) Most candidates were unable to establish the pattern generated in Q1.3. Candidates who were able to generate a pattern did not articulate themselves well in drawing the conclusion required.

Suggestions for improvement

(a) Learners must ensure that they understand what correct *standard form* is in a quadratic equation.

(b) Learners must be taught to check their solutions when using the squaring technique to solve an equation that is not originally quadratic, as well as to check the validity of solutions generated in exponential equations. Teachers must emphasise that implicit restrictions are placed on *surd* equations.

(c) Notation in quadratic inequalities should be emphasised. Graphical tools should be shown to the learners to ensure they understand what the mathematical notation means on a graph.

(d) Exponential rules, manipulation and equations should be practised. Learners should understand when to use the technique of equating exponents because the bases are the same, and when to factorise. These are techniques that are taught in earlier grades and should be revised from Grade 9 through to Grade 12. The importance of language used by teachers is emphasised here. Many understanding misconceptions can be attributed to language used by teachers in the classroom. An example of this is 'drop the bases' in an exponential equation.

(e) Regular revision and emphasis on working with *prime bases* in *exponents* is important.

(f) Problem-solving must be practised. Utilise Olympiad-style questions for practice. Learners should be taught to reason mathematically through argument either in words or in symbols.

(g) Teachers must make time to revise algebraic and exponential law work with learners.

(h) Teachers should place more emphasis on understanding of concept/s being taught and reduce the emphasis on how learners can use the calculator to obtain answers. The answers become meaningful when learners understand the concept and this allows them to interpret their answers.

(i) As suggested in previous reports:
- Teachers should not take for granted that learners know how to round off a number to the required number of places. Where necessary, this skill should be retaught in Grades 11 and 12. Teachers should penalise learners in class work and SBA tasks when they do not round off to the correct number of places.
- Teachers should take some time, preferably in Grade 10, to focus on teaching learners how to represent inequalities (e.g. $-3 < x < 5$; $x < -3$ or $x > 5$) on a number line and how to also write an inequality from the illustration on a number line. This will benefit learners as they are required to write inequality solutions for a number of questions in both examination papers. Emphasis on the correct notation is essential when writing down the solutions to inequalities.
- Linked to this, teachers should explain the difference between 'and' and 'or' in the context of inequalities. Learners cannot use these words interchangeably as they have different meanings.

QUESTION 2: PATTERNS

Common errors and misconceptions

(a) In Q2.1.2 many candidates had difficulty understanding what needed to be done to arrive at an answer. Added to this, they had difficulty writing the answer in the correct *sigma notation*. Common erroneous answers were $\sum_{n=1}^{75}(5n+2) = 14400$; $\sum_{n=21}^{75}(5n+2)$ which did not equate sigma to the required sum of $\sum_{n=1}^{55}(5n+2) = 14400$.

(b) Many candidates did not recognise that the *linear pattern* given in Q2.2.1 was the first difference of the *quadratic pattern* which would help them determine the required term value in the *quadratic pattern*. A large number of candidates used their answer in Q2.2.2 to calculate the answer for Q2.2.1; or they calculated the *general term* of the *quadratic pattern* in both Q2.2.1 and Q2.2.2.

Suggestions for improvement

(a) A solid foundation of *sigma notation* should be emphasised in the classroom. Learners should be exposed to both calculating from given *sigma notation*, and writing information from a given pattern into *sigma notation*.

(b) Teaching of *patterns* needs to include exposing learners to questions that require reading, understanding and interpretation, not just calculations. Even though time in the syllabus is limited, it is vital for learners to be able to answer questions of a different nature. Added to this, questions must be read carefully so that learners know what is required of them.

(c) As mentioned in previous reports, learners should be discouraged from using information provided in later questions to answer earlier questions in an examination.

(d) Teachers need to teach the relationships specifically between a *quadratic pattern* and a *linear pattern*, making particular reference to how terms are calculated by using the *sum* of *linear pattern terms* to generate a term in the *quadratic pattern*.

QUESTION 3: PATTERNS

Common errors and misconceptions

(a) A large majority of the candidates interpreted Q3.2 as requiring the sum of the first 10 radii and not the areas of the first 10 circles as required by the question. Those who did understand that the sum of the areas of the first 10 circles was required, omitted π in their solution or did not calculate the new ratio of the *geometric sequence* formed by the areas of the circles to be $\frac{1}{4}$.

(b) The lack of understanding when reading contributed to many candidates not answering Q3.3 well. Candidates incorrectly equated the general term of the radii with the diameter $\left[6\left(\frac{1}{2}\right)^{n-1} = \frac{3}{128}\right]$. Added to this, exponential laws were incorrectly applied. This meant candidates simplified $12\left(\frac{1}{2}\right)^{n-1} = \frac{3}{128}$ to $6^{n-1} = \frac{3}{128}$.

Suggestions for improvement

(a) Teachers should expose learners to real-life and mensuration problems in *patterns,* as well as other topics in the Mathematics curriculum.

(b) Learners should be encouraged to write out the first three terms of a *pattern* so that they are able to correctly identify the first term and the constant *ratio* or *first difference* in the *pattern*.

(c) Learners should be taught that when working with constants, such as π, they should not convert them to a decimal format as this can hinder the recognition of a possible pattern.

(d) Teachers should encourage learners to work with fractions, particularly in *geometric patterns*, *exponential graphs* and *hyperbolic functions*. Added to this, correct language should be used at all times by the teacher to ensure understanding of the algebraic methods are transferred to learners in the classroom. 'Tip and times' is a phrase that should be replaced with 'multiply by the reciprocal'.

(e) As suggested in previous reports:
- The inclusion of word problems in the *patterns* section is important. Teachers need to emphasise how to take the words of a problem and write them in symbolic form to solve an *equation* or *inequality*.
- Constant revision of *exponential laws* to solve equations correctly is pivotal to candidates' success. Teachers need to emphasise this and revise this thoroughly in all grades.

QUESTION 4: FUNCTIONS (EXPONENTIAL FUNCTION)

Common errors and misconceptions

(a) Candidates struggled to correctly answer the *range* of the *exponential function* in Q4.2, which meant their answer was incorrectly written as $y \in \mathrm{R}\,; y \neq -1$.

(b) A fair number of candidates drew a *hyperbola* in Q4.3. This showed a lack of understanding of the format of the equation of the function provided in the stem of Q4.

The *asymptote* was not necessarily labelled or the drawn graph crossed through its *asymptote*.

(c) Many candidates did not solve for '*x*' when $y = \frac{19}{8}$ which led them to assume that *x* = 0. Secondly, the coordinates of the image of C were not answered well as candidates reflected the point over the *x*-axis, *y*-axis or the line *y* = –*x*.

Suggestions for improvement

(a) Learners should be taught to calculate *x*- and *y*-intercepts when they are required to draw a graph. If the learner is still unsure, their default method should be to draw the graph via point-by-point plotting.

(b) The general form of functions and their shapes should be emphasised from Grade 10 and revised every time a functions question is worked through in class. In addition, the effects of the parameters a, *b*, *p* and *q* should be thoroughly taught, revised and practised by learners from the introduction of functions in Grade 10 through to the end of the Grade 12 academic year.

(c) Teachers should ensure that learners work with transformations in functions from Grade 10. This should include point transformation, recognition of the transformation applied to one function's equation to result in another and the rules of reflection, horizontal and vertical shifts on the equation of a function.

QUESTION 5: FUNCTIONS (HYPERBOLA)

Common errors and misconceptions

(a) In Q5.1, many candidates wrote $p = 1$ which could be attributed to the form of the *hyperbola* being given as $y = \frac{a}{x+p} + q$. The other incorrect answer from candidates was x = –1.

(b) Q5.2 required candidates to calculate the value of the *horizontal asymptote*. Candidates who incorrectly answered this question wrote down the answer of *y* = –3, taking the value of *y* from the equation of the straight line. Candidates did not realise that the *y*-value of the point of intersection of the *vertical asymptote* and the *straight line*, *g*, was the equation of the *horizontal asymptote*.

(c) In Q5.3, some candidates arrived at a positive answer for *a*.

(d) Q5.4 was poorly answered by many candidates because they tried to solve a rational inequality, or they omitted the *vertical asymptote* from their solution.

(e) Q5.5, a problem-solving question, was not well answered by the majority of candidates. Many candidates had difficulty in interpreting the question and indicated 'reflection over the line *y* = *x*' as the answer. This was incorrect.

Suggestions for improvement

(a) Teachers must refer to the *Curriculum Assessment and Policy Statement* for the correct general form of the functions to be used in class. For the *hyperbola*, this is $y = \frac{a}{x+p} + q$. A 'recipe' for learners to calculate the values of *p* and *q* leads to a lack of understanding for the learner. It is suggested that teachers emphasise that a *vertical*

asymptote on a *function* is created when the *denominator* is *undefined*. This will lead to a better understanding by the learners and a more accurate calculation of the parameter *p* in the *hyperbola* equation.

(b) Learners should be taught to work with what is presented to them in each diagram. Before answering any question on a *function*, learners should ideally recognise what each point on the diagram represents and what their properties are. For example: the value 1 on the *x*-axis in this graph indicates the *x*-intercept which means the *y*-value is 0 and the coordinate is (1; 0). This process should be followed for each point on a given graph.

(c) Teachers need to help learners 'error check' their solutions. For a positive '*a*'-value in a *hyperbola*, the graph needs to be decreasing and for a negative 'a'-value, the graph is increasing.

(d) It should be emphasised to learners that when answering graphical interpretation questions on graphs that have a *vertical asymptote*, this value should always be considered in their answers to questions of the nature '*For what values of x …'*.

(e) Transformation geometry should be taught as an integral part of functions.

(f) Teachers need to include functions practice for the learner throughout the year as a means of regular revision of the concepts. The functions from Grade 11 are not retaught in Grade 12 which means that the concepts need to be taught thoroughly in Grade 11 and then revised thoroughly throughout Grade 12.

QUESTION 6: FUNCTIONS (PARABOLA & STRAIGHT LINE)

Common errors and misconceptions

(a) It was a common error for candidates to use the equation given in the question to 'prove' that this was the equation of the *straight line* in Q6.2.

(b) In Q6.3 many candidates failed to create an expression for the *vertical length* EH. They attempted to solve the equation $f(x) - g(x) = 0$ as a minimum and maximum equation. Conceptually, candidates did not realise this calculated the points of intersection of the graphs *f* and *g*.

(c) Q6.4 was poorly answered by the majority of the candidates as it integrated concepts of functions, calculus and algebraic manipulation. Added to this, candidates incorrectly assumed that the point E will be the point of contact of the tangent *g* and the function *k*. Candidates also assumed that C and E lie on the same horizontal line. Even though this is a fact, it was an assumption as this information was not provided in the question.

(d) Candidates who did not know that they should use *gradient* to answer Q6.4, incorrectly differentiated each term that had a variable, irrespective of whether that variable was *x* or *m*. They failed not realise that *m* should have been treated as a constant in this instance.

Suggestions for improvement

(a) Learners need to be taught the difference between 'showing' and 'proving' and using the given equation. The best approach to questions like Q6.2 is to teach learners to read it as 'work out the equation of the line through A and C.'

(b) Teachers need to emphasise that learners cannot assume information in a given scenario. Learners need to work from the given information to correctly deduce that a point is a point of contact or prove this through calculation.

(c) It is imperative that learners are exposed to questions that integrate functions, calculus and transformations. When faced with problem-solving questions, teachers need to help learners to decode what the words mean (for example: *tangent* indicates that the gradients of the two functions are equal at the point of contact) and then guide learners to use correct algebraic methods to answer the given question.

(d) Learners should practise differentiating expressions that have more than one variable so that they become familiar with differentiating the expression with respect to the required variable.

(e) Nature of the roots should not be ignored as an alternate method of dealing with graphs that intersect, are tangential or do not intersect. This requires teachers to incorporate the concepts taught in nature of the roots when teaching quadratic functions.

QUESTION 7: FINANCE

Common errors and misconceptions

(a) In Q7.1 the common errors were $A = 5000\left(1 + \frac{6,8}{100}\right)^{16}$ which omitted the understanding of quarterly compounding or $A = 5000\left(1 + \frac{6,8}{400}\right)^{16}$ which failed to account for the number of quarters in 16 years.

(b) A common error in Q7.2 was that candidates used the *reducing-balance depreciation* method as they did not realise that the *straight-line depreciation* was linked to the *simple interest* formula.

(c) A number of candidates over-complicated Q7.3.1 and used an *annuity formula*, which showed a lack of understanding of the difference between interest on a loan and the interest rate charged on a loan. Their responses highlighted a lack of understanding of the total monies paid out when paying back a loan.

(d) Q7.3.2 was poorly answered by the majority of the candidates. The question involved reading for understanding and multiple steps to the solution. A large number of candidates left out this question.

Suggestions for improvement

(a) Drills and practice should be undertaken on different compounding periods and the compound interest formulae so that learners can familiarise themselves with the number of times that interest is compounded in a specified time frame.

(b) Teachers should teach Financial Mathematics with conceptual understanding and real-life problems. It may help to have learners draw timelines and identify what happens at different stages of an annuity (either present or future valued). Visual representation helps to break up a problem that requires reading for understanding.

(c) Learners should be taught to read for understanding in all problems, especially in Financial Mathematics problems. Teachers need to emphasise the importance of this skill.

QUESTION 8: CALCULUS & INVERSE FUNCTIONS

Common errors and misconceptions

(a) A common error by some candidates in Q8.1.2 was not working with the negative and rational exponent correctly. Candidates incorrectly changed the *surd* term to $-x^{\frac{3}{7}}$.

(b) In Q8.2 many candidates were unable to calculate the gradient of the function at the point where $x = 2$ or they did not calculate the point of contact of the function and the tangent, they used the *y*-intercept instead of *f*.

(c) As mentioned in previous reports, the most common errors in the *first principles* question Q8.3.1 were incorrect notations.

(d) Many candidates merely found the equation of the *inverse function* of *f* instead of writing down the restriction in Q8.3.2. Those who did write down a restriction indicated $x < 0$ or $x > 0$ where the equality was omitted from the restriction.

(e) In Q8.3.3 many candidates were unaware that there were two possible solutions of *y* when taking the square root of the equation $y^2 = -\frac{6}{x}$, i.e. $y = \pm\sqrt{-\frac{6}{x}}$. Many just wrote down $y = \sqrt{-\frac{6}{x}}$ as the solution instead of choosing the negative root.

(f) Another common error made by some candidates when solving for *y* in Q8.3.3, was to incorrectly write their answer as $y = -\sqrt{\frac{6}{x}}$ instead of $y = \sqrt{-\frac{6}{x}}$. These candidates were confused about the placement of the negative sign because they were taught that you cannot determine the square root a negative number.

(g) In Q8.3.3 some candidates, after swapping the *x* and *y* in the equation, incorrectly used the *logarithms* to isolate *y*. This led them to $x = -6y^2$ then $\frac{y}{6} = log\, x^2$.

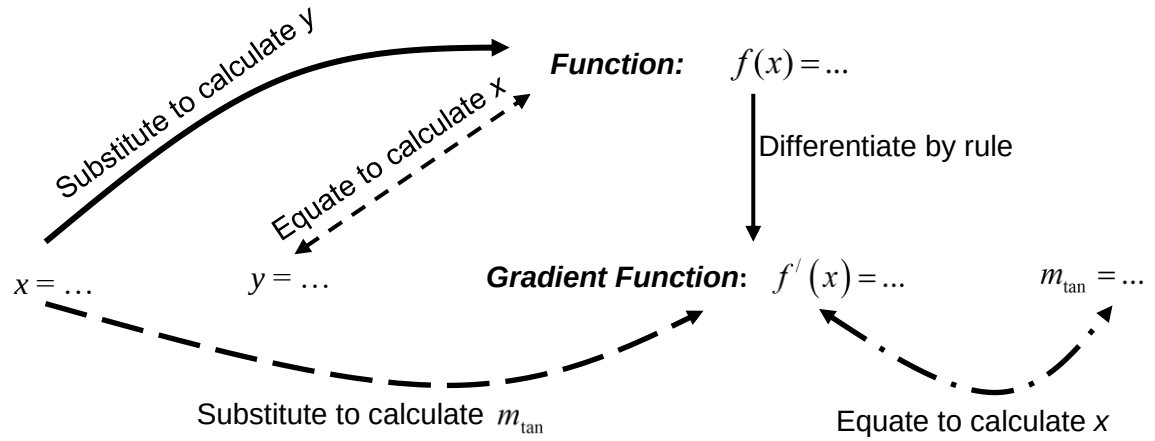
Suggestions for improvement

(a) As mentioned in previous reports:

- Emphasis should be placed on the use of the correct notation when determining the derivative, either when using first principles or the rules.
- Teachers should revise the rules of *exponents* and *surds* when changing an expression into differentiable format.
- Integration and re-emphasis of algebraic concepts, viz. fractions, factorising, inequalities and exponential rules, should be undertaken when working with Calculus.

(b) Teachers must teach all *inverse functions* and not just the *logarithm*. Learners must practise the inverse of the parabola and straight line as part of this section of work.

(c) The derivative needs to be taught in context with the graph and conceptual understanding needs to be the fundamental of how Calculus is taught. A map of how the function, *x*- and *y*-values of a point, the derivative (gradient function) and the gradient of the tangent needs to be linked in a visual representation for learners. The diagram below could help learners understand how these are all integrated and what to do in different situations.



QUESTION 9: CALCULUS

Common error and misconception

(a) Few candidates realised that the *x*-values of the *x*-intercepts of the *derivative* were the *x*-values of the turning points given in Q9.2.

(b) In the absence of the equation of the *cubic function*, many candidates were unable to determine the *x*-value of the *point of inflection* of the graph. A fair number of candidates attempted to determine the equation of *f* so that they could determine the *second derivative* of *f* to answer the question.

(c) Most candidates struggled to interpret Q9.4. Some tried to use the discriminant because they saw *k* in the question. Others tried to calculate the equation of *f*.

Suggestions for improvement

(a) The concept of the point of inflection needs to be taught explicitly by explaining both its link to the second derivative and the conceptual understanding of how it links to the concavity of the cubic function. Learners must understand that the *x*-value of the point of inflection lies halfway between the *x*-values of the turning points of a cubic function.

(b) Learners need to be exposed to graphical interpretation questions where they apply their understanding of *gradient*, *concavity*, *positive* and *negative* values of a function as examples.

(c) As mentioned in previous reports:
- Teachers should ensure that there is enough time for learners to understand the application of Calculus fully.
- Learners should be taught to determine the properties of a graph from Grade 10 to 12 in a progressive manner. The defining property of a turning point having a zero gradient is a way to describe a turning point. Teachers need to prove this link

between the definition of a turning point and the Grade 11 concept of determining the axis of symmetry to calculate the x-coordinate of the turning point.
- Teachers should continue to teach graphical interpretation in cubic graphs as a follow on from the interpretation taught in Grade 10 and 11.

QUESTION 10: CALCULUS (OPTIMISATION)

Common errors and misconceptions

(a) In Q10.1 most candidates equated the speed to 0 and solved. This led to
$-3t^2 + 18t = 0$
$-3t(t - 6) = 0$
$t = 0$ or $t = 6$

(b) Some candidates calculated the second derivative but did not explicitly set it equal to zero in Q10.1.

(c) In Q10.2 most candidates did not recognise that the distance was represented by $s(t)$ which is the function from which $s^{/}(t)$ is derived.

(d) In answering Q10.2 many candidates tried to use the concept of $\text{speed} = \frac{\text{distance}}{\text{time}}$ or $\Delta s = \frac{\Delta d}{\Delta t}$.

Suggestions for improvement

(a) Calculus lends itself to many applications in optimisation and rates of change. Teachers need to expose learners to a wide variety of questions, which include integration of topics including *rate of* change, *analytical geometry, measurement* and *trigonometry*.

(b) *Rate of change* must be taught explicitly as part of the optimisation and application of Calculus.

(c) In all topics, reading for understanding should be ongoing if learners are to improve their responses to problems.

(d) Learners need to be exposed to working from the derivative function to the original function using equating of coefficients.

QUESTION 11: PROBABILITY

Common errors and misconceptions

(a) In Q11.1 many candidates failed to calculate the intersection of the three overlapping sets in the *Venn diagram* correctly. Many candidates used a sample space of 56 for the *Venn diagram*.

(b) Most candidates did not understand the term *'at least'* in the context of probability in Q11.2. This led these candidates to adding P(M) + P(T) + P(G) instead of using their *Venn diagram* to answer the question.

(c) In answering Q11.3 many candidates did not realise that this problem was similar to working with a contingency table. The necessary values could be found from the *Venn*

diagram. A large number of candidates used the probability rule or used P(M only) x P(T only) in their calculation rather than the entire set for *M* and *T*.

