

**NATIONAL
SENIOR CERTIFICATE**

GRADE 12

JUNE 2018

MATHEMATICAL LITERACY P2

MARKS: 100

TIME: 2 hours



This question paper consists of 10 pages.

INSTRUCTIONS AND INFORMATION

Read the following instructions carefully before answering the questions.

1. This question paper consists of FOUR questions. Answer ALL the questions.
2. Number the answers correctly according to the numbering system used in this question paper.
3. Start EACH question on a NEW page.
4. An approved calculator (non-programmable and non-graphical) may be used, unless stated otherwise.
5. ALL calculations must be shown clearly.
6. Round off ALL final answers appropriately accordingly to the given context, unless stated otherwise.
7. Indicate units of measurement, where applicable.
8. Maps and diagrams are NOT drawn to scale, unless stated otherwise.
9. Write neatly and legibly.

QUESTION 1

- 1.1 The table below shows a summary of a budget of Excelsior Secondary School. This budget contains information of previous years' income and expenditure and budgeted values for the school.

TABLE 1: Summary of previous years' income and expenditure and budgeted values for Excelsior Secondary School:

EXCELSIOR SECONDARY SCHOOL			
	2016 Actual	2017 Actual	2018 Budgeted
INCOME			
School fees	R149 567,00	R164 535,70	R180 976,00
Fundraisings	R58 000,00	R61 500,00	R80 000,00
Donations	R50 000,00	R60 000,00	R65 000,00
Allowances from National Department	R156 745,00	R172 420,00	R189 662,00
Other	R5 368,00	R3 409,00	R4 000,00
TOTAL	R419 680	R461 864,70	R519 638,00
EXPENDITURE			
Administration	R56 523,35	R62 459,75	R70 000,00
Teaching resources	R115 678,10	R125 000, 05	R105 000,00
Maintenance	R49 865,56	R63 241,20	R73 123,00
Salaries and wages	R150 800,87	R200 541,65	R275 000,00
TOTAL	R372 867,88	R451 243,10	R523 123,00
BALANCE	R46 812,12	R10 621,60	- R3 485,00

- 1.1.1 Show how the total actual expenditure value for 2017 was calculated. (2)
- 1.1.2 Explain the difference between the terms, 'actual' and 'budgeted' values as illustrated in the table. (4)
- 1.1.3 Identify the expense that shows a decrease in the budgeted amount and give a possible reason for the decrease. (3)
- 1.1.4 A parent claims that the school is in a good financial position. Use evidence from the table to show whether you agree or disagree with the claim. (2)
- 1.1.5 When the school governing body chairperson explained the budget for 2018 to the parents, he claimed that the increase in school fees never exceeds 10%. Verify, with the necessary calculations, whether the statement is valid or not, by comparing the percentage increase in school fees between the different years. (6)
- 1.1.6 If the statement in QUESTION 1.1.5 is true that the annual increase in school fees is 10%, calculate what school fees were for 2015. (2)

- 1.2 The Grade 12 Geography learners at Excelsior Secondary School participated in a Geography Olympiad. The neighbouring school, Whittlesea High School, also participated in the Olympiad. The results of the first round for the two participating schools are given below. Use the information to answer the questions that follow.

Results for Excelsior Secondary School (in percentages):

15; 50; 43; 34; 19; 67; 29; 87; 94; 79; 96; 99; 43

Results for Whittlesea High School (in percentages):

25; 27; 32; 38; 40; 45; 53; 59; 60; 67; 75; 78; 84; 89, 91, 97

- 1.2.1 The school principal of Whittlesea claimed that his school performed better, because their mean is higher than the mean of Excelsior. Verify, showing all calculations, whether the claim of Whittlesea's principal is valid or not. (6)
- 1.2.2 A learner's solution for the Interquartile range (IQR) of Excelsior Secondary School was as follows:

