basic education
Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

ANNUAL NATIONAL ASSESSMENT 2013
ASSESSMENT GUIDELINES
MATHEMATICS
GRADE 9

INTRODUCTION

The 2013 cycle of Annual National Assessment (ANA 2013) will be administered in all public and designated[1] independent schools from 10 to 13 September 2013. During this period all learners in Grade 9 will write nationally set tests in Language and Mathematics and the results will be used to report progress related to achieving the goals set in the *Action Plan 2014, Towards Schooling 2025*.

The learners will write ANA tests during the third school term. The Department of Basic Education (DBE) has provided guideline documents for each grade and subject (Language and Mathematics) on the minimum curriculum coverage that is expected for learners to be able to answer test questions with reasonable success. The Assessment Guidelines set the scope of work that will be covered in the test for each grade and subject.

SENIOR PHASE

CAPS is not yet being implemented in the Senior Phase during 2013 and, therefore, assessment will be based on the National Curriculum Statement (NCS). The Assessment Guidelines specify the Learning Outcomes (LOs) to be assessed. These are arranged in columns: Learning Outcomes; Topics; Assessment Standards and Content Area to be assessed (the learner must be able to do or know).

It is important to note that the ANA 2013 Assessment Guidelines do not imply that the delimited scope is all that must be taught and learnt during the school year. Instead, the Assessment Guidelines provide the minimum curriculum requirements that must be covered by the end of the third school quarter.

Teachers are expected to use these Assessment Guidelines together with the other resources for their teaching and assessment programmes.

[1] "Designated" independent schools are those that will apply and register either their Grade 3 or Grade 6 learners to participate in ANA for purposes of securing State subsidy.

LOs	TOPIC	ASSESSMENT STANDARD	CONTENT AREA The learner must be able to …
NUMBERS, OPERATIONS AND RELATIONSHIPS	Recognising, classifying and representing numbers	Recognise, use and represent rational numbers (including very small numbers written in scientific notation)	know the difference between rational and irrational numbers write very large and small numbers in scientific notation
		Recognise, describe and use the properties of rational numbers	identify whether a number is rational or not
	Problem solving	Solve a problem in a financial context (including profit and loss, budgets, accounts, loans, simple and compound interest, hire purchase, exchange rates)	calculate simple and compound interest with or without using a formula
		Solve a problem that involves ratio, rate, direct and indirect proportion	identify and use direct and indirect proportion to solve problems do calculations involving hire purchase contracts/exchange rates
		Solve a problem involving speed, time and distance	perform calculations involving speed, time and distance
	Calculation types involving numbers	Calculate and solve problems using laws of exponents	use the three basic laws together with $a^0 = 1$, $a^{-n} = \frac{1}{a^n}$ and $a^{\frac{1}{n}} = \sqrt[n]{a}$ for $n \epsilon N$ to simplify expressions
		Multiple operations, with numbers that involve squares, cubes, square roots and cube roots of common and decimal fractions.	perform simple calculations involving squares, cubes, square roots and cube roots of common and decimal fractions

LOs	TOPIC	ASSESSMENT STANDARD	CONTENT AREA The learner must be able to …
PATTERNS, FUNCTIONS AND ALGEBRA	Numeric and geometric patterns	Represent and use relationships between variables in order to determine input and/or output values in a variety of ways	calculate input and output values using tables, formulae or equations.
		Describe the general rules for relationships between numbers in own words or algebraic language	determine: ▪ the rule or general term of a number sequence ▪ the value of any term in a number sequence
	Algebraic expressions	Simplify algebraic expressions and fractions with monomial denominators	use the distributive law to simplify algebraic expressions
		Find the product of two binomials	multiply two binomials
		Factorise expressions that involve: ▪ Common fractions ▪ Difference of two squares	factorise expressions involving a common factor and/or difference of squares
	Equations	Solve equations using additive and multiplicative inverses, factorisation, laws of exponents and check solutions by substitution	solve simple linear equations, equations involving fractions and equations involving exponents
	Graphs	Use substitution in equations to generate ordered number pairs	use tables, formulae and equations to calculate input and/or output values
		Draw linear graphs using given equations focusing on x-intercept, y-intercept and gradient	draw straight line graphs using the table method, gradient y-intercept or dual intercept method
		Determine equations of given linear graphs (using tables where necessary)	determine the defining equations of straight line graphs

LOs	TOPIC	ASSESSMENT STANDARD	CONTENT AREA The learner must be able to …
SHAPE AND SPACE	2-D shapes and 3-D objects	Recognise, name and describe the properties of 2-D shapes and 3-D solids	identify • 2-D shapes • 3-D objects according to the number of faces, vertices and edges
		Conditions for congruency of triangles	identify, name or prove congruency of triangles give the outcomes of the stated congruency
		Conditions for similarity of triangles	identify, name or prove similarity of triangles give the outcomes of the stated similarity
		Solve problems involving unknown sides and angles in triangles and quadrilaterals using known properties of straight lines, triangles and quadrilaterals, as well as congruency and similarity of triangles	do multistep/combination questions involving lengths, angles in 2-D figures and properties of straight lines
	Transforma-tions	Solve geometric problems involving translations, reflections, rotations, enlargements and reductions	transform 2-D figures by translating, reflecting or rotating them determine the coordinates of points after translation or rotation about the origin determine the coordinates of points after reflection in the Y-axis, X-axis, $y = x$ line or $y = -x$ line
		Describe the effect of enlargement or reduction on the perimeter and area of 2-D figures	demonstrate the effect of the given enlargement factor on the perimeter and area of a 2 -D shape
MEASUREMENT	SI Units Area Perimeter Surface Area Volume	Solve problems involving known geometric figures by selecting and using appropriate formulae and measurements	calculate the perimeter and area of combined 2 -D figures using correct formulae and Theorem of Pythagoras if necessary calculate the dimensions of a 2-D shape if given the perimeter or area

LOs	TOPIC	ASSESSMENT STANDARD	CONTENT AREA The learner must be able to …
			calculate the surface area and volume of cubes, rectangular prisms and cylinders.
		Use the Theorem of Pythagoras to solve problems involving missing lengths of sides of triangles.	calculate the lengths of unknown sides in right-angled triangles
		Determine how doubling any, or all, the dimensions of right prisms and cylinders affects their volume	demonstrate the effect of a given enlargement factor on the volume of a cube, rectangular prism or cylinder
DATA HANDLING	Collecting and organising data	Organise numerical data in different ways by determining: ▪ Measures of central tendency ▪ Measures of dispersion	calculate the median, mode, mean and range of a given data set
	Representing and interpreting data	Draw a variety of graphs to display and interpret data including: ▪ Bar graphs, double-bar graphs, histograms with given and own intervals, pie charts, line and broken line graphs or scatter plots	draw bar graphs, double-bar graphs, histograms with given and own intervals, pie charts, line and broken line graphs and scatter plots
		Critically read, analyse and interpret data relating to collection methods and sources of error and bias	critically read, analyse and interpret data
	Probability	Discuss the difference between the probability of outcomes and their relative frequency	calculate the relative frequency and probability of an outcome
		Determine probabilities for compound events using two-way tables or tree diagrams	calculate the probability of compound events using two-way tables or tree diagrams