Suggestions for improvement

(a) In the teaching of probability, teachers need to emphasise the terminology of *'at least'.* Teachers must also describe and show learners what is meant by P(A), P(B) and P(A and B).

(b) Learners need to be taught the difference between mutually exclusive and independent events and the rules that pertain to each of these concepts. This should be thoroughly drilled in Grades 10 and 11.

(c) Teachers need to expose learners to different contexts, diagrams and problems in which independent events can be tested.

(d) When working with *Venn diagrams*, learners need to start with the intersection of all the sets first.

(e) As mentioned in previous reports:
- Teaching basic concepts cannot be overlooked. When learners understand the basic concepts well enough, then the more complex concepts are easier to grasp.
- Reading for understanding must be a regular practice in the classroom. This should equip learners with the skills to deal with word problems in assessment tasks.
- Teachers need to teach both tree diagrams and Venn diagrams thoroughly. These concepts should be examined in school-based assessment tasks throughout the FET phase.

QUESTION 12: COUNTING PRINCIPLES

Common errors and misconceptions

(a) In Q12.1 some candidates included the factorial in their answer to arrive incorrectly at 26! X 10! X 26! X 10!.

(b) Most candidates were unable to work with the constraints placed on the calculation in Q12.2. Responses from candidates included (26 x 26 x 26) x (10 x 10 x 10); 26 x 10; 26 x 10 x 19 x 5 or they included the use of factorials in their answers.

(c) Many candidates were unable to calculate the percentage increase correctly in Q12.3. Other candidates did not know how to deal with the code formed being odd.

Suggestions for improvement

(a) Teach learners the *Fundamental Counting Principle* in such a way that they will be able to base their answers on their reasoning, rather than on any rule. The concept of the *factorial* needs to be explained thoroughly.

(b) When teaching learners about the number of options available for a code or set of items, it is a good idea for learners to draw lines or boxes to represent each space that is available. Thereafter, learners need to be taught to recognise how many options are available for each position in the code or list of items. It is important to stress to learners

that they should put a 'x' between these numbers so that they can arrive at the correct solution using the *Fundamental Counting Principle.*

10.5 OVERVIEW OF CANDIDATES' PERFORMANCE IN PAPER 2

(a) Candidates were not careful when using a calculator, especially in the Statistics questions. They entered the data incorrectly and arrived at answers that were close to the correct answer. This resulted in an unnecessary loss of marks.

(b) Candidates made assumptions about features in a question by looking at the diagrams in the Analytical Geometry and Euclidean Geometry sections. They used these assumptions in their answers without first proving that the relationship was true. Candidates who made use of assumptions in their answers were penalised.

(c) Candidates struggled with questions that involved the integration of topics.

(d) Candidates struggled to recall Trigonometric definitions, rules and formulae taught in Grades 10 and 11. Consequently they resorted to using compound angle formulae where reduction formulae would have made answering much easier.

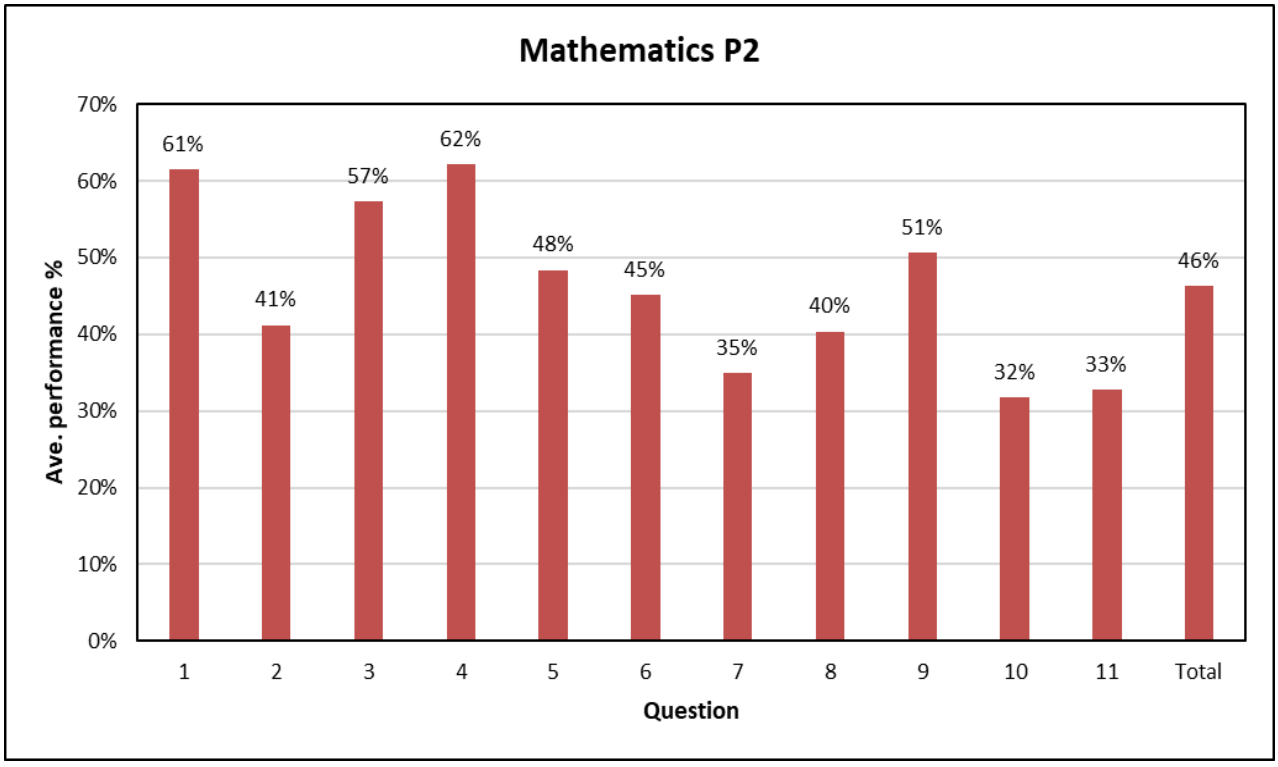
(e) As mentioned in previous reports, candidates needed to exercise caution with algebraic manipulation skills since overlooking certain basic principles or practices results in the unnecessary loss of marks.

(f) Candidates presented incoherent answers to Euclidean Geometry questions. Marks were not awarded for correct statements that did not follow logically.

10.6 DIAGNOSTIC QUESTION ANALYSIS FOR PAPER 2

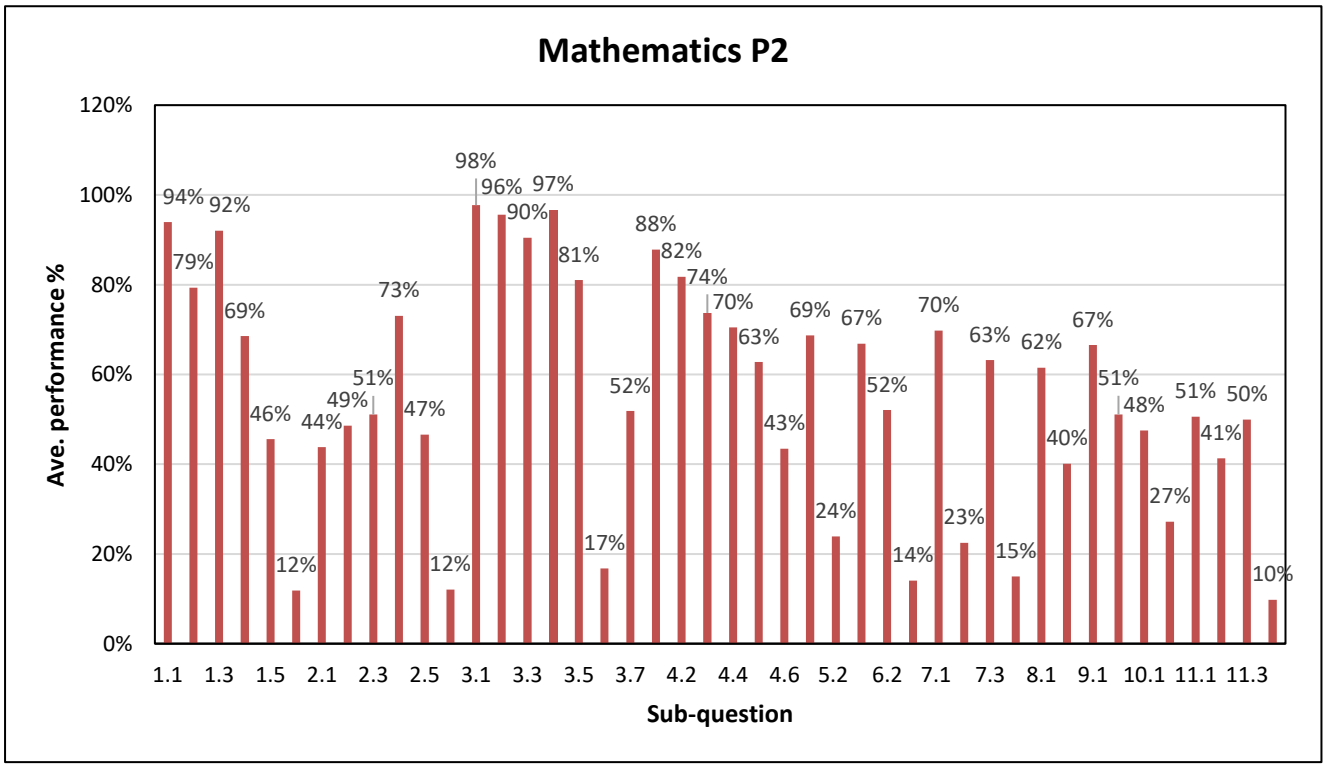
The following graph was based on data from a random sample of candidates' scripts. While this graph might not accurately reflect national averages, it is useful in assessing the relative degrees of challenge of each question as experienced by candidates.

Graph 10.6.1 Average performance per question in Paper 2



Q	Topic(s)
1	Data Handling
2	Data Handling
3	Analytical Geometry
4	Analytical Geometry
5	Trigonometry
6	Trigonometry
7	Trigonometry
8	Trigonometry
9	Euclidean Geometry
10	Euclidean Geometry
11	Euclidean Geometry

Graph 10.6.2 Average performance per subquestion in Paper 2



10.7 ANALYSIS OF CANDIDATES' PERFORMANCE IN EACH QUESTION IN PAPER 2

QUESTION 1: DATA HANDLING

Common errors and misconceptions

(a) In Q1.1 to Q1.4 many candidates failed to round off their answers to the required number of places.

(b) When writing the equation in Q1.1, many candidates interchanged the values of *a* and *b*. Another common error in this question was that candidates failed to round off their answers for *a* and *b* correctly to two decimal places. Some candidates did not enter the data correctly into the calculator. They arrived at answers that were close to the correct answers for *a* and *b*.

(c) Many candidates did not round off, or rounded off incorrectly, when answering Q1.2. They gave an answer of –0,7979453714 … or –0,79 instead of 0,8.

(d) While several candidates substituted $x = 29$ correctly into the least-squares regression equation, they did not arrive at the correct answer. This was only possible if they had made mistakes when using the calculator.

(e) Many candidates showed that they lacked the skill of reading for understanding when answering Q1.4. They calculated the mean of the *x*-values instead of the mean of the *y*-values.

(f) Many candidates did not attempt Q1.5. Some candidates re-calculated the standard deviation but did not state how the increase in the number of push-ups influenced the standard deviation. These candidates failed to respond to the question, which pointed to candidates not being able to read for understanding.

(g) Q1.6 was answered very poorly. Many calculated the predicted value when $x = 40$ instead of the increase in the number of push-ups. These candidates failed to subtract 6 from the predicted value.

Suggestions for improvement

(a) It should not be taken for granted that learners are able to round off correctly to two decimal places. In this regard, an exercise on rounding can help correct any misconceptions.

(b) Teachers should link the equation of the least-squares regression line ($y = a + bx$) with the equation of the straight line and emphasise that '*a*' refers to the *y-intercept* and '*b*' refers to the *gradient*.

(c) As stated in previous reports, when determining the equation of the least-squares regression line, it is advisable that learners write down the values of *a* and *b* and then write down the equation of the regression line. In this way, they can get the CA mark for the equation.

(d) When analysing bivariate data, both the *x*- and *y*- values are considered in determining the equation of the least-squares regression line and the value of the *correlation coefficient.* However, the *x*- and *y*- values in a bivariate data set can also be considered as two separate sets of data. Learners need to be made aware that they can be asked to calculate the *mean* and *standard deviation* of the *x*- and/or *y*-variables of a bivariate set of data.

(e) Learners should be proficient in using their calculators in STAT mode. They should be familiar with what the symbols on the calculator represent, for example $\sigma_x$represents *population standard deviation* and *r* represents *correlation coefficient*.

(f) As mentioned in previous reports, learners should be able to use the values of their calculations to make predictions and comments about the data. Time should be devoted to interpretation questions.

QUESTION 2: DATA HANDLING

Common errors and misconceptions

(a) Many candidates gave the position of the median and not its value when answering Q2.1. Some candidates did not realise that the minor gridlines represented two units and not one unit. This led to them reading off the answers incorrectly. Some candidates calculated the position of the median incorrectly by using the formula for ungrouped data, i.e. $\frac{1}{2}(n+1)$. Instead, they should have used the formula $\frac{1}{2}n$. A few candidates incorrectly indicated the interval in which the median lay.

(b) The errors listed in (a) were made when determining the *lower quartile* (in Q2.2) and the *interquartile range* (in Q2.3). In Q2.3 some candidates subtracted the positions instead of the values of the upper and lower quartiles. A few candidates calculated the *range* or *semi-interquartile range*; neither of these were correct.

(c) Many candidates knew how to draw the box-and-whisker diagram required in Q2.4. Some of them used values of the median and quartiles that were different to the ones that they had calculated in Q2.1 to Q2.3. These candidates were not awarded any marks.

(d) Candidates were able to correctly read the value at one hour from the *ogive*. However, they were unable to use this information to answer the question correctly. They failed to subtract 26 from 60 because they did not realise that more than one hour was to the right of 26. A few candidates incorrectly took the total number of workers to be 65 and subtracted 26 from 65. They were not awarded any marks.

(e) Many candidates did not attempt Q2.6. This question required candidates to read with understanding and extract the relevant information from the *ogive*. Many candidates were unable to interpret 'part thereof' correctly. The common incorrect response was that workers who travelled for 110 minutes will be allowed 2,5 x 30 minutes = 75 minutes instead of 3 x 30 minutes = 90 minutes. A fair number of candidates had no understanding of the question and responded in the following way: 110 – 20 = 90 minutes. Although they arrived at the correct answer, they were not awarded any marks.

Suggestions for improvement

(a) Reading for understanding is a fundamental requirement in the *Statistics* section and must be developed in classroom activities.

(b) Questions on *Statistics* are normally set in context. Learners should be taught to answer the questions within the context of the question.

(c) Teachers need to explain the difference between the position of the quartiles and the value of the quartiles. The values of the quartiles are the statistics that describe various points in the set of data and this information is required in data analysis.

(d) In Grade 11, teachers should take time to explain the concept of *cumulative frequency* and how to read and interpret the cumulative frequency from an *ogive*. For example, the value of 26 does not represent the number of workers who took 60 minutes to travel to work. Instead, 26 workers took up to 60 minutes to travel to work, i.e. these workers travelled between 0 and 60 minutes to get to work.

(e) Much of this question was based on reading off the *ogive*, which is done in Grade 11. Revision of Grade 11 work in Grade 12 will assist learners prepare for the examinations.

QUESTION 3: ANALYTICAL GEOMETRY

Common errors and misconceptions

(a) Some candidates were unable to substitute correctly into the gradient formula when answering Q3.1.

(b) In Q3.2 some candidates swopped the *x*- and *y*-values around when substituting into the equation of the straight line. Other candidates substituted correctly but failed to simplify the equation correctly.

(c) Some candidates incorrectly assumed that B was the midpoint of CD and used the midpoint formula to calculate the value of *k* when answering Q3.3.

(d) Candidates who failed to answer Q3.4 correctly used the coordinates of points other than C and D in their working or they failed to use their calculators correctly to calculate the length of CD.

(e) Although Q3.5 was well answered by most candidates, some candidates calculated the ratio of the gradients of DB and DC instead of calculating the ratio of the lengths of DB and DC. Some candidates incorrectly assumed that this question required Euclidean Geometry knowledge.

(f) Q3.6 was not well answered by most of the candidates. Very few realised that they had to use the *proportionality theorem* to answer the question. Many incorrectly calculated the areas by using the area of triangle formula: $\frac{1}{2}\text{base} \times \text{height}$ although the triangles chosen were not right-angled. Some candidates wrote down the area rule incorrectly. A few candidates only substituted the length of one side in the area rule instead of two.

(g) In Q3.7 many candidates were able to establish two equations from the information given in the question but did not realise that they needed to solve these equations simultaneously. Some who attempted to solve the equations simultaneously made errors in calculations that resulted in them not being able to solve for *x*. A fair number of candidates assumed that the *y*-intercept of AD was the midpoint of AD without first proving this fact. They were not credited for making this assumption.

Suggestions for improvement

(a) If learners are not sure, they should consult the information sheet for the correct formula.

(b) Teachers should ensure that learners are able to use calculators correctly. It might be useful to call out the procedure step-by-step as learners perform the calculations.

(c) As stated in previous reports, it is important that learners realise that it is not acceptable to make any assumptions, e.g. that a certain point is the midpoint of a line. Even if it looks as if the point is the midpoint, it may not just be assumed and used. These need to be proven first before the results can be used in an answer.

(d) Teach learners to analyse diagrams in Analytical Geometry and to use relevant properties to respond to questions.

(e) Learners should be advised that they need to fill in the calculated values and additional information on their sketch in the answer book as they proceed with subquestions. This helps them visualise what information is at their disposal when answering the next sub-question.

(f) Teach learners how to identify when to use which formula: $\text{area} = \frac{1}{2}\text{base} \times \text{height}$ or $\text{area} = \frac{1}{2}a.b.sin\,C$ when calculating the area of a triangle.

(g) Teach learners to expect that Euclidean Geometry facts will be integrated into Analytical Geometry and will be needed in the answering of some Analytical Geometry questions.

QUESTION 4: ANALYTICAL GEOMETRY

Common errors and misconceptions

(a) Few candidates attempted to answer Q4.1 by using the gradient formula instead of the midpoint formula.

(b) While many candidates answered Q4.2 correctly, some candidates incorrectly used the gradient of the radius when determining the equation of the tangent. They failed to realise that the tangent was perpendicular to the radius. Some incorrectly used the gradient of $\frac{1}{3}$ instead of $-\frac{1}{3}$.

(c) Many candidates answered Q4.3 correctly. Some worked backwards from the equation that they were required to prove. This was unacceptable and they were not awarded any marks.

(d) In Q4.4 some candidates incorrectly substituted the value of *y* into the equation of the tangent calculated in Q4.3 instead of the equation of the circle.

(e) In Q4.5 many candidates did not label the angles correctly, for example, they wrote $\hat{P} = \hat{L}$, instead of $L\hat{P}R = \hat{L}$. Some candidates assumed, without proof, that PR = LR and therefore concluded that $\hat{L} = 45°$. Other candidates also assumed that $\hat{R} = 90°$ without first proving it. These candidates were not awarded any marks in both instances.

(f) Q4.6 was poorly answered by many candidates. Many candidates presented arguments that were constructed on circular reasoning. They started their responses by stating that $m_{PT} \times m_{RT} = -1$ and used the value of m_{PT} from Q4.2 to calculate the value of m_{RT}. Thereafter, they showed that the product of the same two gradients, m_{PT} and m_{RT}, was equal to –1.

Suggestions for improvement

(a) As mentioned in previous reports, teachers need to revise the concepts of *perpendicular lines* and *gradients*, particularly that the tangent is perpendicular to the radius at the point of contact.

(b) Learners should practise using a formula to get an answer (e.g. using the formula to calculate the coordinates of the midpoint), as well as to calculate an unknown variable if the answer has been given (e.g. calculate the coordinates of an endpoint if one endpoint and the midpoint are given).

(c) Teachers should develop learners' ability to reason logically and to write down the steps in their reasoning.

(d) For learners to be able to reason and answer even more complex questions, they need a very good understanding of basic concepts, including those from lower grades. Regular revision of these concepts can help consolidate understanding them.

QUESTION 5: TRIGONOMETRY

Common errors and misconceptions

(a) In Q5.1.1 some candidates arrived at $r = -5$ and did not realise that there was a mistake in their answer as r is a distance and its value cannot be negative. Other candidates gave the answer as $\cos A = \frac{3}{4}$. This was incorrect.

(b) In Q5.1.2 some candidates were unable to write the expansion for cos 2A correctly despite it being given in the information sheet. Instead, they incorrectly wrote the expansion for cos 2A as 2 cos A. Other candidates substituted a ratio into the place of the angle, i.e. $\cos\left(\frac{-3}{5}\right)$.