Excelsior Secondary School (IQR):

$$\text{Quartile 2 (median)} = 29\%$$

$$\begin{aligned}\text{Lower Quartile (1)} &= \frac{34 + 43}{2} \\ &= 55,5\%\end{aligned}$$

$$\begin{aligned}\text{Upper Quartile (3)} &= \frac{79 + 96}{2} \\ &= 87,5\%\end{aligned}$$

$$\begin{aligned}\text{IQR} &= \text{Upper Quartile} - \text{Lower Quartile} \\ &= 87,5\% - 55,5\% \\ &= 32\%\end{aligned}$$

(8)

Verify, showing all calculations, whether the learner's solution is correct or not.

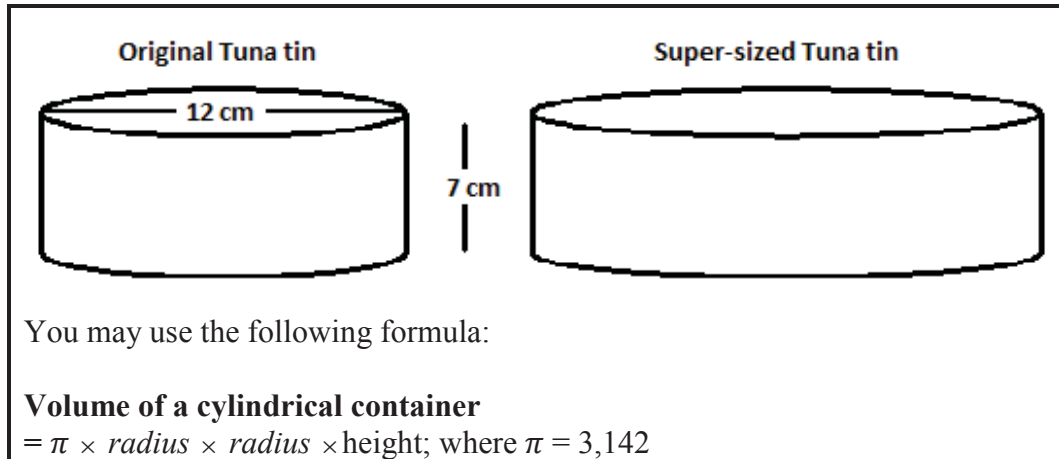
- 1.2.3 For a learner to go through to the second round, they must achieve at least 60%. Calculate the probability that a learner from both schools will go through to the second round. Write your final answer to three decimal places. (3)

[36]

QUESTION 2

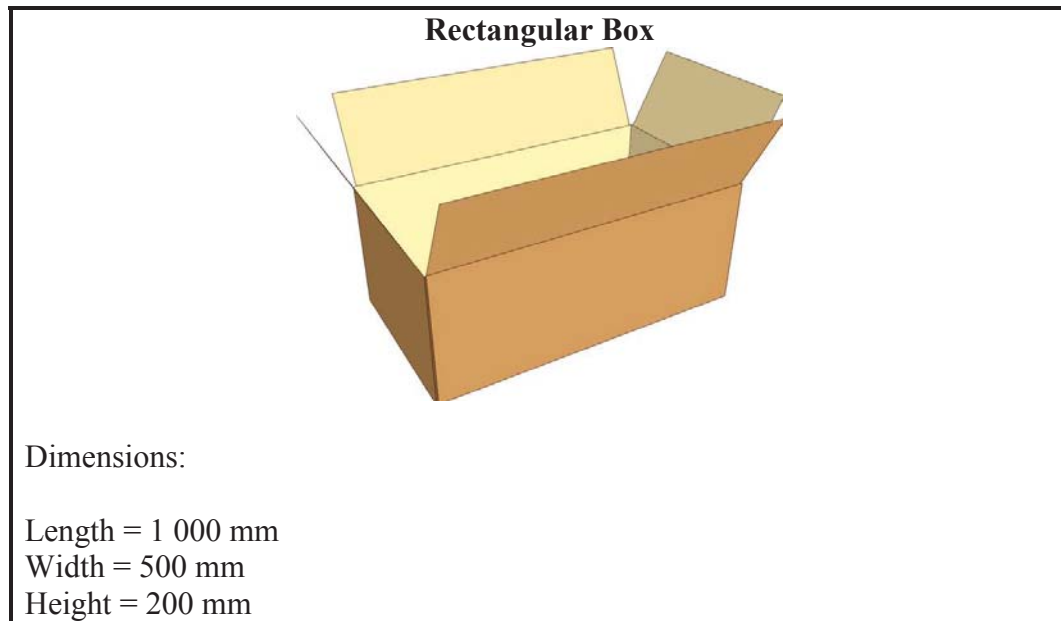
- 2.1 A tin of tuna comes in a cylindrical tin with a diameter of 12 cm and height 7 cm. The cost of one tin is R11,99. The manufacturers have designed a new promotional super-sized tin, which is twice as wide as the original tin, but the height remains the same.