(c) Q5.1.3 was not well answered as many candidates did not realise that they had to draw another sketch for $\hat{B}$. Some candidates incorrectly placed $\hat{B}$ in either the first or third quadrants instead of the second quadrant. Some candidates made the assumption that $\hat{A} + \hat{B} = 90°$ and used co-ratios to solve the question.

(d) Q5.2 was poorly answered by many candidates as they failed to multiply the numerator and denominator by 2. In doing so, they would have created the expansion of the sine double angle in numerator which would have eased their simplification. Instead, many candidates expanded the numerator by using the sine and cosine compound angle expansions. They made many algebraic mistakes in the process. Some candidates incorrectly replaced α with p instead of $\cos\alpha$ with p. They did not know the difference between the angle and the value of the ratio.

Suggestions for improvement

(a) Teachers should ensure that all learners are able to select the relevant quadrant when drawing sketches in the Cartesian plane to calculate trigonometric ratios. Regular revision of Grade 10 and 11 Trigonometric concepts can help consolidate this work.

(b) As stated in previous reports, teachers must remind learners that the same simplification skills used in Algebra also apply to Trigonometry. Revise addition, subtraction and simplification of algebraic fractions with learners before teaching simplification of trigonometric expressions and proving trigonometric identities.

(c) Teachers should emphasise the use of the information sheet when working with compound angles.

(d) Expose learners to questions on trigonometric ratios involving combinations of compound angles, angles greater than 360° and co-ratios.

(e) As mentioned in previous reports, teachers must discuss the difference between an angle and a trigonometric ratio at the beginning of the study of Trigonometry in Grade 10. The relevance of an angle in the trigonometric ratio must be emphasised.

(f) Teachers should expose learners to a few methods of simplifying trigonometric expressions. However, they should develop skills in learners that allow them to answer questions in the most efficient way.

QUESTION 6: TRIGONOMETRY

Common errors and misconceptions

(a) Q6.1.1 tested bookwork. However, many candidates were unable to derive the expression for $cos(x+y)$ using the identity for $cos(x-y)$. Instead, candidates merely wrote down the expansion as given in the information sheet. They did not receive any marks for their effort.

(b) Although Q6.1.2 was well answered by many candidates, some candidates used the compound angle formulae to expand $cos(90°-x)$ or $sin(360°-x)$ instead of using reduction formulae. Some learners failed to show all the steps in their working. They went directly from $sin(-y).cos(180°+x)$ to $sin\,y\,.cos\,x$ instead of first writing $(-sin\,y)(-cos\,x)$. These candidates were penalised as they did not clearly demonstrate full understanding of the reduction formulae.

(c) The following were noted in Q6.2: some candidates equated $f(x)$ to 0 instead of 2 as given in the question. Many candidates incorrectly reduced $-11\,cos(90°+x)$ to $-11\,sin\,x$ instead of $11\,sin\,x$. Some candidates failed to factorise the quadratic expression in sin*x* correctly. A fair number of candidates were able to factorise $6\,sin^2\,x+11\,sin\,x+3$ correctly but then incorrectly stated that $x=-\frac{1}{3}$ or $x=-\frac{3}{2}$ instead of $sin\,x=-\frac{1}{3}$ or $sin\,x=-\frac{3}{2}$. Some candidates left their answers as general solutions and not answers in the third and fourth quadrants as required.

(d) In Q6.3.1 many candidates substituted values of *x* into the given expression and then concluded that the maximum value of the expression occurred at $x = 0°$. Some candidates incorrectly stated that the expression will have a maximum when $x=\frac{-b}{2a}$ instead of when $sin\,x=\frac{-b}{2a}$. These candidates also arrived at the answer $x = 0$. Many candidates were unsuccessful in their attempt to calculate the derivative of the given expression. They did not apply the Chain rule correctly and omitted $cos\,x$ from their derivative.

(e) The answer to Q6.3.2 depended on calculating the answer to Q6.3.1 correctly. As a result, many candidates were unable to answer Q6.3.2 correctly. Candidates failed to notice that the value of 0° was excluded from the domain. Some candidates gave the answer as an interval without realising that the function will attain a maximum value at a single point.

Suggestions for improvement

(a) *CAPS* indicates that the derivation of the compound angle formulae is examinable. Teachers should teach the derivation of these formulae.

(b) Teachers should remind learners that they must still use the reduction formulae together with the compound angle formulae when answering questions in Grade 12.

(c) Teachers should stress the importance of showing the signs when reducing trigonometric ratios.

(d) Teachers should advocate the use of the *k*-method when dealing with quadratic equations involving trigonometric ratios. A simplified quadratic equation may be easier to solve.

(e) Teachers should explain the difference between the general solution and the specific solutions within an interval. This point was covered in previous reports.

(f) Expose learners to different types of exercises involving inequalities, writing and interpreting intervals and working with angle in different quadrants.

QUESTION 7: TRIGONOMETRY (GRAPHS)

Common errors and misconceptions

(a) In Q7.1 some candidates incorrectly gave the answer as $y = 90°$ or just $90°$ instead of $x = 90°$. Many candidates ignored the domain specified and gave $x = -90°$ as an answer. Other candidates gave the answer as an interval. This was incorrect.

(b) Many candidates did not attempt Q7.2. Many of those who attempted this question failed to realise that $x = -180°$ was also a solution. Some candidates confused which of the endpoints to include. They gave the answer as $x \in [-90° ; 0°]$ instead of $x \in (-90° ; 0°]$.

(c) While Q7.3.1 was well answered by most candidates, some incorrectly gave the answer as 90° or 360° while others incorrectly gave the answer as an interval $x \in [-180° ; 180°]$.

(d) When answering Q7.3.2 some candidates overlooked the vertical translation of the graph. They sketched the graph of $y = cos\,2x$ and left it at that.

(e) Most candidates could not link the equation given in Q7.4 to the equations of the graphs. Hence, they were unable to use the graphs to establish the answers. Other candidates made the link between the given equation and the graphs. However, instead of giving the general solution, they only gave the *x*-values for which the graphs intersected as the solution.

Suggestions for improvement

(a) It is necessary for learners to be reminded constantly of the meaning of concepts like *period, domain, amplitude* and *range.*

(b) As mentioned in previous reports, learners should be told that the period of a trigonometric function is the length of a function's cycle. Since this value is a length, it is a single number and not an interval of values.

(c) Learners should be shown how to write intervals, using both inequality and interval notations. Teachers are encouraged to use both forms of notations in class. It is good practice to write an interval in one form and then ask learners to write the same answer in the other form.

(d) Teachers should teach the 'mother graphs' well so that learners can develop insight into their characteristics. Thereafter, learners must be exposed to how the change in the different parameters affect the 'mother graphs'.

QUESTION 8: TRIGONOMETRY

Common errors and misconceptions

(a) In Q8.1 some candidates chose the incorrect trigonometric ratio to calculate AC. They used $sin\,46{,}85°$ or $cos\,46{,}85°$ instead of $tan\,46{,}85°$. Other candidates failed to identify the opposite and adjacent sides with reference to $46{,}85°$. They wrote $tan\,46{,}85° = \frac{\text{AC}}{16}$ instead of $tan\,46{,}85° = \frac{16}{\text{AC}}$. Some candidates made mistakes when making AC the subject of the formula. They rewrote $tan\,46{,}85° = \frac{16}{\text{AC}}$ incorrectly as $\text{AC} = 16\,tan\,46{,}85°$.

(b) Q8.2 required candidates to perform several calculations to arrive at the answer. This proved to be beyond many candidates. Some candidates assumed that AC = BC. This led to inappropriate values for EC. Some candidates made errors when substituting into the cosine rule, especially since BC appeared in two places in the formula. Other candidates made errors in their calculations that led to distances obtained that did not match the given information.

Suggestions for improvement

(a) Teachers should devote the appropriate amount of time to this section. This should allow learners to score the accessible marks in this section of work.

(b) Learners need to develop strategies to be used when solving right-angled triangles and triangles that are not right-angled. Teach learners when to use basic trigonometric ratios and which basic ratio is appropriate for a given context.

(c) As mentioned previously, it might be a good idea to give learners an exercise in which they identify which rule is to be used to solve the question. The learners must also substantiate why they think that the rule that they have selected applies to the question.

(d) Remind learners that the sine and cosine rules are applicable to a single triangle. Learners may not create a proportion by using the sides and angles or two different triangles using the sine and cosine rules.

(e) Learners need to be reminded constantly that they may not make assumptions about the lengths of sides and the sizes of angles based on the diagram. Learners must work with the information that they are given in the question.

QUESTION 9: EUCLIDEAN GEOMETRY

Common errors and misconceptions

(a) In Q9.1 many candidates assumed that ECB was a tangent to the circle. Hence, they stated that $\hat{A}_1 = 86°$ instead of $40°$. Some candidates confused the cyclic quadrilateral theorems and regarded the opposite angles of the cyclic quadrilateral to be equal instead of being supplementary. Other incorrect assumptions made were that $\hat{C}_1$ was the exterior angle of triangle ADC and that AB || DC and therefore the corresponding angles were equal.

(b) Some candidates, in answering Q9.2, stated that $\hat{C}_2 = \hat{A}_1$ without proving it. Many candidates incorrectly used $\hat{B} = \frac{1}{2}\hat{A}_1$ instead of $\hat{A}_1 = \frac{1}{2}\hat{B}$. Some candidates incorrectly assumed that AC was the diameter of the circle and therefore incorrectly stated that $\hat{D} = 90°$.

Suggestions for improvement

(a) As mentioned in previous reports, teachers are encouraged to use the 'Acceptable Reasons' in the *Examination Guidelines* when teaching. This should start from as early as Grade 8. Learners should be issued with a copy of the 'Acceptable Reasons'.

(b) Teachers should make use of a diagram with annotations to explain a theorem. Illustrate which information is given and what conclusions can be made from this given information.

(c) Teachers must insist that learners read the information given in the question. This information contains key words that direct learners to the theory required to solve the question.

(d) Teach learners to identify all the theorems that are applicable to a question and how to select which ones can be used to answer the question.

(e) Teachers must make learners aware that they are not allowed to draw additional lines on a diagram. In doing so, they are changing the question, and this is not acceptable.

QUESTION 10: EUCLIDEAN GEOMETRY

Common errors and misconceptions

(a) In Q10.1 some candidates did not draw the constructions nor did they state the constructions necessary to prove the theorem. Some omitted the perpendicular symbols for the heights of the triangles. These candidates were not awarded any marks. Some candidates used the incorrect heights for the triangles they were working with. Some candidates chose the incorrect triangles and therefore were unable to prove the theorem. Some learners renamed the given triangle, thereby changing the question. This was not accepted.

(b) When answering Q10.2.1, some candidates applied the midpoint theorem without first showing that both O and R were midpoints. Some candidates assumed that lines OR and WS were parallel in the diagram without proving that they were. The solution of many candidates lacked logic in their presentation. They presented the necessary information, but the sequence of the steps created gaps in the logic. These candidates were not awarded full marks.

(c) Q10.2.2 was poorly answered by many candidates. Some candidates applied the proportionality theorem without first proving that OR || WS. This was considered a breakdown. Many candidates lost a mark for not stating the parallel lines in the reason 'proportionality theorem'. Some candidates chose the incorrect sides when using the proportionality theorem to calculate the length of PT. For example, they stated that $\frac{\text{PT}}{\text{PS}} = \frac{\text{OT}}{\text{OV}}$ but PT was not a side of triangle ROT.

Suggestions for improvement

(a) Learners should be taught that a construction is required to prove a theorem. If the construction is not shown, then the proof is regarded as a breakdown, and they receive no marks.

(b) Learners should be made to prove theorems as part of their informal tasks. A good strategy is to expect learners to write the proof of a theorem as a task the day after the theorem was explained in class. Teachers should also choose random letters to label the triangles and not stick to the conventional A, B and C.

(c) As mentioned in previous reports, learners should be taught that all statements must be accompanied by reasons. It is essential that the parallel lines be mentioned when stating that corresponding angles are equal, alternate angles are equal, and the sum of the co-interior angles is 180° or when stating the proportional intercept theorem.

(d) It is advisable to train learners to reason logically and to write corresponding statements and reasons when teaching Euclidean Geometry in Grade 8. This should enable learners to present coherent proofs or solutions in Grade 12.

(e) Teachers should point out to learners that the *midpoint theorem* is a special case of the *proportionality theorem.*

QUESTION 11: EUCLIDEAN GEOMETRY

Common errors and misconceptions

(a) Many candidates did not name angles in a precise and correct way when answering Q11.1. For example, they wrote $\hat{F}$. In the context of this question, $\hat{F}$ could refer to three different angles: $\hat{F}_1$ or $\hat{F}_2$ or $A\hat{F}G$. Some candidates stated that $E\hat{A}G = \hat{C}_1$ and provided the reason 'tangents from a common point'. These candidates combined two steps into one. They were not credited with any marks because the reason did not correspond to the statement. Some candidates assumed that if $E\hat{A}G = x$, then $\hat{A}_1 = x$ or $\hat{A}_2 = x$.

(b) In Q11.2 many candidates assumed that CD || GF and immediately started with a ratio of sides. This was not accepted as candidates had to first prove that CD ||GF. When proving that CD || GF, many provided the incorrect reasons: 'corresponding angles', 'converse corresponding angles' or 'corresponding angles present' instead of corresponding angles are equal.

(c) When answering Q11.3 many candidates stated that $\hat{A}$ was common. Some even stated that $\hat{A}_2 = \hat{A}_3$ and gave the reason that they were common even though these were angles in two different triangles. When proving the two triangles similar, some candidates used the reason 'remaining angles' or 'sum of angles in triangle' for the first

pair of equal angles. They failed to understand that remaining angles is a consequence of two other pairs of angles being equal in both triangles.

(d) In Q11.4 most of the candidates found it challenging to correctly identify which pair of triangles they should prove similar. Some candidates were able to write down the correct proportions from the pairs of similar triangles but were unable to link these proportions to prove that $\mathrm{GF}^2 = \frac{\mathrm{BC.FC.AF}}{\mathrm{AD}}$.

Suggestions for improvement

(a) As mentioned in previous reports, more time needs to be spent on the teaching of Euclidean Geometry in all grades. Learners should read the given information carefully without making any assumptions. Exercises on Grade 11 and 12 Euclidean Geometry must include different activities and all levels of the taxonomy.

(b) The need for learners to name the angles correctly has been mentioned in several reports previously. Teachers should not credit learners with marks in school-based assessment tasks if the angles are not named correctly.

(c) Teach learners not to assume any facts in a geometry sketch but to use only what was given and that which had already been proven in earlier questions.

(d) Learners need to be made aware that writing correct statements that are irrelevant to the answer in Euclidean Geometry will not earn them any marks in an examination.

(e) Consider teaching the approach of 'angle chasing' where you label one angle as *x* and then relate other angles to *x*. In this way, learners should find it easy to identify angles that are equal but moreover, they should find it easier to establish the reasons for the relationships between the angles.

(f) Learners need to be told that success in answering Euclidean Geometry comes from regular practice, starting off with the easy and progressing to the difficult.

CHAPTER 11

PHYSICAL SCIENCES

The following report should be read in conjunction with the Physical Sciences question papers of the November 2024 examinations.

11.1 PERFORMANCE TRENDS (2020–2024)

The number of candidates who sat for the Physical Sciences examination in 2024 decreased by 5 684, compared to that of 2023.

There was a marginal decline in the pass rate this year. Candidates who passed at the 30% level decreased from 76,2% in 2023 to 75,6% in 2024. There was a corresponding decrease in the pass rate at the 40% level over the past two years from 51,1% to 49,9%.

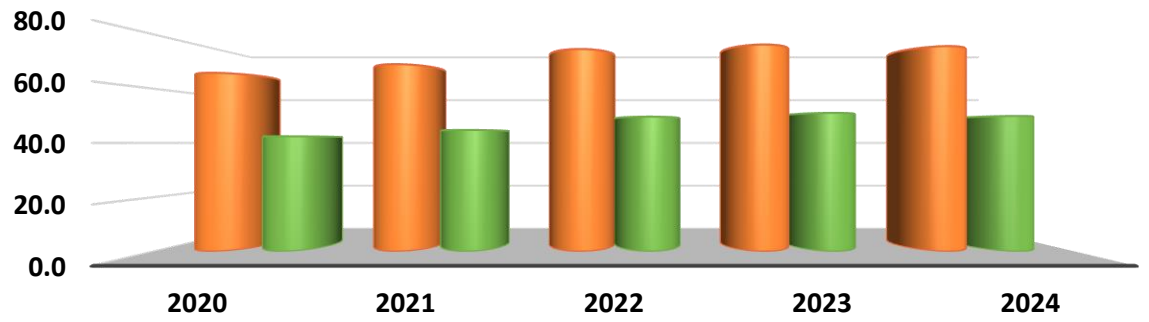
There was a marginal decrease in the percentage of distinctions over 80% (Level 7) from 3,1% to 2,8%. This converts into a decrease of 778 in the total number of distinctions, from 6 398, in 2023 to 5 620.

The various commendable support programmes employed by teachers, subject advisors and provincial education departments were continued in 2024. The resourcefulness and diligence of the above-average candidates also contributed to the overall results in the subject.

Table 11.1.1 Overall achievement rates in Physical Sciences

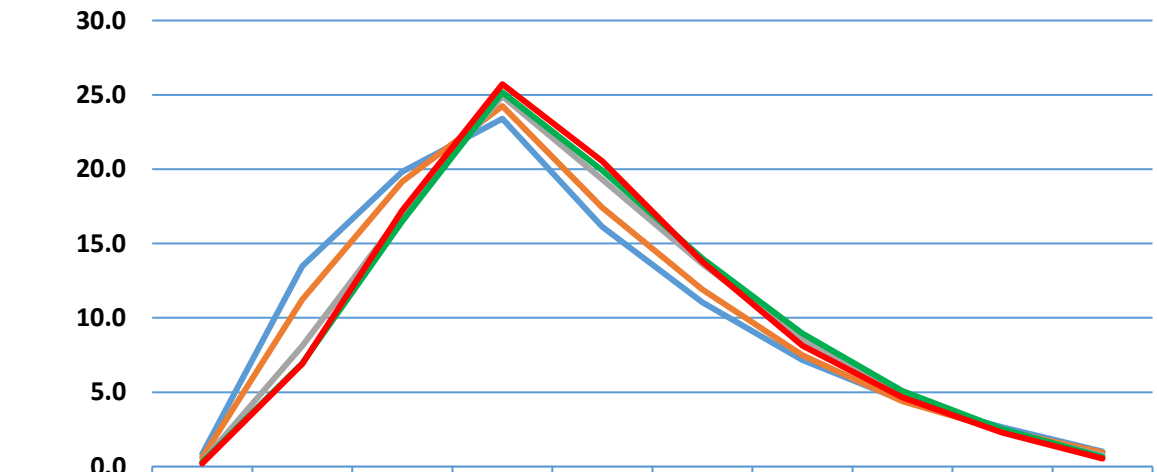
Year	No. wrote	No. achieved at 30% and above	% achieved at 30% and above	No. achieved at 40% and above	% achieved at 40% and above
2020	174 310	114 758	65,8	73 982	42,4
2021	196 968	135 915	69,0	88 164	44,8
2022	209 004	155 877	74,6	103 811	49,7
2023	206 399	157 368	76,2	105 414	51,1
2024	200 715	151 839	75,6	100 222	49,9

Graph 11.1.1 Overall achievement rates in Physical Sciences (percentage)



	2020	2021	2022	2023	2024
% achieved at 30% and above	65.8	69.0	74.6	76.2	75.6
% achieved at 40% and above	42.4	44.8	49.7	51.1	49.9

Graph 11.1.2 Performance distribution curves in Physical Sciences (percentage)



	0-9.9	10-19.9	20-29.9	30-39.9	40-49.9	50-59.9	60-69.9	70-79.9	80-89.9	90-100
2020	0.8	13.5	19.8	23.4	16.1	11.0	7.2	4.5	2.6	1.0
2021	0.6	11.2	19.2	24.2	17.4	11.9	7.5	4.4	2.4	0.9
2022	0.3	8.1	17.0	24.9	19.3	13.6	8.6	5.0	2.4	0.7
2023	0.3	7.0	16.5	25.2	19.9	14.0	8.9	5.1	2.5	0.6
2024	0.2	6.9	17.2	25.7	20.5	13.8	8.1	4.7	2.3	0.5

General comments on Paper 1 and Paper 2

The question on the *Doppler Effect* in Paper 1 was well answered. The question on the *Photoelectric Effect*, was again poorly answered.

Questions pertaining to pure recall of content were poorly answered because key words and phrases were omitted from definitions. Short informal assessment tasks relating to these issues will greatly assist in improving these shortcomings. This practice can be used to good effect in content relating to definitions and laws listed in the *CAPS* and the *Examination Guidelines*.

Interpretation of graphs was still a challenge for many candidates. Problem-solving exercises that involve graphs should be done in a variety of topics. Identification of the variables in relation to the equation describing the graph should be stressed. Practical work needs more attention in schools to ensure learners can apply practical skills, e.g. identification of variables, drawing of conclusions, interpretation of results and drawing and interpretation of graphs.

The application of mathematical principles was still a challenge for many learners. Learners should be given a variety of problem-solving activities that involve mathematical knowledge pertaining to simultaneous equations, quadratic equations, binomials, factorisation, trigonometry and graphs in classwork, homework, tests, and examinations.

Teachers should include the use of ICT in the teaching of the subject. Multimedia/Software such as *PhET* and *Edukite* as well as *YouTube* videos should be used to demonstrate the answers for multiple-choice questions through simulations (virtual experiments).

11.2 OVERVIEW OF CANDIDATES' PERFORMANCE IN PAPER 1

General comments

(a) Most questions were completely new contexts, and this made the question paper far more challenging than previous years' question papers.

(b) It is crucial to teach conceptual understanding thoroughly before drilling the previous years' question papers.

(c) Data sheets should form part of the learners' workbooks (pasted on the first page) and learners should be told to copy formulae, as they are, from data sheets.

(d) Mark allocations should be noted: Generally, 3 marks signify a one-step calculation, while 4 – 6 marks require a multi-step calculation.

(e) Each topic and/or concept should be paired with a formula on the data sheet.

(f) Teachers should take some time to prepare a focused assessment to enhance learners' conceptual understanding.

(g) Teachers are advised to check what the bullets in the examination guidelines mean and to make sure that they understand the depth and breadth to which a bullet must be subjected.

(h) Teachers are advised to explain definitions, laws and principles and they should not be satisfied with learners merely reciting these, without understanding them. This

creates a gap in the learners' ability to apply and calculate, using these rules and principles.

(i) The lack of knowledge of topics taught in Grades 10 and 11 could be seen in the poor performance of the candidates in Question 8. *Electric circuits* must be completed in Grades 10 and 11. However, this topic needs to be revised and assessed throughout the Grade 12 academic year.

(j) Throughout the paper, candidates showed a lack of understanding when they had to differentiate between *vectors* and *scalars.*

(k) Candidates lost marks unnecessarily because they forgot to write subscripts in formulae.

(l) Generally, candidates struggled with topics that were integrated in a question.

(m) Interpretation and drawing of sketch graphs were a challenge for many candidates. Questions involving graphs should be included in teaching and assessment of all topics. Teachers should note that learners can be asked to draw or interpret graphs in any of the topics in the Physical Sciences, as long as the graph shows the relationship between quantities that are treated within the examination guidelines.

(n) Candidates showed a lack of understanding of mathematical relationships, specifically when referring to ratios and proportions.

(o) In many questions, candidates made the same errors and displayed the same poor conceptual understanding as in previous years. Provinces should mediate effective implementation of the recommendations in this diagnostic report.

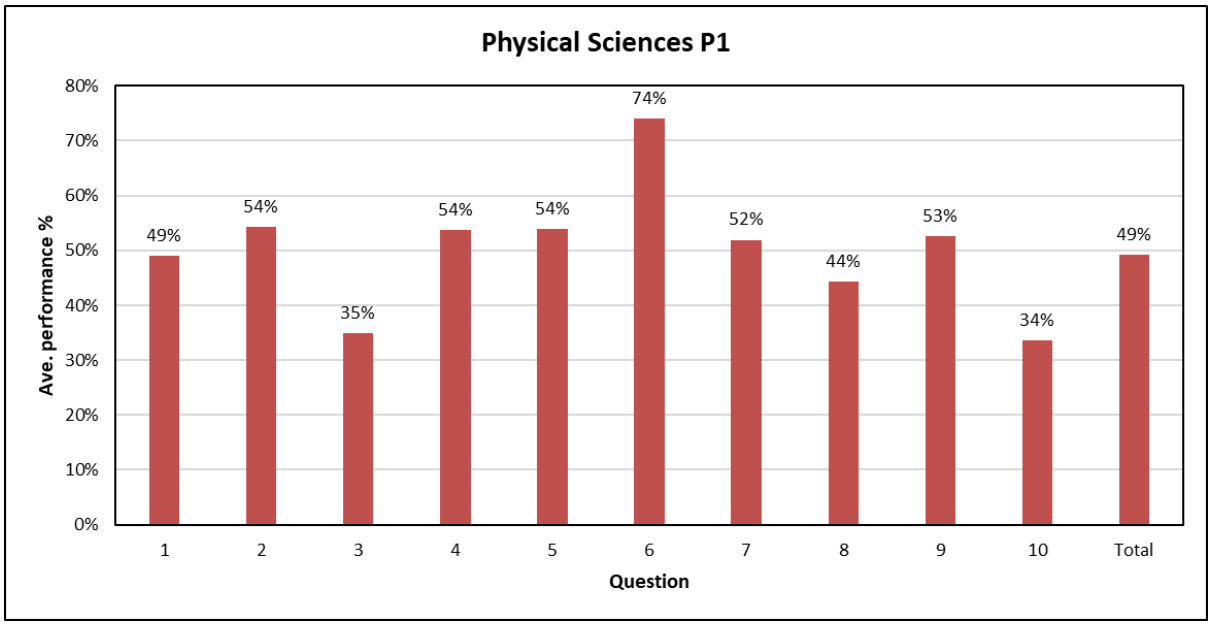
(p) Many candidates lost marks unnecessarily for: not writing the correct formulae from the data sheet provided; not showing their substitutions; and for leaving out subscripts. Some candidates did not give the correct units for the answers, or they did not convert their numerical answers to a minimum of two decimal places. Some left their answers as fractions.

11.3 DIAGNOSTIC QUESTION ANALYSIS OF PAPER 1

The following graph is based on data from a random sample of candidates. While this graph might not accurately reflect national averages, it is useful in assessing the relative degrees of challenge of each question as experienced by candidates.

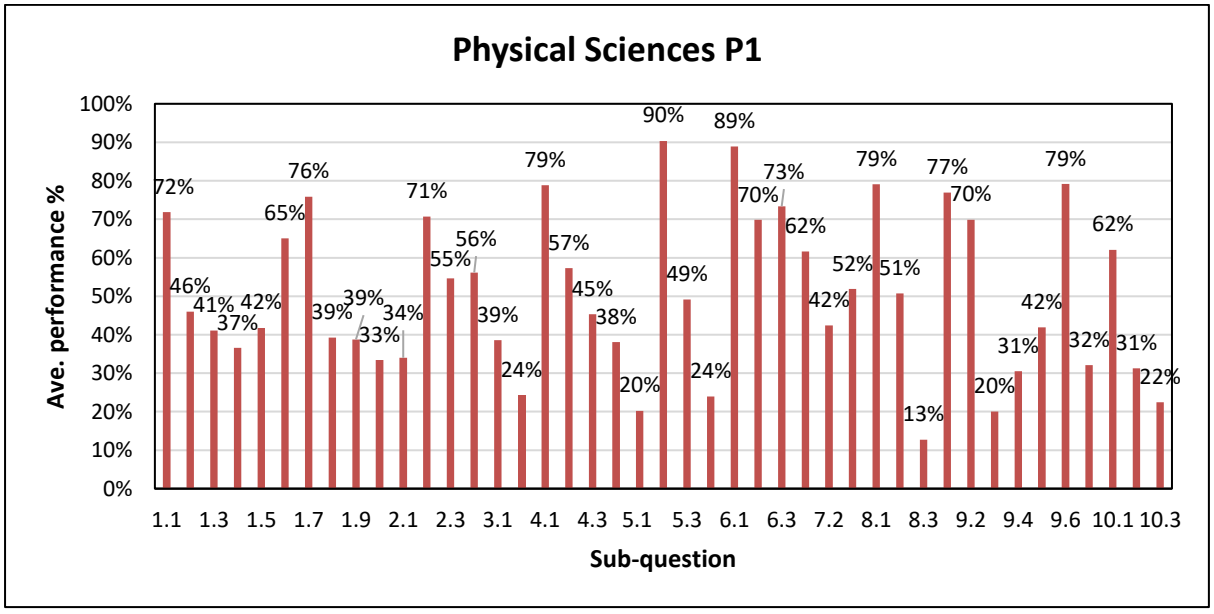
There was a slight improvement in the performance in Question 1 (Multiple-choice questions) compared to 2023. It must be noted that the *Examination Guidelines* do not restrict multiple-choice questions to level 1 and 2 questions. The averages also reflect a poor performance in Q3, Q8 and Q10. These were the worst performing questions in the 2024 Physical Sciences Paper 1. Q6 was the best performing question.

Graph 11.3.1 Average performance per question in Paper 1



Q	Topics	Q	Topics
	Multiple-choice questions	6	Doppler Effect
	Newton's laws of motion	7	Electrostatics (Coulomb's law & electric fields)
	Vertical projectile motion	8	Electric circuits
	Momentum and impulse	9	Electrodynamics: Motors, generators, AC and DC
	Work, energy and power	10	Photoelectric effect and Electrostatics

Graph 11.3.2 Average performance per subquestion in Paper 1



Sub-Q	Topic	Sub-Q	Topic
1.1	Newton's Laws of Motion	6.1	Name phenomenon
1.2	Projectile Motion	6.2	Predict direction of car's motion
1.3	Momentum and impulse	6.3.1	Calculate frequency of emitted sound
1.4	Work, energy and power	6.3.2	Calculate speed of car
1.5	Momentum and impulse	7.1	Calculate net electric field
1.6	Doppler effect	7.2	Draw net electric field
1.7	Electrostatics	7.3.1	Statement Coulomb's Law
1.8	Electric circuits	7.3.2	Give polarity of charge T
1.9	Electrodynamics	7.3.3	Calculate magnitude of charge T
1.10	Photoelectric effect	8.1	Define power
2.1	Definition static friction	8.2.1	Calculate reading on A_1
2.2	Free–body diagram	8.2.2	Calculate reading on A_2
2.3.1	Calculate coefficient of static friction	8.2.3	Calculate resistance R_1
2.3.2	Application Newton 2	8.2.4	Calculate total R_{ext}
2.4	Explain effect of mass on static friction	8.3	Calculate whether L_2 will burn
3.1.1	Calculate total time	9.1	Name type of generator
3.1.2	Calculate height of building	9.2	State energy conversion
3.1.3	Calculate maximum height of Ball A	9.3	Explain why DC not used for transmission of electricity
3.2	Velocity – time sketch graphs	9.4	Calculate frequency of rotation
4.1	Statement conservation of mechanical energy	9.5	Define I_{rms}
4.2	Calculate speed Trolley B	9.6	Calculate I_{rms}
4.3.1	Calculate change in momentum Trolley B	9.7	Interpret graph and state change
4.3.2	Give change in momentum Trolley A	10.1	Define photoelectric effect
4.4	Calculate speed of Trolley A	10.2.1	Predict colour
5.1	Definition work done	10.2.2	Explain prediction
5.2	Free–body diagram	10.2.3	Calculate frequency of light
5.3	Calculation magnitude of applied force	10.2.4	Effect of increasing intensity
5.4	Explain effect of increasing mass on work done by applied force	10.3.1	Name type of spectrum
		10.3.2	Explain presence of coloured lines

11.4 ANALYSIS OF CANDIDATES' PERFORMANCE IN EACH QUESTION IN PAPER 1

QUESTION 1: MULTIPLE-CHOICE QUESTIONS

Common errors and misconceptions

(a) Q1.1: Candidates had to interpret the word 'equilibrium'. Candidates were expected to know that $F_{net} = 0$ N, therefore $a = 0$ m·s^{-2} and the object was moving at a constant velocity.

(b) Q1.2: Candidates had to interpret the area under the acceleration-time graph which is equal to $a\Delta t$. Most learners were opting for option A (final velocity of the stone). They did not apply their Grade 10 definition of acceleration that $a = \frac{\Delta v}{\Delta t}$ and misread the fact that the stone was thrown downwards i.e. it had an initial velocity. The other most common incorrect answer was C. Candidates thought that *constant acceleration* multiplied by time implied a *constant velocity*. These candidates had no concept of what *acceleration* is.

(c) Q1.3: Momentum was related to E_K. Most candidates chose option B, and thought that $E_K \propto p$. They did not understand that if p, which equals mv, was halved, that v was also supposed to be halved.

(d) Q1.4: This question was answered badly. Newton's laws of motion were integrated with *work, energy* and *power*. Candidates should have focused on understanding how different concepts related to each other. Since the box accelerated down the incline, F_{net}, and therefore W_{net}, were down the incline. Candidates should have known that the gravitational force down the incline is greater than the sum of the applied force and frictional force up the incline. The most common incorrect answer was A.

(e) Q1.5: *Vertical projectile motion* was integrated with *momentum*. Candidates could not relate the lower height reached by the ball to the loss of kinetic energy while the ball bounced off the ground. Candidates did not understand that the ground was exerting an impulse on the ball and thus, could not get the direction of the impulse on the ball correct.

(f) Q1.6: Candidates who answered this question incorrectly did not understand that red shifted, which implied that the light observed on Earth had a longer wavelength and lower frequency. This was a level 1 question.

(g) Q1.7: Candidates had to realise that for the top sphere, the upward *electrostatic force* and the downward *weight* were equal. They had to equate two formulae and do a mathematical manipulation.

(h) Q1.8: Candidates had to interpret that 'kW' is a unit for power and 'h' is a unit for time. They then had to understand that $P \times \Delta t = W$. Since the SI unit for power is *Watt* and that for time is *second*, candidates encountered challenges in relating to the given unit. This level 1 question was answered badly.

(i) Q1.9: This question was answered poorly. The diagram gave the rotation of an electric motor and therefore candidates had to apply the left-hand rule. Furthermore, they had to know that a motor has a *split-ring commutator*. Most candidates were familiar with the term *split ring* and not *commutator* and since *split ring* was not one of the options, they chose option A. Candidates were confused with which hand (left or right) to apply to determine the direction of rotation of the coil.

(j) Q1.10: This question was the worst answered multiple-choice question. All three descriptions are true for light in general. Candidates did not consider the context in which the question was asked (*photoelectric effect*). Most candidates could not relate photons as packets of energy called *quanta*, although they knew that the *photoelectric* effect demonstrated the particle nature of light.

Suggestions for improvement

(a) Multiple-choice questions test learners' understanding of concepts, principles, laws, and the relationship between the dependent, independent, and constant variables, as well as the application of scientific knowledge.

(b) Multiple-choice questions are a good way for learners to consolidate their conceptual knowledge of a particular topic. Teachers should be going through multiple-choice questions with their learners, on the completion of every topic, as well as prior to any major examination. This practice should start from Grade 8. It must be noted that 80% (55 MCQs) of the Grade 9 GEC external paper consists of MCQs.

(c) Teachers should ensure a solid grasp of fundamental concepts and their interconnections to tackle integrated questions effectively. By focusing on these areas, learners can enhance their performance on multiple-choice sections and develop the skills necessary to interpret and answer complex questions accurately.

(d) Assessment of multiple-choice questions should be included in all class activities and not only in control tests and preliminary examinations. Teachers could create a Google form comprising of multiple-choice exam bank items where learners can do short multiple-choice quizzes to test themselves. Simultaneously, the teacher also gets feedback to see which learners are struggling with multiple-choice. This can be done per chapter or topic and be used as a fast test. Multiple-choice questioning should be used throughout the year. Some apps, such as *zipgrade* or *Kahoot!*, could also make the practising of multiple-choice questions easier. After such a test, learners should review their mistakes and identify why some answers were wrong.

(e) Learners must be encouraged to read all options before selecting the most appropriate answer. They must be able to justify why the other options are incorrect. This must be demonstrated through logical reasoning and not by engaging in lengthy calculations. During teaching and learning, carefully selected concrete examples must be worked out to demonstrate concepts, laws and principles, followed by generalisations and the making of predictions.

(f) Learners must also be encouraged to refer to the formula sheet because it gives the summaries of laws and principles, as well as the relationship between the variables.

QUESTION 2: NEWTON'S LAWS OF MOTION

Common errors and misconceptions

a. Q2.1: A higher percentage was expected for this level 1 question. The low average was probably a result of this definition not being examined previously. Candidates omitted key words such as 'tendency', 'motion', 'stationary object', and 'relative/parallel' to a surface in the definition. Some wrote 'moving object' instead of 'stationary object'. Some candidates defined *kinetic friction* instead of *static friction,* while others defined *inertia*.

(b) Q2.2: The free-body diagram was well answered and the best performing subquestion. Some candidates could not distinguish between horizontal and vertical forces, and drew the vertical forces instead of the horizontal forces. Some candidates drew all four forces. Common errors in the free-body diagram: arrows not touching the dot; f_k instead of f_s^{max} or f_s; $F_{applied}$ instead of T; no labels; no arrows, frictional force in the wrong direction and additional forces.

(c) Q2.3: Most candidates were unable to interpret the graph correctly. The crate remains stationary until the mass is 4,2 kg and the static friction force is at a maximum. Candidates were thus unable to apply Newton's second law using an acceleration of zero. Many candidates lost a mark in Q2.3.1 for writing f_S instead of f_S^{max} in the equation. In Q2.3.2, the system was accelerating; there was a kinetic frictional force and therefore, the tension force calculated in Q2.3.1 could not have been used in Q2.3.2. As this is a Physics error; positive marking could not be applied. Candidates did not realise that they had to apply Newton's second law to each mass, setting up two equations and solving simultaneously to calculate acceleration. Many candidates tried calculating the acceleration by only using one object.

(d) Q2.4: Candidates could not identify the relationship between f_s^{max} and N nor N and mg nor N and m. A few wrote increase in 'gravity' instead of 'gravitational force' or 'weight' of the crate. Some candidates tried explaining using the relationship between mass and acceleration or the net force, while some thought that the 8,5 kg was replaced by the 5 kg mass.

Suggestions for improvement

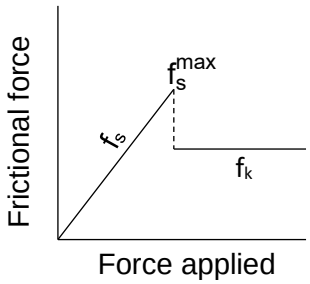
(a) Teachers should supply learners with copies of the *2021 Examination Guidelines*, adhere to and emphasise the definitions in the guidelines and *CAPS*. Key words must be emphasised in these definitions. Teachers must explain the definitions and concepts to the learners and guide them in answering questions. Learners should be exposed to various questions using $f_s^{max} = \mu_s N$ and $f_k = \mu_k N$.

(b) Newton's laws and friction is Grade 11 work that needs to be revised with learners. Questions with graphs and different scenarios should be given to learners to revise throughout the year. Learners also need to apply this knowledge when doing the section on *Work*, *Energy* and *Power*.

(c) The importance of drawing free-body diagrams for each object correctly in problem solving and their usefulness must be emphasised. Encourage learners to use different problem-solving strategies to answer the same question to ensure that they gain a greater understanding of the problem and its solution. Teachers could introduce free body diagrams in Grade 9 in the teaching of *forces*.

(d) Free-body diagrams are easy marks to achieve. However, too many candidates are losing marks because they do not insert arrows; or they draw extra forces; or they label the forces incorrectly. Drawing a free-body diagram is a simple skill that teachers can easily teach. Learners write the equations according to their free-body diagram, so if the diagram is incorrect, the calculations will also be incorrect. No positive marking is applied from an incorrect free-body diagram.

(e) Static and kinetic frictional forces can be explained using with the graph below.



(f) For all questions requiring an explanation involving relationships between quantities, learners must relate their explanation to a formula or a law. Learners should be taught to choose an appropriate formula and identify the independent and dependent variables, as well the controlled variables (variables that need to be kept constant).
E.g.: $f_k = \mu_k N = \mu_k(mg\cos\theta)$; because μ_k, $\cos\theta$ and g are constant, $f_k \alpha$ m.

(g) The correct use of the sign notation, when solving problems involving vector quantities, needs to be emphasised.

(h) Learners should be encouraged to substitute the given data directly into the formula that they have selected, before manipulating the formula.

QUESTION 3: VERTICAL PROJECTILE MOTION

Common errors and misconceptions

(a) Q3.1.1: This subquestion was a level 4 question. Most candidates did not realise they had to set up two equations for Δx, one for ball A and another for ball B, and equate the correct displacements. Many candidates tried solving for time using one equation. Candidates were inconsistent with allocating signs for the different vector quantities.

(b) Q3.1.2: This subquestion carried three marks and should be a one-step calculation. Many candidates solved this using multi-step calculations and they were either awarded full marks or were unable to substitute the velocities. One of the main errors was using the incorrect times, i.e. the time for ball A was used in an equation, with the initial velocity of ball B, or vice versa.