Below is an illustration of the ordinary tuna tin and the super-sized tin.



- 2.1.1 Give ONE possible reason why the manufacturers have designed a super-sized tuna tin. (2)
- 2.1.2 The sales manager has a challenge as to what the price of the super-sized tin should be. His assistant claims it is easy to determine the price, because if the volume of the super-sized tin is double the volume of the original tin, then the price should also be doubled.
- Verify, with the necessary calculations, whether the assistant's statement is valid or not, based on the comparison of the volume of the super-sized tin compared to the original tin. (7)
- 2.1.3 Based on your answer in QUESTION 2.1.2, use a calculation to suggest a price for the super-sized tin. (4)

- 2.2 The manufacturers must package these super-sized tuna tins in rectangular boxes. The dimensions of the box are as follow:

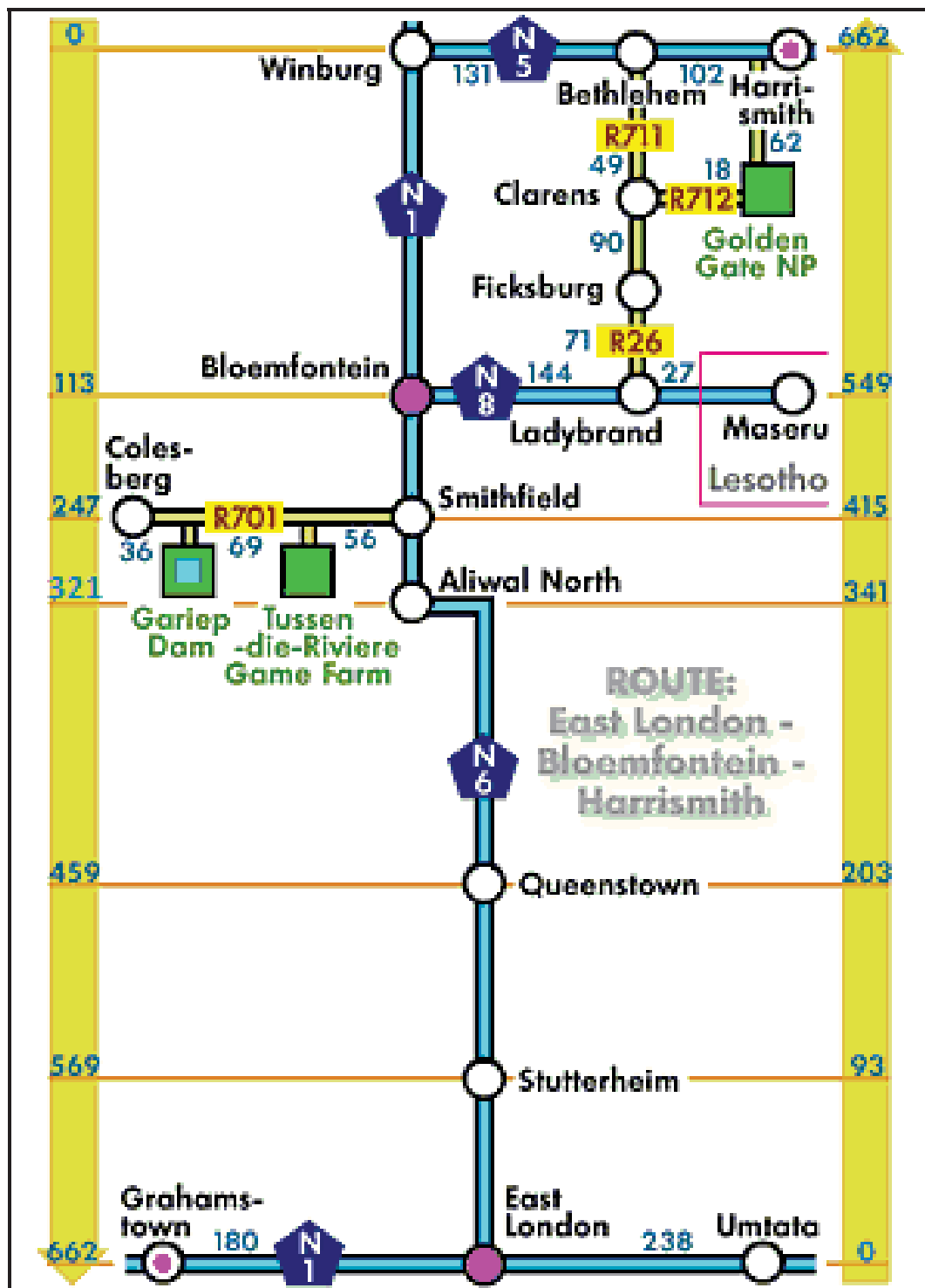


With the necessary calculations, determine how many super-sized tuna tins can be packed in the box.

(6)
[19]

QUESTION 3

- 3.1 Study the following strip chart that shows the travelling route from East London to Harrismith. Use the strip chart to answer the questions below.



- 3.1.1 The lines from Ladybrand to Ficksburg and from Ficksburg to Clarens are equal in length, but the distances between these places are different. Give a possible reason why the distances are different.

(2)

- 3.1.2 Calculate the distance from Queenstown to Grahamstown. (2)