(c) Q3.1.3: This subquestion carried four marks and should have been a one-step calculation, with an addition of the answer for Q3.1.2. Many candidates just calculated the height above the starting point. Some candidates did not realise that Y represented the maximum height reached by ball A, and substituted the initial velocity of ball B into the equation.

(d) Q3.2: This question was answered very poorly. Some errors made by candidates included not realising that initially ball A moved upwards while ball B moved downwards, and therefore the initial velocities must have opposite signs and be drawn on opposite sides of the x-axis. Both graphs should end at the same time, as the balls hit the ground at the same time. The velocity time graphs should be straight lines, and the gradients should be the same, as both balls had the same downwards acceleration. Graphs were not labelled as A or B, therefore, candidates lost one mark.

Suggestions for improvement

(a) Learners should be exposed to several questions involving different scenarios of *vertical projectile motion*, including scenarios for two objects.

(b) Learners must first make sure that they understand the motion of the projectile and which values are relevant at each position. A rough drawing or diagram indicating the physical motion of the projectile, together with all the information given, (*velocities*, *displacements*, *time* etc.) is necessary in all scenarios. The motion of the projectile should also be broken up into different sections and only the given information for that section must be analysed.

(c) Advise learners to start every calculation on *vertical projectile motion* by indicating sign conventions at the beginning of the problem. They should not change their sign convention within a problem as it can lead to confusion. The allocation of direction to vectors is crucial, to ensure correct substitution of values. Emphasis should be placed on the vector quantities such as *velocity, acceleration* and *displacement* so that learners comprehend that vector quantities have both *magnitude* and *direction*.

(d) Learners should understand that time cannot be negative. They simply change it to a positive and forfeit marks for substitution.

(e) The skills of interpreting and sketching graphs especially for projectiles should be taught and learners should be exposed to various questions building from lower to higher order questions. Teachers should sketch graphs while doing calculations, do

not dedicate specific periods to graph sketching/drawing – integrate this sketching while problems are being solved.

(f) For sketching of graphs and interpretation:
Link position/displacement - time graphs with the equation $\Delta y = v_i \Delta t + \frac{1}{2} g \Delta t^2$ which is rewritten as $y = \frac{1}{2} g \Delta t^2 + v_i \Delta t + y_i$ where y_i is a point of projection.
Thus, the shape of a position – time graph is a parabola: $y = ax^2 + bx + c$

Link velocity- time with the equation $v_f = v_i + g\Delta t$ which is rewritten as $v_f = g\Delta t + v_i$ where v_i is the y-intercept and g is the gradient of the graph.
Thus, the shape of a velocity – time graph is a straight line: $y = mx + c$

QUESTION 4: MOMENTUM AND IMPULSE (Integrated with conservation of mechanical energy)

Common errors and misconceptions

(a) Q4.1: This level 1 question was well answered. Candidates lost marks because they omitted key words, e.g. 'sum' or 'total' and 'isolated', in their responses. It is important to note that the correct term is *'isolated system*' and not *'closed system*'. Some candidates stated the *law of conservation of linear momentum* and some *the law of conservation of energy*.

(b) Q4.2: Quite a few of the candidates could not write a correct formula for *conservation of mechanical energy* and thus lost one mark. Those that used the *conservation of momentum* formula or started with $(E_p)_{top} = (E_k)_{bottom}$ were awarded zero marks.
Other candidates wrote $\Delta E_k = \Delta E_p$ instead of $\Delta E_k = -\Delta E_p$ and obtained only one mark.
Using the formula $W_{nc} = \Delta K + \Delta U$ required that zero be substituted for W_{nc}. If the zero was not substituted, candidates were credited with maximum of two marks out of four.
It must be emphasised that ΔE_k equals $\frac{1}{2} m(v_f^2 - v_i^2)$ and not $\frac{1}{2} m(v_f - v_i)^2$.

(c) Q4.3.1: The poor performance in this question was due to candidates writing the incorrect or an incomplete formula and therefore obtaining zero marks.
Direction was not given for the final answer – candidates did not realise that momentum is a vector quantity.
The unit for momentum and change in momentum (Q4.3.2) is $kg \cdot m \cdot s^{-1}$ or N·s and not J, or $kg \cdot m \cdot s^{-2}$ or N.
Candidates who wrote $p = mv$ instead of $\Delta p = m\Delta v$ obtained zero marks, even if they had the correct answer.

(d) Q 4.3.2: Candidates were unable to ascertain that the change in momentum for trolley A was equal in magnitude but opposite in direction to the change in momentum of trolley B. Many candidates failed to score marks as they did not give a direction. The use of the minus sign to indicate opposite direction is not accepted.

(e) Q4.4: This was the worst answered subquestion in Question 4. This could have been solved using $\sum p_i = \sum p_f$ or $\Delta p = mv_f - mv_i$. The most common errors candidates made were using the incorrect masses and/or using incorrect signs.

Suggestions for improvement

(a) Definitions must form part of daily activities as well as class tests and must be marked exactly as in the final examination.

(b) The vector nature of momentum should be emphasised, and learners should be encouraged to specify the sign that they have chosen for each direction, before they start a calculation.

(c) For *conservation of momentum* and *conservation of mechanical energy*, the formulae are developed from the definitions. Learners must be taught to use both principles correctly and where to substitute zeros. The concepts should be fully explained and the similarities and differences in the two conservation concepts should be emphasised.

(d) The concept of *impulse* must be taught from the premise of Newton's second law, that the body is accelerating (changing velocity) due to a net force applied on it over a short period of time. Newton's third law must be used to explain why $\Delta p_A = - \Delta p_B$.

(e) Change in momentum is for the same object not two objects, hence the *mass* and *velocities* values substituted, should be for the same object.

(f) Learners must be taught to assign subscripts when using the formulae.

(g) Teachers should emphasise that the symbol Δ implies (final quantity – initial quantity).

QUESTION 5: WORK, ENERGY AND POWER

Common errors and misconceptions

Q5.1: This level 1 question was the second worst answered subquestion in the whole paper. This definition had not been examined previously. Many candidates wrote the definition for $W_{net}=\Delta E_k$, as that was what they had expected to be asked. A large number of candidates replaced the term *displacement* with *distance* and omitted the direction of the displacement and the word "product". Many candidates referred to the direction of the *force* instead of the direction of the *displacement*. A few candidates defined work done by a non-conservative force or wrote a definition for the *Work-Energy* theorem.

Q5.2: The free-body diagram was well drawn by most learners. Common errors included: incorrect labels; breaking up the force at an angle into its components; not adding arrows; not labelling the forces; drawing additional forces; drawing the frictional force as if the object was moving on an incline; drawing the frictional force in the direction of motion thus indicating a clear misconception of the definition of frictional forces.
Some candidates were using unconventional symbols by creating their own abbreviations.

Q5.3: Many candidates could not calculate the *work* done by the forces but only the change in *kinetic energy*. A large number of candidates incorrectly wrote $W_{net} = ½m(v_f-vi)^2$ or swopped the initial and final speeds, while others wrote the incorrect formula $W_{nc} = \Delta E_k$.
Some candidates do not understand the concepts of *net work done* on the object as the sum of work done by the different forces acting on the object. Many candidates understood the concepts that had to be used to answer the question but made too many mathematical errors. Candidates' substitutions were correct, but they made mistakes when using their calculators. There were many incorrect substitution errors regarding the *angle of force F* or the *parallel component of force F*.

Q5.4: This subquestion was very poorly answered. Most candidates said that the work would increase, a clear indication that they were confused with which variable influenced the work done by a force. They did not understand that the mass of the object does not influence the

work done by an applied force. Many candidates gave lengthy explanations that were not required. This showed that candidates were not used to stating the relationship without an explanation. From the reasons they gave it was clear that they had not been asked or exposed to a question such as this regarding factors that influenced the work done by a force.

Suggestions for improvement

(a) Learners must look at the mark allocation to determine the number of forces on the free-body diagram. Learners must be instructed to use conventional symbols/abbreviations for forces or to provide the full name of the forces.

(b) Teachers should emphasise that when candidates draw components of a force on a free-body diagram instead of the force itself, they will forfeit the mark for that force.

(c) Learners should be exposed to more higher order questions that require multi-step calculations and questions involving graphical interpretation.

(d) Step-by-step ways to solve these types of questions should be taught to learners. Learners should first identify forces, draw a free-body diagram, identify the forces that do work and then start to answer the question.

(e) Clearly explain to learners the difference between W_{net} (total work done by all forces acting on the object, i.e. both conservative and non-conservative) and W_{nc} (total work done by non-conservative forces acting on the object).

(f) The net work done by a force is always equal to the change in kinetic energy of the object. Energy principles refer to the relationship between work done and energy. The only equations that relate energy principles are $W_{net} = \Delta E_k$ and $W_{nc} = \Delta E_p + \Delta E_k$.

(g) Teachers should stress the meaning of Delta: Δ = (final – initial) and not Δ = (initial – final).

(h) The importance of substituting the zero-values, even if it carries no marks, must be emphasised. This helps the learner to conceptualise the motion and to substitute correctly.

(i) It is important that learners refer to the data sheet and use the formulae as given and not create their own formulae.

(j) Grade 10 teachers must explain the conservation of mechanical energy correctly. Learners should refrain from using the formula $(E_p)_{top} = (E_k)_{bottom}$.

QUESTION 6: DOPPLER EFFECT

Common errors and misconceptions

This was the best answered question, even though a wavelength-time graph was given.

(a) Q6.1: Candidates were able to identify the *Doppler effect* well. Those who lost marks only wrote Doppler and left out the word 'effect'.

(b) Q6.2: Although this subquestion scored a high average, it was found that many candidates could not read and interpret the wavelengths correctly from the graph. Since $\lambda_L > \lambda_S$, the police car was moving away. Candidates had to remember that

wavelength and frequency are inversely proportional, i.e. a larger wavelength implies a lower frequency.

(c) Q6.3.1: Common errors made by candidates included using the formula c = f x λ; substituting Planck's constant (h) into the wave equation or using E = hf, as well as substituting 3 x 10^8 m·s^{-1} or 340 m·s^{-1}, instead of 343 m·s^{-1} for the speed of the sound.

(d) Q6.3.2: This was not an easy question. The calculation depended on the candidates' interpretation of the graphs and their mathematical skills. Since the police car was moving away, the value of f_L had to be less than that of f_S.
Some candidates lost marks unnecessarily by not using the complete Doppler formula as it appeared on the data sheet.
The most common error was swopping the f_L and f_S; and using the values for λ in place of f. Candidates who substituted 340 m·s^{-1} instead of 343 m·s^{-1} (which was given in the question) for the speed of sound, lost 2 marks.
Mathematical manipulation is a challenge. Positive marking assisted candidates in scoring marks.

Suggestions for improvement

(a) The *Doppler effect* is not easy to grasp. Relevant demonstrations and thorough assessment of this section are necessary to foster understanding of the *Doppler effect*. Videos and simulations play a key role in visually demonstrating the changes in frequency and wavelength of the sound that is detected by the listener, when the sound source and the listener are moving relative to each other. Teachers should make sure that learners understand how the *Doppler effect* is applied in different situations, e.g. in the medical field.

(b) Teachers need to source and expose learners to a variety of questions relating to the *Doppler effect* equation as the scope is very broad, given the number of variables in the equation. Identification of variables in relation to the equation and interpreting and using the information in graphs should be stressed.

(c) Give learners various types of questions including ones with two variables which they must solve, using simultaneous equations.

(d) Too many candidates are losing the formula mark because they are not writing down the *Doppler equation* as it appears on the data sheet. It is a simple matter to instruct learners to do this. Only once substitution starts, should learners change the signs.

(e) The speed of sound in the equation v = f λ is constant, therefore the *Doppler effect* can either be related to f or λ. Educators must use the equation v = f x λ to show the relationship between f and λ for constant speed.

(f) Learners should be provided with opportunities to revise Grade 10 content on waves and relationships between frequency and wavelength, with emphasis being on the fact that speed of sound in air and the speed of light in air are constant.

QUESTION 7: ELECTROSTATICS (COULOMB'S LAW and ELECTRIC FIELDS)

Common errors and misconceptions

(a) Q7.1: Most candidates could identify and use the correct equation, but found the conversion of distance from centimetres to metres and nano coulombs to coulombs challenging.
The units for the final answer were incorrect or omitted.
Some candidates used the incorrect formula and started with F for force and not E for electric field.

(b) Q7.2: Candidates performed poorly in this level 1 subquestion which required a sketch of the resultant electric field pattern for opposite charges. One of the marking criteria was to look at 'field pattern between charge' and 'field pattern outside charge'. Most learners drew this sketch very poorly and obtained 0 or 1 mark. For example, there were too few field lines between the charges, field lines were not curving correctly on the outside, not drawing a straight horizontal line joining the middle of the spheres between and on the outside of the spheres, lines were not touching the sphere or lines originated inside the sphere.
Directions of the field lines were incorrect, and many sketches looked like spiders and not electric field lines.
Some candidates drew the electric field pattern for two like charges or one single charge and lost three marks.

(c) Q7.3.1: This level 1 question was poorly answered. Most candidates omitted key words like *force, product* and *square* when stating Coulomb's law. Omitting such key words resulted in a statement with no meaning or an incorrect context. Some learners still used the product of *masses* instead of product of *charges* and forfeit 2 marks.

(d) Q7.3.2 was well answered.

(e) Q7.3.3: This question required candidates to use the definition of electric field to calculate the final answer. Candidates who substituted the negative sign of the charge were penalised. The electrostatic force depends on the magnitudes and not the nature of the charges. Substituting the negative sign of the charge also confused candidates as they had to take the vector nature of the forces into account to substitute the net force.
Some common mistakes:
Candidates wrote $F_{net} = \frac{kQ_1Q_2}{r^2}$ instead of $F = \frac{kQ_1Q_2}{r^2}$ and forfeited the mark for the formula.
Some candidates did not realise that there were two forces acting in a straight line on Q_T and they tried calculating F_{net}, using Pythagoras's equation: $F^2_{net} = F_S^2 + F_P^2$.
Many candidates were confused with the direction of the forces which charges P and S exert on charge T. F_{net} at point Q_T is in the same direction of $F_{ST,}$ therefore $F_{net} = F_{ST} - F_{PT}$ and $-F_{net} = F_{PT} - F_{ST}$.
F_{net} = 2,5 x 10^{-4} N was given. Candidates should have begun with a formula for F or F_{net}. Many started with $E = \frac{kQ1Q2}{r^2}$ or $F = \frac{kQ}{r^2}$. This clearly indicated that they were not using the data sheet and were attempting to write the formulae from memory.

(f) Mathematical manipulation was a challenge for some candidates.

Suggestions for improvement

(a) Learners should revise this work at the beginning of Grade 12 and this should be included it in the first term common test and the June examinations.

(b) Teachers can use vector diagrams very effectively to assist learners with the sign conventions when working with forces/fields and to calculate net force/field.

(c) The drawing of different patterns should be assessed. Teachers should check the shape and emphasise curving of field lines on the outside and inside, if a question on the electric fields pattern for two-point charges is asked. They should also ensure that learners know the symmetrical field lines, when a question on the electric field pattern for a single charge is asked.

(d) It is important to teach learners to follow the marking criteria as far too many marks were forfeited because of sloppy sketches~~.~~

(e) Testing the learners' knowledge of definitions must form part of daily activities, as well as class tests and must be marked exactly as in the final examination.

(f) The magnitude of the electrostatic force depends on the magnitudes – and not the nature (polarity) – of the charges. Learners should not substitute the negative sign when using the Coulomb's law formula or the formula to calculate electric field strength.

(g) The vector nature of electrostatic forces and electric field at a point should be tested for three charges placed in straight line and when they are placed at the apexes of a right-angled triangle.

QUESTION 8: ELECTRIC CIRCUITS

Common errors and misconceptions

(a) The main challenge that candidates experienced was interpreting the circuit diagram and applying the given power and voltage ratings in the calculations. They could not differentiate between 'parallel' and 'series' connections and nor could they identify which resistors were connected to each other and in which part of the circuit.

(b) Q8.1: This subquestion was well answered. However, many candidates omitted the word 'rate' and some used either 'current' or 'potential difference' instead of 'energy'.

(c) Q8.2.1 and 8.2.2: The most common mistake was choosing the correct power equation to solve the problem. Candidates did not seem to understand the values given for each bulb. Ammeter A_1 reads the total current. Candidates calculated the current through L_1 but forgot to add the current through L_2. For Q8.2.1, many candidates used the rating of L_1 instead of that of L_2.

(d) Q8.2.3: Most candidates were unable to identify the circuit as a parallel combination. Also, they did not realise or forgot what was taught in Grades 8 and 9: that the potential difference is the same in each parallel branch and therefore, the total potential difference for the bottom branch is 32 V. Since V_{L1} = 20 V, V_{R1} = 12 V.
Candidates also did not realise that R_1 and L_1 were connected in series and therefore, the current through each is the same.

(e) Q8.2.4: Candidates were unable to calculate the total resistance for the parallel branch and added the resistance for the parallel combination to the series part to get the total resistance. Some leaners were not adding the internal resistance. Many candidates ~~do~~ did not know that the R in the emf equation was the total external resistance.

(f) Q8.3: This subquestion was the worst answered question in the paper. Many candidates incorrectly stated: the removal of L_1 increased the resistance of the circuit, which decreased the current in the circuit and therefore, the current through L_2 decreased and L_2 would continue to glow but would be dimmer. They did not realise

that while the circuit current, which was 3,3 A, decreased, the current through L_2 (which was 1,5 A) increased and therefore L_2 would burn out/blow.
Many candidates incorrectly answered 'Yes'. Most of them were unable to use a power equation or Ohm's law to calculate resistance to enable them to calculate the current and to compare it to the calculated current associated with the rating. Most of the candidates were using a different value for emf.

Suggestions for improvement

(a) Learners always find solving electric circuits a challenge. This section is done in Grade 11 as well. It is important to spend more time on this section.

(b) Learners should always attempt to answer all the questions. Even if they are not sure, they should start with an equation in which known values can be substituted. Positive marking helps many of the learners in these questions, but then they should have at least attempted the question.

(c) *PhET* simulations should be used effectively in practical demonstrations when teaching electric circuits.

(d) Teachers should use a variety of circuit set-ups and using all electrical quantities (P, V, I, Q and W) when working with electrical circuits. The focus should be on the properties of potential difference and current in series and in a parallel branch.

(e) It is important to emphasise that the moment any component burns out or is replaced, the circuit changes. Only emf and the internal resistance remain the same, all the other current and potential difference values must change.

(f) Teachers should use various forms of the emf equation ($\mathcal{E} = I(R+r)$; $\mathcal{E} = V_{ext} + V_{int;}$ $\mathcal{E} = IR + Ir$) so that learners are exposed to the different ways of calculating emf instead of always expecting to use R_{ext} and r to calculate emf.

(g) Some of the candidates were taught to use V_{load} instead of V_{int} or V_{lost}. Teachers are advised not to use V_{load}.

(h) The properties of potential difference and current in a series and parallel branch should be thoroughly tested in Grades 10 and 11. These skills and knowledge should only be reinforced in Grade 12.

(i) Teachers should emphasise that the power rating on a device is the maximum it can sustain without burning out.

(j) Learners must be taught not to leave the answers as a fraction, but to write the answer with at least two decimal places and to ensure that the unit is correct.

QUESTION 9: ELECTRODYNAMICS

Common errors and misconceptions

(a) A factor contributing to the poor performance in this section could be that electrodynamics is taught in the third term, when teachers are rushing to complete the syllabus. As a result, the topic may not be covered in sufficient depth, and teachers do not have enough time to properly assess this section.

(b) Q9.1: Candidates could not interpret the graph to identify the DC generator.

(c) Q9.2: Candidates' incorrect responses were: 'electrical to chemical', 'mechanical to chemical', 'chemical to mechanical'.

(d) Q9.3: Most candidates were unaware of the advantage of AC over DC.
This is specifically specified in *CAPS* (page 131) and in the *2021 Examination Guidelines* (page 14).
It was obvious that this aspect was not emphasised during teaching and learning or it was not covered at all. The low average of 20% for this level 1 subquestion attested to this.

(e) Q9.4: This level 2 question required the application of the relationship between frequency and period ($T = \frac{1}{f}$), a concept that was supposed to be taught in Grade 10. The extremely poor performance in this question, with an average of 34%, could be attributed to teachers not emphasising this formula in Grade 10 and Grade 12 and candidates forgetting this formula, even though it was on the data sheet.
Most candidates struggled to interpret the graph and to determine the period of the wave, which was necessary for calculating the frequency at which the coil rotates. Some candidates were able to choose the correct formula but could not read the correct value off the graph. Some candidates used $\frac{1}{0,01}$ or $\frac{1}{0,04}$, clearly indicating that they could not identify the number of waves/cycles in the graph.
Candidates used s^{-1} instead of Hz for the unit of frequency or omitted the unit.

(f) Q9.5: The definition of *root mean square current* (*rms*) is included in the *Examination Guidelines*, yet some candidates were unable to define it accurately. However, there was an improvement in the performance in this question compared to the 2023 paper, where the same question was asked. It remains a challenging definition as many candidates did not understand it and just regurgitated it.

(g) Q9.6: Some candidates still omitted the subscripts rms and max in the equation $I_{rms} = \frac{I_{max}}{\sqrt{2}}$. A few candidates rounded off incorrectly to two decimal places and wrote no unit or an incorrect unit.

(h) Q9.7: Once again, this was a question requiring an explanation/description which was very poorly answered. Most candidates answered this question by referring to the observed differences between the two graphs.
A number of candidates were able to identify from the graph that the change made to the operation of the generator led to a decrease in one of the quantities depicted. However, they were unable to specify and quantify this change. Important words were omitted e.g. 'speed was slower' rather than 'speed of rotation was slower'. Candidates also did not mention the ratio by which the speed of rotation changed viz. it was halved. Many said 'time was doubled' instead of 'period was doubled'.

Suggestions for improvement

(a) Teachers should relate the rating of appliances used in our homes, i.e. f = 50Hz, V_{rms} = 200 V, to explain the real-life application of AC generators.

(b) Teachers must use *PhET* or *YouTube* simulations or videos to demonstrate the working of AC/DC generators, as well as show the graphs to demonstrate the effect of the number of the coils, the speed of the rotation and the strength of the magnetic field on the emf or current produced by the generator.

(c) Learners usually perform better in questions involving calculations of *rms current* and *rms voltage*. However, they struggle to answer conceptual questions involving these values. Teachers need to ensure that learners understand the difference between *rms* and maximum values of current and voltage.

(d) Time should be dedicated to this topic. This topic is done in the third term and is easy to neglect because often there is insufficient time left for teaching. School periods might not be enough; use afternoon sessions to work through previous papers. Learners can easily score full marks for this question if they practice and work through enough past questions.

(e) Teachers should make use of previous papers to make sure learners know the difference between *AC, DC, motors* and *generators*.

QUESTION 10: PHOTOELECTRIC EFFECT

Common errors and misconceptions

(a) With candidates scoring an average of 34%, this question recorded the worst performance in the paper.

(b) Q10.1: Many candidates defined *threshold frequency* or *work function* instead of *photoelectric effect*.

(c) Q10.2.1 and Q10.2.2: The common mistake in this question was that candidates did not indicate which two of the three lights would eject electrons or which one of the three would not eject electrons, when comparing their frequencies.
Candidates could not use the spectrum of light to identify which light had the highest/lowest frequency, even though they should have known that red light has the longest wavelength and lowest frequency and blue light, the shortest wavelength and highest frequency from their knowledge of red shift.
Some candidates misinterpreted the diagram. They mistook the arrows on the diagram as the actual length of the light shining onto the metal.
Scientific notation was also a challenge to identify the higher and lower energy value.

(d) Q10.2.3: Most candidates did not realise that they had to calculate the *work function* of potassium first, to be able to calculate the frequency of light that ejected electrons with maximum E_k of $6{,}96 \times 10^{-20}$ J
Most did not realise that this was a multi-step calculation.
The large number of candidates, who used the frequency of $5{,}85 \times 10^{14}$ Hz as the *threshold frequency* of the potassium, obtained a maximum of 2 out of 5 marks.
Rounding off within the question was a problem.
Many candidates omitted 'max' in the formula $E = hf + E_{kmax}$.

(e) Q10.2.4: Red light does not emit electrons as its frequency is below the threshold frequency of potassium. Increasing the intensity of red light will not increase the energy of the incident photons and there will still be no electrons ejected. Most candidates failed to understand this.

(f) Q10.3.1 and Q10.3.2: Most candidates did not demonstrate any knowledge of *line emission spectrum*, and they did not know the difference between *absorption spectrum* and *emission spectrum*. Most candidates explained how the *emission spectrum* was obtained, i.e. atoms/electrons emit energy when moving from a higher to a lower

energy state, which was required for one mark. They failed to explain that the coloured lines represent the frequencies of the emitted photons.
From the answers of a vast number of candidates, it was apparent that this section, which should have been taught in the third term, was not taught with the necessary detail.

Suggestions for improvement

(a) This topic is done last according to the *ATP*, and it was not tested in any examination except in the trial examination. Insufficient assessment is done on this topic. Teachers should try to complete the curriculum without neglecting the detail and ensure that quality revision is done. They should set questions which address both, the different cognitive demands and levels of difficulty.

(b) Teachers should make a summary of the content and graphs, i.e. E vs f; E_k vs f; E_k vs $1/\lambda$, E_k vs λ and include the spectra as stated on page 14 of the *2021 Examination Guidelines*.

(c) Simulations and *YouTube* videos should be used in teaching the *continuous spectrum*, *line spectrum* and *line absorption spectrum*.

(d) Writing the subscripts on the formula, as it is presented on the datasheet, must be emphasised during lessons.

(e) Teachers should show learners how the different spectra are being formed and thoroughly explain the difference between *absorption* and *emission spectra*.

11.5 OVERVIEW OF CANDIDATES' PERFORMANCE IN PAPER 2

General comments

(a) Teachers must ensure that the correct *Examination Guidelines* (2021) are used to inform their teaching and assessment parameters. However, while the guidelines present the content to be delivered in point form (bullets), teachers must extend these points to a range of application possibilities. A singular point can be assessed in multiple ways, using a range of examples to assess the application thereof. The guidelines provide the titration of a strong base and a weak acid as an example. However, the titration of any acid and base can be assessed, as was the case in Q7. This question was poorly answered.

(b) The demand on a Physical Sciences learner is substantial, mostly because science relies on complicated explanations of abstract concepts. Most candidates perform poorly because they fail to grasp and process these complex phenomena systematically. This failure accounts for the poor performance throughout the paper, especially in Q8 and Q9 (redox reactions).

(c) Physical Sciences are, in many cases, very mathematical in nature. A good grasp of basic mathematical skills such as computation; working with formulae; solving equations (both linear and quadratic); understanding mathematical relationships; drawing and interpreting graphs; etc. places candidates in a better position to answer questions in an examination. Many candidates lacked these basic mathematical skills, as demonstrated in Q5.1.2 (reaction rates), Q6.2 (equilibrium constant calculation), Q7.5 (acid base calculation) and Q7.6 (stoichiometry). Teachers must take the time to demonstrate and revise calculator manipulation skills.

(d) Chemistry is an ‘exact science'. There is huge emphasis on accuracy, particularly regarding definitions and explanations of chemical phenomena. While a regurgitation of facts will earn candidates some marks, it must be accompanied by the necessary understanding. This will allow candidates to answer questions pitched at higher cognitive levels. A lack of understanding was evident in many of the multiple-choice questions (Q1), Q4 (organic reactions), Q5 (reaction rates), Q6.1 (chemical equilibrium) and the questions involving redox reactions (Q8 and Q9).

(e) Chemistry is also an 'experimental science'. The accumulation of knowledge is structured, acquired mostly through a scientific method. Therefore, science process skills are central to knowledge construction. Candidates must understand experimental procedures through prescribed, recommended and other experiments that seek relationships between quantities, e.g. vapour pressures of different organic compounds (Q3), reaction rate vs time (Q5.1) and a titration (Q7). Candidates demonstrated a poor understanding of the experimental procedure involved in a titration.

(f) The teaching and learning programmes from Grades 10 to 12 are progressive. Candidates are expected to know the foundational concepts before advancing to the more abstract concepts programmed for subsequent grades. Candidates demonstrated gaps in their understanding of work covered in previous grades, e.g. Q7.1, Q7.2 and Q7.4 (acids and bases), Q7.6 (stoichiometry, involving water of crystallisation) and Q8.1 (oxidation numbers).

(g) Some assessment items involve the integration of scientific concepts. These questions are usually pitched at a higher cognitive level, designed to assess the ability of candidates to invoke knowledge and skills drawn from various knowledge areas. Candidates perform poorly in these types of questions, which suggests a linear model of teaching and a failure to link concepts for a deeper understanding of phenomena. Candidates failed to link the hydrated compound to a stoichiometric ratio in Q7.6, although Q7 assessed acid-base theory and calculations.

(h) The use of past question papers is essential to demonstrate how knowledge can be applied to solve problems and answer questions in particular contexts. However, a variation of contexts will demand more creative ways to select and apply appropriate knowledge. This variation reduces the predictability factor of assessment items, and often results in poor responses to innovative questions. For this reason, teachers must ensure intensive teaching through developmental activities. Questions from past papers, and other appropriate questions should be used to demonstrate a range of assessment possibilities. These questions, on their own, may not prepare candidates for novel assessment items. This explains why the innovative questions (e.g. Organic Reactions in Q4, and the electrolysis of aqueous sodium chloride in Q9.2) were very poorly answered.

(i) Candidates performed best in Q2 (Organic nomenclature and structures, functional groups, isomers and esterification). Most candidates appeared to be well prepared for this question, and Q3 (vapour pressure of various organic compounds).

(j) The performance in the question on chemical equilibrium and equilibrium constant calculations (Q6) was reasonable. Many candidates obtained 50% and above, for the calculation, despite a poor understanding of the requirements posed by the question. This can be attributed to the use of lenient marking standards for this type of question.

(k) Candidates performed the poorly in Q8 and Q9 (redox reactions and electrochemistry). The poor performance may be attributed to the fact that Grade 11 work was assessed (refer to (f) above) and to the degree of innovation that characterised some of the sub-questions (refer to (h) above). It was also evident that many candidates showed no prior engagement with or exposure to this content. These candidates did not know how to use the *Table of Standard Reduction Potentials* correctly. Teachers may have rushed the teaching of this content, as it was the last section programmed for the year, and they were under pressure to complete this in limited time.

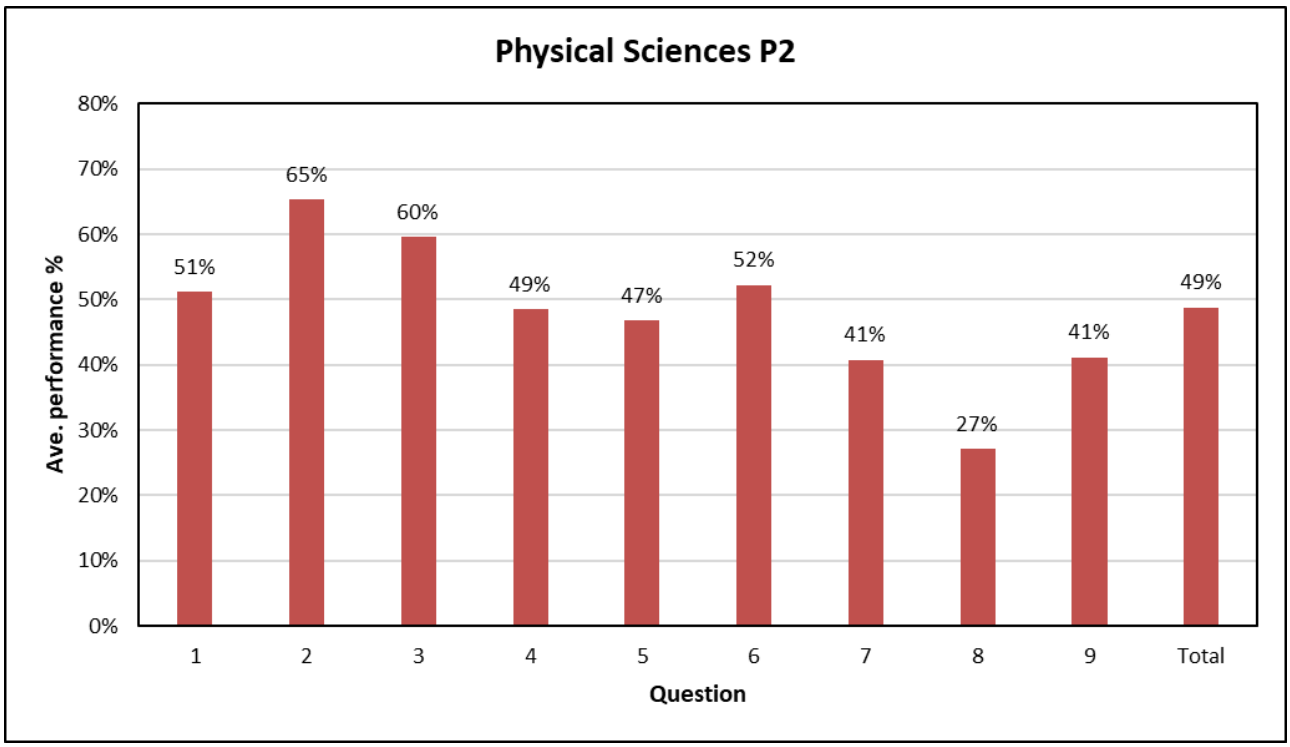
(l) A few candidates failed to manage their time well, therefore, did not attempt all the questions. Candidates must be taught time management so that they attempt all the questions in the allocated time.

(m) Candidates should understand the instruction 'Round off your **final** numerical answers to a minimum of **two** decimal places'. This should only apply to the final answer. Learners should be taught to store the answers of their calculations (unrounded) on their calculators, and only round off when the final answer is given.

11.6 DIAGNOSTIC QUESTION ANALYSIS OF PAPER 2

The following graph is based on combined data from all the provincial samples. While this graph might not reflect national averages accurately, it is useful in assessing the relative degrees of difficulty of each question as experienced by candidates throughout the country.

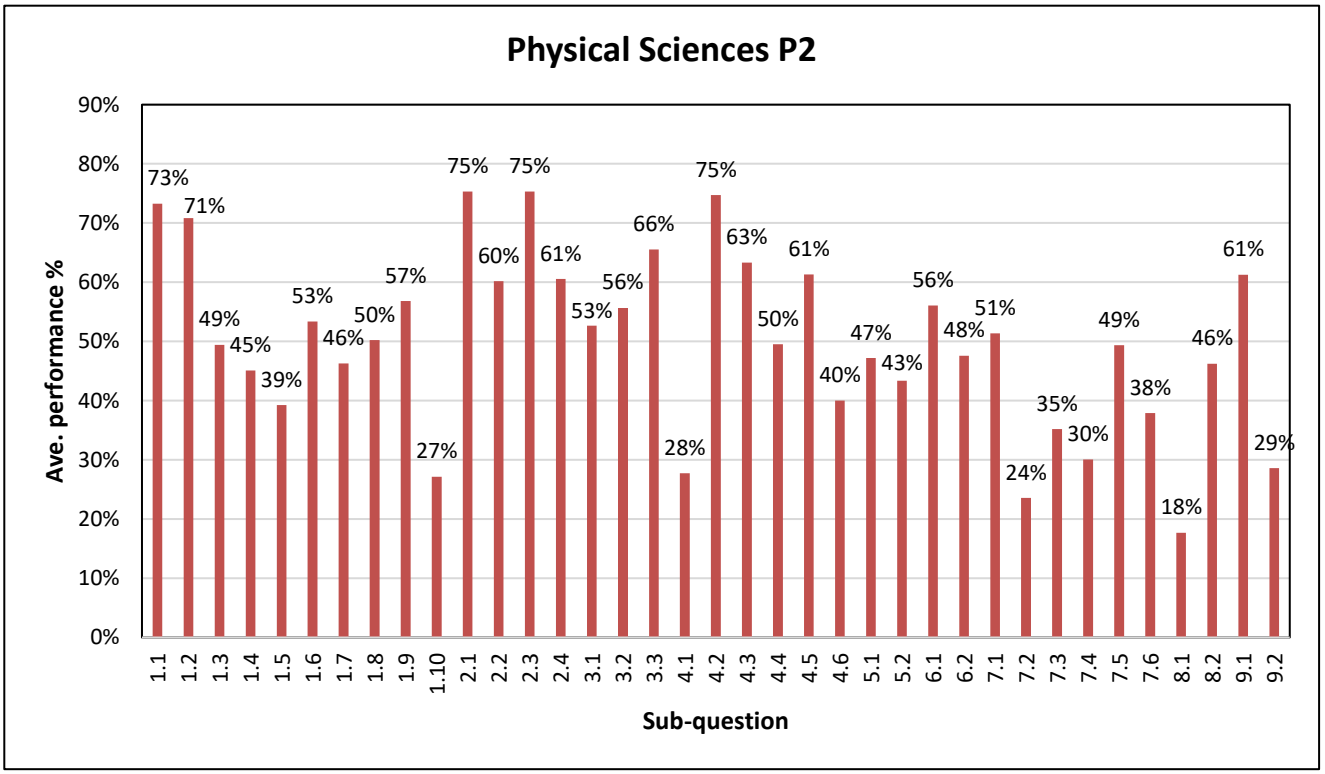
Graph 11.6.1 Average performance per question in Paper 2



Question	Topic	PERCENTAGE
1	Multiple-choice	51
2	Organic Structures, functional groups and isomerism	65
3	Physical Properties (Vapour pressure)	60
4	Organic Reactions	49
5	Rates of Reaction	47
6	Chemical Equilibrium	52
7	Acids and Bases	41
8	Redox Reactions & Galvanic Cells	27
9	Redox Reactions & Electrolytic Cells	41
Total		**49**

For the above data, the average performance per sub-question is shown in Graph 11.6.2.

Graph 11.6.2 Average performance per sub-question in Paper 2



SubQ.	Topic	Av %	SubQ	Topic	Av %
1.1	Identification of hydrogen bonds from condensed formulae	73%	4.1	Definition of cracking	28%
1.2	Carboxylic acids general formula	71%	4.2	Establishing whether a haloalkane is primary, secondary or tertiary	75%
1.3	Reactions: Dehydration and hydration	49%	4.3	Determining the reactant undergoing hydrohalogenation	63%
1.4	Potential energy vs course of reaction graph: Determining values	45%	4.4	Organic reactions: Substitution	50%
1.5	Equilibrium constants	39%	4.5	Determining the type of elimination reaction	61%
1.6	Chemical equilibrium	53%	4.6	Writing balanced equations using structural formulae for reactions that had to be worked out from a given flow diagram	40%
1.7	Strengths of acids	46%	5.1	Definition of reaction rate; calculation of reactant mass, given the reaction rate, explaining in terms of the collision theory and drawing reaction rate graph when a factor is changed	47%
1.8	Titration: pH at equivalence point	50%	5.2	Maxwell Boltzman distribution when temperature is increased	43%
1.9	Reduction potentials and galvanic cell	57%	6.1	Defining chemical equilibrium; understanding equilibrium changes from a concentration vs time graph and explaining in terms of Le Chatelier's Principle	56%
1.10	Electroplating	27%	6.2	K_c calculation with initial amounts for reactants and products	48%
2.1	Identifying alcohol, formyl group and unsaturated compounds from the given list of compounds	75%	7.1	Definition of a weak base	51%

SubQ.	Topic	Av %	SubQ	Topic	Av %
2.2	IUPAC name of a haloalkane and an alkyne	60%	7.2	Writing formula of conjugate acid	24%
2.3	Functional isomers	75%	7.3	Titration: Experimental procedure	35%
2.4	Esterification reaction	61%	7.4	Explaining why methyl orange is a suitable indicator for a given titration	30%
3.1	Definition of vapour pressure	53%	7.5	Titration calculation	49%
3.2	Comparing vapour pressures of branched alkanes	56%	7.6	Stoichiometric calculation involving water of crystallisation	38%
3.3	Comparing vapour pressures of branched aldehydes and carboxylic acids	66%	8.1	Using oxidation numbers to explain why a given reaction is redox; identifying the oxidising agent and explaining whether reactions will occur by referring to the table of Standard Electrode potentials.	18%
			8.2	Writing the balanced ionic reaction given the cell notation	46%
			9.1	Determining whether a reaction is spontaneous or non-spontaneous by means of a calculation	61%
			9.2	Electrolysis of sodium chloride	29%

11.7 ANALYSIS OF CANDIDATES' PERFORMANCE IN EACH QUESTION IN PAPER 2

QUESTION 1: MULTIPLE-CHOICE QUESTIONS

General comments

(a) As with all other assessment items, the basic requirements to answer multiple-choice questions is an understanding of the concepts being assessed.

(b) Multiple-choice questions are not always set at the lower cognitive levels, and they are not always easy. They are usually set to attain the prescribed cognitive balance within the ten sub-questions.

(c) Multiple-choice questions will seldom have straight-forward, obvious answers. The distractors are usually carefully formulated to support a known misconception or misunderstanding.

(d) There is no pattern ~~to~~ in the correct combination of letters, and there is no preference for any specific letter. The correct alternative must be chosen on the basis of scientific accuracy alone.

(e) Multiple concepts or criteria can be assessed within the same multiple-choice question, e.g. the reaction being favoured, and the effect on the equilibrium constant can be assessed with reference to a changed condition in a reversible reaction in the same question.

Common errors and misconceptions

(a) Most candidates answered Q1.1 (identifying the hydrogen bond) and Q1.2 (identifying a general formula for carboxylic acids) correctly.

(b) The performance in Q1.6 (increasing yield in a reversible reaction) was satisfactory. However, many candidates did not apply Le Chatelier's Principle correctly.

(c) Apart from Q1.1, Q1.2 and Q1.6, the rest of the multiple-choice questions were very poorly answered. Candidates found questions based on organic reactions to be challenging. It was for this reason that more than half of the candidates answered Q1.3 incorrectly. Alternative reasons could be that the reactant in reaction 1 was presented as a condensed formula, or the candidates failed to see the elimination (*dehydrohalogenation*, with the correct major product) and the subsequent addition (*hydrogenation*) reactions.

(d) Candidates failed to identify the two activation energies for the reversible reaction in Q1.4. This would have revealed that the activation energy for the reverse reaction was greater than that of the forward reaction, thus eliminating options B and D. They also had to see that $\Delta H_{(forward)}$ had to be negative, as the graph presented was that of the exothermic reaction, thus eliminating option C.

(e) Q1.5 required candidates to use a stoichiometric ratio to determine the equilibrium moles of H_2 and I_2 in the given reaction. This could have been done in a table, in order to establish that the moles of reactants at equilibrium would be equal, hence the concentrations of the reactants would be equal if they occupy the same volume.

(f) Q1.7 and Q1.8 were poorly answered because candidates failed to understand the relationship between the strength of an acid, corresponding Ka values (Q1.7), the concentration of hydronium ions in the acid solution (Q1.7) and the pH of the solution at equivalence point in a titration (Q1.8). Q1.8 also required candidates to know the strength of typical acids and bases, which is covered in Grade 11.

(g) The samples from across the provinces indicated that many candidates did not answer Q1.9 (the combination of 2 criteria involving galvanic cells) correctly. Candidates could not use the Table of Standard Reduction Potentials correctly and could not differentiate between the anode and the cathode in an elementary galvanic cell.

(h) Q1.10 was the question that recorded the lowest average, across all provinces. The question presented three statements related to the electroplating of an iron rod with nickel. It could be that candidates did not expect all three statements to be correct. There was, however, a poor understanding of the oxidation and reduction processes in the cell.

Suggestions for improvement

(a) This section accounts for almost 13% of the total marks in the question paper, and it is important for learners to be taught and encouraged to practise the skill of answering multiple-choice questions. Multiple-choice questions must be included in daily classwork and homework activities, assignments/tutorials and formal and informal tests. Answering multiple-choice questions is a learnt skill. Teachers must provide strategies for answering this type of question. For this, booklets containing multiple-choice questions (arranged per section) must be sourced and made available to learners.

(b) As stated earlier, all question types require learners to know the content on which the question is based. Strategies to answer multiple-choice questions include the elimination of obviously incorrect options; the testing of each option to establish its correctness; detecting inaccurate components of an option that has multi-components. Learners must be taught to consider all options, even though one of them may appear obvious.

(c) Le Chatelier's principle is often tested extensively in an examination. It has to be taught sequentially and in detail for meaningful learning. Q1.6 and Q6.1 provided information in different ways, requiring the application of the same principle. See the suggestions for improvement for Q6.

(d) Q1.3 is an example of a question where each option consisted of two components, the name of product P and the name of product Q. Precision is required in such a question as an incorrect choice of any of the products will result in the selection of an incorrect option. Learners must be taught how to identify the major product in an elimination reaction. In this case the major product was but-2-ene, which immediately eliminates options A and C. They then need to know that the product of a hydrogenation reaction is an alkane, which eliminates options C and D. This leaves B as the only option that meets both criteria.

(e) When graphs or diagrams are presented, it is strongly recommended that additional information or data be included in the given representation (in the question paper), so that a more complete picture of the problem is obtained. This would simplify the problem. Drawing arrows for the activation energies for both the forward and reverse reactions for Q1.4 would have revealed that the activation energy for the reverse reaction was greater than that for the forward reaction. This immediately eliminates two of the options.

(f) The information provided for stoichiometry calculations, including that for reversible reactions, is better managed if it is tabulated. Learners must be taught how to capture given data, and how to work out information that is not given, i.e. to understand the calculation patterns when populating stoichiometric or equilibrium constant tables.

(g) Q1.7 and Q1.8 required an understanding of the strength of acids and bases. Teaching must emphasise that this strength can be related to the degree of ionisation of the acid, the concentration of hydronium ions, pH of the solution, Ka values and the electrical conductivity of the solution. Learners must know the names and formulae of typical strong and weak acids and bases, and the expected pH ranges at the equivalence point in a titration.

(h) The shortcomings in Q1.9 and Q1.10 can be attributed to the poor general understanding of redox reactions and electrochemistry. This is possibly because of the rushed pace of teaching, as this content comes at the end of the teaching programme. Teachers must not be pressurised to compress these abstract concepts into unreasonable time frames. Education authorities, school management and teachers must respect the prescripts of the Annual Teaching *Plan*. This will be discussed in the analysis of Q8 and Q9.

QUESTION 2: ORGANIC NOMENCLATURE

Common errors and misconceptions

(a) Q2 in which a list of organic compounds that needed to be analysed was provided, was generally well answered. This question recorded an average of 65%, the highest average of all the questions.

(b) Many candidates did not know that the formyl group referred to the functional group of the aldehydes (compound A).

(c) Candidates found analysing the condensed formulae (compounds E, F and G) to be challenging.

(d) Many candidates could not work out the IUPAC name of compounds B and E. Candidates scored reasonably well because of the part marks awarded in Q 2.2.1 and Q2.2.2.

(e) While most candidates could define the term *functional isomer*, many failed to apply this definition to correctly identify the two functional isomers from the list.

(f) Q 2.4.4 required candidates to work backwards to establish the name of the alcohol required to form compound F, an ester. Many candidates could not work out the correct IUPAC name of this alcohol, which had to be a primary alcohol (i.e. propan-1-ol) instead of just propanol.

Suggestions for improvement

(a) Learners must know the names of the common functional groups (formyl group, carboxyl group, carbonyl group) and their structural formulae. These questions are assessed as level 1 questions, although they need to be identified in the structure of a given molecule, in a molecular formula, or in a condensed formula.

(b) For the naming of organic compounds, it is important to observe the IUPAC rules. However, the following should also be emphasised:

1. If a compound is given as a condensed formula, it should first be represented as a structural formula. Teachers must provide some practice examples that will familiarise learners with the skill of converting condensed formulae to structural formulae.
2. The functional group should be identified from this structural formula, so that the homologous series can be identified (e.g. the triple bond in compound E will classify the molecule as an alkyne).
3. Any halogen or alkyl substituent can then, also, be easily identified. The C atoms to which the functional group and the substituents are attached must be part of the parent chain.
4. The longest chain, which includes the C atoms referred to in 3 above, must then be identified.
5. Learners should start numbering from the side giving the C atom, to which the functional group is attached, the smaller number (from the right in compound E, making the parent chain pent-2-yne).
6. To complete the name, there must not be 'an' after the 'pent' of the parent name. It is important to emphasise that the 'an' is always included for all organic compounds except hydrocarbons, haloalkanes and esters.

(c) Types of isomerism must be thoroughly taught, with clear examples to bring out the difference in each type. Common functional isomers include ketones and aldehydes (compounds A and C) and carboxylic acids and esters. Teachers should expose learners to examples of these functional isomers.

(d) The number of carbon atoms in the alkyl group attached to the ‘O’ bridge (ester link) in the ester must be used to determine the number of carbons (and hence the IUPAC name) of the alcohol used to produce the ester.

QUESTION 3: PHYSICAL PROPERTIES OF ORGANIC COMPOUNDS

Common errors and misconceptions

(a) The definition of *vapour pressure* (Q3.1) was not well answered. Many candidates failed to express this definition in terms of pressure, with some making temperature the subject of the definition. Key phrases such as a 'closed system' were omitted, for which candidates lost one of the two marks.

(b) Many candidates did not identify the variable (chain length or degree of branching) that resulted in different vapour pressures for the three compounds considered in Q3.1. While most candidates chose the correct vapour pressure for compound C in Q3.2.1, their explanation for this choice was inadequate in Q3.2.2.

(c) There was an improvement in the responses to Q3.3, as most candidates saw the difference in the functional group for compounds D and E. However, their explanations were once again inadequate, despite the routine nature of this type of question.

(d) Q3.2.2 required candidates to compare compound C with compounds A and B. Some candidates compared compound A to compound B, which did not fully support the choice made in Q3.2.1.

(e) In the explanation that required candidates to compare compound C with compounds A and B, many of them did not express the comparison in the superlative degree, where the words 'weakest' and 'strongest' were required.

(f) Some candidates referred to the relationship between boiling points and vapour pressure, which was not necessary for the explanations in Q3.2.2 and Q3.3.2.

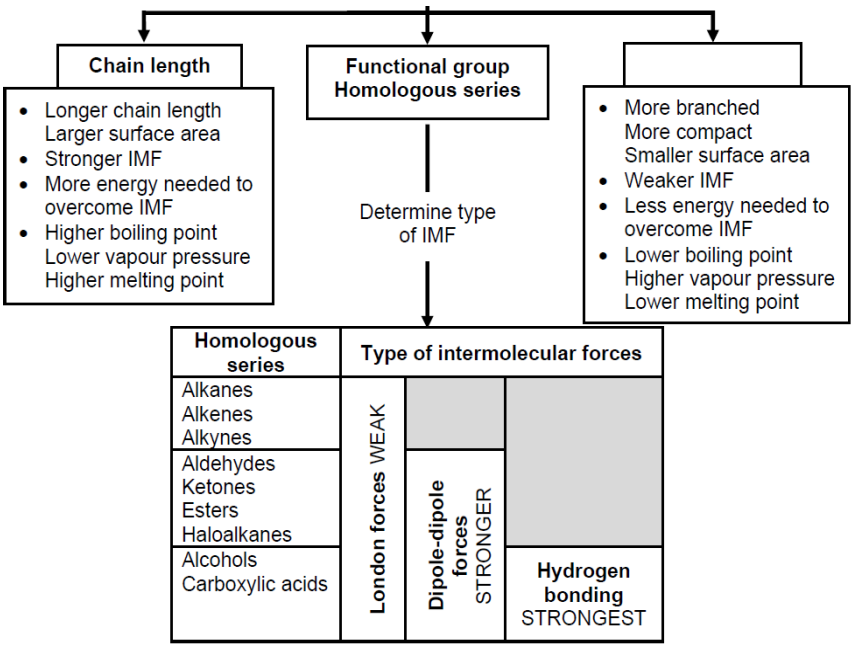
(g) In Q3.2.2 and Q3.3.2 some candidates referred to 'breaking the bonds' instead of 'overcoming the intermolecular forces'. Candidates were penalised for this error.

Suggestions for improvement

(a) The teaching of vapour pressure as a physical property must be preceded by an explanation of the phase changes that a substance undergoes, and the meaning of a 'closed system' and 'phase equilibrium'. It is this prior knowledge that will make the concept of *vapour pressure* meaningful, so that learners can express it accurately.

(b) When teaching the physical properties of compounds, teachers must ensure that they revise intermolecular forces, as taught in Grade 11, as a baseline. Teachers should ensure that learners are able to identify the types of intermolecular forces for different compounds, with a focus on London forces, dipole-dipole attraction and hydrogen bonds. Learners must first be able to identify what is being varied (the independent variable in many of the investigative questions); what is being controlled; and then determine the comparative strength of the intermolecular forces in the compounds, e.g. in Q3.2, the chain length was varied, while in Q3.3 the functional group was varied.

(c) Learners must be taught to identify different types of intermolecular forces in different organic compounds. Below is the summary of different intermolecular forces and how it affects the strength of organic molecules.



(d) When comparing the strength of intermolecular forces or physical properties such as vapour pressures, the difference between intermolecular and intramolecular forces must be emphasised, so that the expression 'breaking the bonds' does not feature in the required explanations. Emphasise the difference between *bonds* between atoms in molecules (intramolecular) and *forces* between molecules (intermolecular) and that the strength of the intermolecular forces is responsible for the different phases. Inter-atomic or intramolecular forces, which are much stronger that intermolecular forces, are formed or broken during chemical reactions, when new compounds are formed. Intermolecular forces are overcome, not broken, during phase changes.

(e) When writing explanations related to physical properties of compounds, learners should be taught to use the following steps:

When comparing compounds from the same homologous series:

1. Compare the surface areas of the compounds.
2. Identify and compare the strength of the intermolecular forces.
3. Compare the energy needed to overcome the intermolecular force.

When comparing compounds from different homologous series:

1. State the type of intermolecular force in each compound.
2. Identify and compare the strength of the intermolecular forces.
3. Compare the energy needed to overcome the intermolecular force

(f) The comparison between two compounds in Q3.3.2 and three compounds in Q3.2.2 was expressed incorrectly by many candidates. The correct degrees of comparison should be used. When comparing two compounds the comparative degree should be used; they should be accompanied by words such as ‘bigger’, ‘stronger’ and ‘higher’. When comparing three or more compounds, the superlative degree should be used; they should be accompanied by words such as ‘biggest’, ‘strongest’ or ‘highest’.

(g) As Q3 is often experimental in nature, learners should be exposed to informal experiments, demonstrations and videos on experimental techniques to measure and compare boiling points and vapour pressure.

QUESTION 4: REACTIONS OF ORGANIC COMPOUNDS

Common errors and misconceptions

(a) The definition of *cracking* in Q4.1.1 was poorly answered. This is a level 1, recall question. An important word like 'longer' was omitted. Candidates used 'larger' or 'bigger', instead of 'longer'; and 'smaller' instead of 'shorter' in the definition. Words were added that made the definition wrong, for example, 'alkanes and alkenes are formed'. Many candidates omitted the word 'hydrocarbon/alkane'.

(b) In Q4.2 most candidates identified the product as a secondary haloalkane. However, the reason provided for this was inaccurate. Instead of explaining that the halogen is bonded to the C …., many candidates provided the following incorrect reasons:
- The halide is attached to the C……
- The haloalkane is attached to the C….

(c) Candidates did not understand the flow diagram. To determine the reactions, candidates had to start from reaction II. However, many failed to recognise the reaction as a substitution reaction (conversion of an alkane to a haloalkane).

(d) Q4.6 was poorly answered. Candidates could not determine which of the available listed reagents could have been used to eventually form the desired product. This was a higher order question.

(e) Many candidates wrote 'Butan-2-ene' instead of 'but-2-ene' for the IUPAC name of compound T. This error was pointed out in Q2.

(f) Many candidates failed to distinguish between molecular, condensed and structural formulae. These candidates presented the wrong formula type for Q4.3.1, Q4.3.2, Q4.6.1 and Q4.6.2.

Suggestions for improvement

~~(a)~~ Definitions proved to be a problem for learners throughout the paper. Providing the definitions, on their own, may not improve learners' responses in a test or examination. Definitions must be understood for learners to state and apply them correctly. Teachers should unpack their meanings and provide reasons and counter examples for refuting imprecise statements. A common imprecise statement is that *cracking* involves the breaking down of long chain alkanes into shorter chain hydrocarbons. The statement is not always true, as H_2, which is not a hydrocarbon, is also a possible product during *cracking*. Therefore, only one mark will be awarded for this imprecise statement. To prepare learners for the final examinations, teachers should not award full marks for inaccurately stated definitions in tests and examinations.

(b) The difference between a *halogen*, a *halide* and a *haloalkane* must be strongly emphasised in the classroom. A halogen, when reacting with other substances, is

a diatomic element, while a halide is usually the ionic combination of a halogen with a positive ion (e.g. NaCl or HBr). A haloalkane is an alkane where one or more hydrogen atoms are replaced by halogen atoms (e.g. $C_2H_4Br_2$). Halogens and halides are inorganic, whereas haloalkanes are organic.

(c) Although a flow diagram represents a logical sequence of the reactions, the information to piece together the reactions is not necessarily discernible from the first reaction. The reactions must be looked at holistically, so that the products, obtained from one reaction are the correct reactants for the next reaction. Learners need a thorough knowledge of the different prescribed organic reactions and their conditions to analyse flow diagrams. They must be taught to analyse data provided and devise steps to prepare a given compound, using the reactants supplied and progressing from one reaction to the next. They should also be able to work backwards (work out the reactant) when given a product. Summaries of the different types of reactions and their conditions should be compiled to help learners memorise the required information. The following is a useful summary:

SUMMARY OF ORGANIC REACTIONS				
	Reaction name	**Reactants**	**Reaction conditions**	**Products**
Substitution	Halogenation	alkane + halogen	hf/Δ	haloalkane + hydrogenhalide
	Hydrolysis	haloalkane + base (NaOH/KOH)	• DILUTE strong base • Mild heat	alcohol + halide salt
		haloalkane + water	• Add water • Mild heat	alcohol + hydrogen halide
	Substitution	alcohol + hydrogen halide	No water	haloalkane + water
Addition	Hydration	alkene + water	Concentrated H_2SO_4	alcohol
	Hydrogenation	alkene + hydrogen	Pt, Pd, Ni; dissolved in non-polar solvent	alkane
	Halogenation	alkene + halogen	Room temperature and pressure (no catalyst needed)	haloalkane
	Hydrohalogenation	alkene + hydrogen halide	no water	haloalkane
Elimination	Cracking	alkanes	High temperature OR Catalyst	alkene + hydrogen/ alkane +alkene OR alkane + alkene
	Dehydrohalogenation	haloalkane + base (NaOH/KOH)	• CONCENTRATED strong base • Heat	alkene + salt + water
	Dehydration	alcohol	• Concentrated H_2SO_4 • Heat	alkane + water

(d) For the flow diagram given in Q4, the following sequence would help learners to unpack the reactions:

- Organic compound U was given as a starting reactant to form C_4H_8 (alkene) and organic compound W. Learners should be able to conclude that W is an alkane.
- Alkane W reacts to form a primary haloalkane with four C-atoms. Learners should be able to determine that a substitution reaction (Q4.4.2) took place, and that alkane W has four C-atoms (Q4.3.1).
- Since *cracking* took place to form an alkane and an alkene, combining the alkane and alkene will result in the starting alkane, U. Therefore, U is C_8H_{18} (Q4.3.2).

(e) The difference between molecular, condensed and structural formulae must be emphasised during the teaching of organic chemistry. Learners who do not know this difference will forfeit a substantial percentage of the allocated marks when they provide a formula-type different from that required by the question.

QUESTION 5: REACTION RATE

Common errors and misconceptions

(a) The performance in this question was below average. The experiment referred to in Q5.1 was a typical reaction rate investigation, using different reactants. The graph (volume of $H_2(g)$ produced vs time) was also a familiar representation of the data.

(b) The definition of reaction rate (Q5.1.1), still proved to be a challenge for some candidates, despite being assessed repeatedly in the past. A number of candidates incorrectly stated the definition as, 'rate of change of concentration per unit time'.

(c) The volume of the gas produced in this investigation was often confused with the volume of the HCℓ(aq). Candidates applied the formula $c = \frac{n}{V}$ to the Aℓ(s), which demonstrated a clear lack of understanding of the phases of the reactants and the applicable formulae.

(d) The molar volume (24,5 $dm^3 \cdot mol^{-1}$) was given for the conditions under which the given reaction took place. The inappropriate use of V_m at STP (22,4 $dm^3 \cdot mol^{-1}$) by many candidates, indicated a lack of understanding of gaseous volumes and their conversion to moles.

(e) Many candidates failed to see that since the reaction rate was given in $dm^3 \cdot min^{-1}$, use of the reaction rate formulae would provide the volume of $H_2(g)$ formed if the time was in minutes. These candidates attempted to convert the time to seconds, which was unnecessary.

(f) Candidates were unable to identify the factor affecting the reaction rate in Q5.1.3. Some candidates discussed this change in terms of the concentration of the HCℓ(aq), despite the assumption of constant concentration in the question.

(g) When explaining the changes in the reaction rate in terms of the collision theory (Q5.1.3), candidates omitted the phrases 'effective' and 'per unit time'. These omissions were highlighted in previous reports, and the change in the implications for reaction rates was explained.

(h) When drawing the graph of volume vs time (Q5.1.4), candidates did not understand that the yield remained constant when increasing the concentration of the excess reagent. Many of the curves for the more concentrated HCℓ showed an increase in the yield of $H_2(g)$.

(i) Many learners incorrectly attributed the change in the Maxwell Boltzmann distribution to the addition of a catalyst rather than increased temperature. Some reasoned that the graph shifted to the right, instead of reasoning that the peak shifted to the right. This demonstrated a poor understanding of the Maxwell Boltzmann energy distribution curves.

Suggestions for improvement

(a) Appropriate experiments must be conducted, demonstrated or digitally shown in class. The generation of graphs as the experiments proceed, enhances their meaning and familiarises learners with data sets for theoretical analysis. This supports the assessment items common in examination papers.

(b) Definitions, as discussed earlier, must be presented in meaningful ways so that they are taught for understanding and applicability. They must form part of daily activities, and should be assessed regularly. The gaps in inaccurate definitions given during class tests must be addressed in post-test activities.

(c) Stoichiometric calculations must be done thoroughly from Grades 10 and 11 and revised thoroughly in Grade 12 (especially the ones involving limiting reagents and reagents in excess). All of a reagent in excess does not react, but the limiting reagent is used to determine how much of the product will form and how much of the excess will react. There must be an understanding of the phases of the reacting substances and the products formed, so that appropriate equations are used to calculate quantities such as the number of moles of a substance.
The equation $n = \frac{V}{V_m}$ must only be used for gases, while the equation n = cV is usually used when aqueous solutions are involved.

(d) Learners must be taught the difference between molar volumes at STP, and molar volumes under differing conditions of temperature and pressure. Learners using 22,4 dm^3 indiscriminately lack the understanding of stoichiometry under non-standard conditions.

(e) Reaction rates can be measured in various units. Learners must be taught the different units, and when conversions are necessary (i.e. when minutes must be converted to seconds, or moles must be converted to mass or volume, etc). This can be done by selecting examples or past questions that require these types of conversions.

(f) The factors affecting the rate of a reaction must be taught in detail. Learners must be able to identify the external change and explain this in terms of the collision theory. The explanations need to be precise – 'reaction rates' must not be confused with 'yield'. Hence, terms such as 'per unit time' and 'effective' collisions must be emphasised.

(g) Appropriate activities must be selected to strengthen learners' understanding of the different graphs and other representations of data. These representations must also clarify the difference between reaction rate and the yield of products, such as the volume of the $H_2(g)$ (question 5.1.5).

(h) The *Maxwell-Boltzmann* distribution curve must be presented as a statistic model that tracks the rate of a given reaction. The activation energy can be represented on the graph. If the temperature of a reaction mixture increases, then:
- The average kinetic energy of particles increases.
- The NUMBER OF PARTICLES with energies greater than the activation energy increases. If a candidate says particles have more kinetic energy, they are merely repeating the statement in 1 above.

- There are more effective collisions per unit time. The word 'effective' is important because if the collisions are not effective, no reaction occurs. 'Per unit time' is also important to indicate the speed at which the reaction occurs.
- The reaction rate increases.

These explanations, and the changes in the distribution curves, must be clarified for an increase in concentration of a reactant and for the addition of a catalyst.

QUESTION 6: CHEMICAL EQUILIBRIUM

Common errors and misconceptions

(a) Q6.1.1 was generally well-answered. However, there were many candidates who repeated the errors made in previous examinations, and lost marks for an easy level 1 question. Some candidates wrote 'the forward reaction is equal to the reverse reaction' or 'the rate of the forward reaction is equal to the reverse reaction' or 'the number of reactants and products are equal'. Failure to express the definition completely and accurately resulted in candidates obtaining no marks, as no part marks were allocated for this definition.

(b) Most candidates could not interpret the graph presented in Q6.1. They could not establish the changes to the equilibrium positions occurring at times t_1, t_2 and t_3., and the response to these changes in terms of Le Chatelier's Principle.

(c) Many candidates could not relate the volume change to concentration ($c=\frac{n}{V}$) in question 6.1.4. Many indicated that the 'graph decreases' instead of the 'concentration decreases'.

(d) In Q6.1.8 candidates failed to interpret the graph to explain the change in temperature using Le Chatelier's Principle. They merely stated the principle, instead of applying it. They could not deduce from the graph that the forward reaction was favoured. The language usage in this question was poor.

(e) Q6.2 recorded the lowest average as there was a lack of understanding of what the question required. The question was unfamiliar as there were initial amounts for both the reactants and the products. Many candidates understood the initial moles of the products to be zero.

(f) Some candidates interpreted CO(g) as Co, demonstrating very poor knowledge of reversible reactions and equilibrium.

(g) Many candidates expressed the equilibrium constant (Kc) incorrectly. They provided the inverted expression or wrote it as $Kc = \frac{[Products]}{[Reactants]}$, for which a mark for the expression was not awarded. The table to calculate Kc was not used correctly by candidates. Some did not apply the ratio correctly or they did not divide the equilibrium moles by the volume to obtain equilibrium concentrations. Mathematical manipulation to calculate 'x' was poor. Many candidates did not understand the question, resorting to the calculation of Kc instead of the mass of the CO(g).

(h) Many candidates appeared to have been coached in the use of the table without reference to the context and the uniqueness of the question. These candidates wrote the given initial moles of the gases, used an arbitrary value for one of the reactants used, applied the ratio from the balanced reaction, added or subtracted to obtain the equilibrium moles, divided by the given volume to obtain the equilibrium concentrations, wrote the correct Kc expression and substituted accordingly into this expression. For this response, up to five of the nine marks were awarded, although the demands of the question were not understood.

Suggestions for improvement

(a) Learners must understand why they are penalised for inaccurate or imprecise definitions. There are very few definitions associated with chemical equilibrium, and they are generally easier to remember. Candidates should state definitions, laws, principles as they are stated in the *Examination Guidelines*. Understanding the definitions will facilitate accuracy in the way they are expressed.

(b) The teaching of chemical equilibrium must involve knowledge of the factors that can disturb a reaction at equilibrium (concentration, pressure, and temperature). Volume is not one of these factors, but it indirectly impacts on equilibrium positions as it affects concentration and pressure. A change in the volume of a container will have a distinct appearance on a concentration-time graph. The explanations advanced by candidates for Q6.1.4 demonstrated a clear lack of understanding.

(c) The application of Le Chatelier's principle can be very abstract, even for high achievers. When providing explanations, in terms of Le Chatelier's principle, candidates should be taught to use the following steps:
- Identify the disturbance.
- State that the system will act to oppose this disturbance.
- State which reaction (forward or reverse) will be favoured when opposing the disturbance.
- State the effect on, for example, the number of moles of products, etc.

(d) Kc calculations can be assessed in various ways. Learners must be exposed to a range of question types so that the context and the requirement of the question ~~i~~s understood. The initial amounts of the products had to be included in the Kc calculation in Q6.2.

(e) The use of the table for Kc calculations is recognised as a convenient way to arrive at equilibrium concentrations. In some questions the Kc value needs to be calculated using these equilibrium concentrations, and in other questions the Kc value is given, and unknown concentrations or amounts need to be calculated. Learners must be taught the correct approach and detail required to complete the table accurately.

(f) As with all concepts in chemistry, more difficult questions can only be correctly answered if there is a good understanding of the concepts being assessed. Teaching the procedure to arrive at equilibrium concentrations is necessary, but not sufficient. The concept of chemical equilibrium is abstract and involves stoichiometry principles applied to reversible reactions. The understanding of what the question requires, and how it is to be approached is contingent on meaningful knowledge acquisition and application.

QUESTION 7: ACIDS AND BASES

Common errors and misconceptions

(a) The presentation of the definition of a weak base required for Q7.1. was poorly answered. Many candidates did not use the word 'dissociate'. The word 'dissolve' was frequently used instead. Reference was made to 'hydronium ions', or 'hydroxyl' instead of 'hydroxide ions'. Many candidates provided an incomplete definition, omitting the part '…to form a lower concentration of hydroxide ions', thus forfeiting the second mark.

(b) Q7.2 was very poorly answered. The concept of conjugate acids is covered in Grade 11, and the poor performance may be the result of no or insufficient revision of this and other related concepts. Common incorrect answers provided included K_2CO_3, KCO_3^-, and H_2CO_3.

(c) The poor performance in Q7.3 to Q7.5 indicates the lack of practical work done at schools. Candidates could not work out the final and initial burette readings when they were given the volumes of base for each run of the titration. Many candidates subtracted the initial burette reading from the volume used, instead of adding them for Q7.3.1. These candidates arrived at the incorrect answer of 13,55 cm^3.

(d) Candidates could not adequately explain why methyl orange is a suitable indicator for the titration of a strong acid and a weak base (Q7.4). Many indicated that the pH range of the equivalence point is less than 7 but did not relate it to the indicator and the pH range in which it changes colour, thus forfeiting the second mark.

(e) The titration calculation (Q7.5) was a straightforward calculation, which could have been solved in a single step by using the titration formula. However, the volume of base that had to be used in this formula had to be the average of the volume of the two runs. Most candidates did not use this average value and forfeited a mark.

(f) In Q7.5 candidates who resorted to a two-step alternative solution had to convert the volumes of the acid and the base from cm^3 to dm^3. In some cases, these conversions were done incorrectly, and candidates were penalised.

(g) Q7.6 tested the concept of water of crystallisation. Candidates were required to determine the moles of water of crystallisation (x) in the hydrated salt, $K_2CO_3 \cdot xH_2O$. This is taught in Grade 10, however, candidates had to engage higher thinking skills to determine what was required to answer the question. Because of insufficient practice, the question was poorly answered. Common errors included the exclusion of the water of crystallisation when calculating the molar mass of the hydrated salt, and the failure to convert the volume to dm^3, in the formulae to calculate concentration.

Suggestions for improvement

(a) Definitions and the formulation of principles must form part of daily activities and class tests and must be marked exactly as they are marked in the final examination. A complete definition must be given (refer to the *Examination Guidelines*).

(b) The teaching of acid-base theory, such as the different models (and their associated definitions), the strength of an acid or a base and acid-base conjugate pairs, although covered in Grade 11, must be revised in Grade 12. This theory forms the basis for the advanced study in Grade12. Conjugate pairs are best taught by using the Lowry-Bronsted definitions, i.e. an acid is a proton donor. So, if the acid donates its proton (H^+ ion), its conjugate base will have one less H in its formula, and its charge will be reduced by 1, e.g. the conjugate base of HCO_3^- is CO_3^{2-}. Conversely, a base receives a proton, so its conjugate acid will have one more H atom, and its charge increases by 1, e.g. the conjugate acid of CO_3^{2-} is HCO_3^-.

(c) The titration experiment is a common practical task that is recommended for use as a formal SBA task, or at the very least, to be done as an informal task. The questions make sense to learners if they are exposed to burettes and other relevant apparatus while conducting the experiment. A discussion of all three types of titrations (strong acid-strong base, strong acid-weak base, and weak acid-strong base) is necessary to understand the choice of indicator and the nature of the salt formed. Schools must make provisions for the acquisition (or borrowing) of equipment such as burettes to provide learners with what is considered to be a basic science learning experience.

(d) The action of indicators is also covered in Grade 11. Once again, it appears that teachers neglected to revise this as prior knowledge that is essential for the understanding of titrations. By doing all three titrations referred to above, learners will become familiar with the pH range of the final solution, the concept of hydrolysis and the choice of indicator.

(e) Learners must be taught that the reliability of data obtained from experiments such as a titration is enhanced by taking multiple readings. Hence, more than one run is necessary. However, the volume of the solution in the burette that has to be used in the calculation has to be the average over the number of runs conducted. If more runs are conducted, then outlier values can be ignored when computing this average.

(f) Many learners find conversions involving a range of units, to be challenging. Teachers must address this at the beginning of Grade 10 and reinforce the relevant conversions when they are required. The conversion of volume from one unit to another is a challenge, as seen in the responses to Q7.5. Innovative techniques are required to address this problem, such as developing and understanding a conversion table.

(g) Q7.6 was a higher-order question, despite its reliance on knowledge from Grade 10 stoichiometry. Teachers must include these types of questions in their teaching and revision so that the integration and progression of content can be reinforced through normal teaching. Again, learners' ability to convert to required units (in this case from cm^3 to dm^3) must not be taken for granted.

QUESTION 8: REDOX REACTIONS AND GALVANIC CELLS

Common errors and misconceptions

(a) One of the worst performances in the paper was recorded in this question. The question deviated from the predictable questioning style of the past, in that a

galvanic cell was not provided, and candidates were not required to calculate cell potential or write down the cell notation. Q8.1.1 and Q8.1.2 assessed Grade 11 basic redox reactions, while the rest of the questions assessed the use of Table of Standard Reduction potentials.

(b) In Q8.1.1 candidates could not assign oxidation numbers. Most candidates either did not show a change in oxidation numbers, or when oxidation numbers were shown, the answer was not accompanied by an explanation.

(c) Q8.1.2 was also poorly answered. Many candidates did not see the oxidising agent as the substance that is reduced, nor did they ~~not~~ relate reduction to the decrease in the oxidation numbers determined in Q8.1.1. Candidates could not distinguish between H^+, H and H_2.

(d) Candidates found Q 8.1.3 to be very difficult. A common incorrect answer was 'Cu is a stronger reducing agent than HCℓ'. Candidates had little or no idea of what and how to compare the relative strengths of the reducing agents using the table of standard reduction potentials.

(e) Q 8.1.4 was also very poorly answered. A common incorrect answer here was 'Cu is a stronger oxidising agent than HNO_3'. Once again, candidates had little or no idea of what and how to compare the relative strengths of the oxidising agents using the table of standard reduction potentials.

(f) The net equation for a cell is usually assessed in the context of a labelled diagram showing the half cells. Candidates were unaware that the cell notation was used to indicate the half reactions. For this reason, many candidates could not work out the half reactions from the cell notation and therefore, could not deduce the net reaction. Some candidates attempted to formulate the half reactions using Pt, which served as the inert metal for the transfer of ions, while others swapped the Fe^{2+} and Fe^{3+} ions for the reduction half reaction.

Suggestions for improvement

(a) The Grade 11 coverage of redox reactions is supposed to provide a basic understanding of these types of reactions. They have to be revised before the more advanced applications (electrochemistry) are attempted in Grade 12. Teachers must ensure that the baseline concepts are reinforced, to facilitate the understanding of the advanced applications.

(b) Assigning oxidation numbers to elements in a compound is a primary requirement for an understanding of redox reactions and its subsequent applications. The set of rules for assigning numbers must be discussed and applied. Learners must be able to see the change in oxidation numbers and deduce whether a species is being oxidised or reduced.

(c) The concepts of *oxidation, reduction, oxidising agents* and *reducing agents* must be revised in Grade 12. The determination of each in a given reaction stems from the ability to correctly assign oxidation numbers. This leads to the early construction of 'skeleton' half reactions, which can then be accurately determined by a match with the appropriate half reaction in the table of standard reduction potentials.

(d) Teachers must focus their lessons on the following:

1. When the strengths of oxidising agents are compared, ions must be compared with ions and not atoms. Similarly, when the strengths of reducing agents are compared, candidates should compare the atoms with atoms and not with ions.
2. To determine whether the reaction can occur or not, check the reducing and oxidising strengths of the given substances.
   - A reaction will take place between a stronger reducing agent and a stronger oxidising agent.
   - A reaction will not take place between a weaker reducing agent and a weaker oxidising agent.
   - Unbalanced equation: $HC\ell + Cu \rightarrow CuC\ell_2 + H_2$.

     Unbalanced ionic equation: $H^+ + C\ell^- + Cu \rightarrow Cu^{2+} + C\ell^- + H_2$.

     After removing spectator ions: $\underset{\text{weaker OA}}{H^+} + \underset{\text{weaker RA}}{Cu} \rightarrow \underset{\text{stronger OA}}{Cu^{2+}} + \underset{\text{stronger RA}}{H_2}$.

     The question specified that explanation must be in terms of reducing ability:
   - Cu is a weaker reducing agent than H_2 so cannot reduce H^+ to H_2, so the above reaction WILL NOT TAKE PLACE.
3. Unbalanced equation: $Cu + HNO_3 \rightarrow Cu(NO_3)_3 + NO + H_2O$.
   - Unbalanced ionic eqn: $\underset{\text{stronger RA}}{Cu} + \underset{\text{stronger OA}}{H^+} + \underset{\text{weaker OA}}{NO_3^-} \rightarrow \underset{\text{weaker RA}}{Cu^{2+}} + NO_3^- + NO + H_2O$.

     The question specified that explanation must be in terms of oxidising ability:
   - NO_3^- is a stronger oxidising agent than Cu^{2+} so it oxidises Cu to Cu^{2+}.

(e) Interpreting and writing cell notations should feature as part of the activities in the teaching of galvanic cells. Learners must be able to write the cell notation from a given cell and they should be able to establish the half reactions from the cell notation.

(f) Learners must know that in electrochemistry, electrodes are needed. These electrodes must be solids (metals) and good conductors of electricity. If the compounds in the half cells do not include solids, then an inert electrode (usually platinum) is used to facilitate the transfer of electrons. It must be inert so that it does not take part in the reaction. Since it does not take part in the reaction, it cannot be part of the half reactions and overall cell reaction.

QUESTION 9: ELECTROLYTIC CELLS

Common errors and misconceptions

(a) The responses provided in Q9.1 by most candidates demonstrated a clear lack of understanding of the cell potential of a redox reaction and the spontaneity of the reaction. Some candidates did not attempt the question.

(b) Many of the candidates who answered Q9.1 did the calculation, but did not conclude whether the reaction was spontaneous or non-spontaneous. Others did not correctly correlate the sign of the cell potential to the correct conclusion, i.e. if a positive value for the cell potential was obtained, the conclusion was incorrectly given as non-spontaneous.

(c) The definition of an electrolyte (Q9.2.1), like many other definitions in this paper, was presented inadequately. Key phrases such as 'solution' or 'in water' were omitted. Since no part marks were awarded for this question, candidates forfeited both marks for the omission of a single key word or phrase. Some candidates defined *electrolysis*, instead of *electrolyte*.

(d) Q9.2.2 was poorly answered. Candidates demonstrated a poor understanding of the electrolytic cell in general, and the electrolysis of a concentrated NaCl solution in particular. Many candidates identified the correct half reaction from the table of standard reduction potentials but wrote it as a reduction instead of an oxidation half reaction, i.e. $C\ell_2 + 2e^- \rightarrow 2C\ell^-$. Some candidates omitted the charge from the ions when writing the half reaction.

(e) Most candidates did not understand what Q9.2.3 required. They did not see that the reduction half reaction should be established first, and that the products of this half reaction were required. The common incorrect answer provided was either Na or NaCℓ.

(f) The follow up question to Q9.2.3 was also poorly answered. As with Q8.1.3 and Q8.1.4, candidates showed little understanding of the table of standard reduction potentials.

Suggestions for improvement

(a) The required time allocated in the *ATP* must be used when teaching this topic. Although electrochemistry is taught towards the end of the third term, teachers need to allocate more time to teaching this topic. They must not be pressurised to 'finish the syllabus' to accommodate the revision programmes forced upon them. Grade 11 work (redox reactions) must be revised in Grade 12.

(b) Teaching of the standard reduction potential table is vital, and learners must be encouraged to refer to the table to compare relative strengths of oxidising and reducing agents. Using the table also prevents errors of unbalanced equations when writing the half reactions. The spontaneity of a reaction can also be predicted by calculating the cell potential of a possible reaction.

(c) As was recommended throughout this analysis, definitions need to be taught meaningfully – for understanding. Learners are more likely to articulate a definition accurately if they understand the concept or concepts involved.

(d) There are a few electrolytic cells on which learners are assessed. Teachers must ensure that all these cells are discussed in detail. The electrolysis of sodium chloride is one of these cells. It requires an understanding of all the details, especially regarding the competing oxidation and reduction processes that take place.

(e) Learners should be instructed that in electrolysis of concentrated NaCℓ(aq), there are two possible reactions at both the cathode and the anode:
Cathode (negative electrode): $2H_2O + 2e^- \rightarrow H_2 + 2OH^-$ OR $Na^+ + e^- \rightarrow Na$
Anode (positive electrode): $2C\ell^- \rightarrow C\ell_2 + 2e^-$ OR $2H_2O \rightarrow O_2 + 4H^+ + 4e^-$
At the cathode: H_2O is a stronger oxidising agent than Na^+ so H_2O will be reduced (question 9.2.4)

At the anode: H_2O is a stronger reducing agent than $C\ell^-$. We would expect H_2O to be oxidised but due to overvoltage $C\ell^-$ will be oxidised.
∴ Cathode (reduction): $2H_2O + 2e^- \rightarrow H_2 + 2OH^-$.
Products at cathode are H_2 and OH^- (question 9.2.3)
Anode (oxidation): $2C\ell^- \rightarrow C\ell_2 + 2e^-$ (question 9.2.2)
Product at anode is $C\ell_2$
Overall reaction: $2H_2O + 2C\ell^- \rightarrow H_2 + 2OH^- + C\ell_2$

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