- 3.1.3 Why are some of the roads marked with 'R', while the others are marked with 'N'? (2)
- 3.1.4 Mr Frieslaar is travelling from Aliwal North to Harrismith, but will first pick up his son in Colesberg. Calculate the distance that Mr Frieslaar will travel between the two places. (5)
- 3.1.5 Mr Frieslaar left Aliwal North at 09h45. On the R701, he must drive at an average speed of 80 km per hour, while the average speed will be 100 km per hour on the N1 and N5. Mr Frieslaar also had three pitstops of 30 minutes each.
He claims that he will cover the distance in less than 11 hours (including pitstops). Verify, showing all calculations whether his statement is valid or not.

You may use the following formula:

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}} \quad (9)$$

- 3.2 Mr Frieslaar states that the cost of petrol is not the only factor to consider when travelling by car. He is driving a 2016 Hyundai Elantra, 1600 cc with a value of R286 000. Below is a list of the different cost for the vehicle that Mr Frieslaar drives.

COST FACTORS	PRICE IN CENTS PER KILOMETRE	PETROL FACTOR
Fixed Costs	526	
Running Costs:		
Fuel		8,03
Service and Repair Cost	22,73	
Tyre Cost	16,70	

When Mr Frieslaar was taking the trip from Aliwal North to Harrismith, the petrol price was R12,87 per litre. Calculate the total operating cost of travelling the distance between the two towns. Your answer must be based on the distance that you have calculated in QUESTION 3.1.4. Give your final answer in Rand.

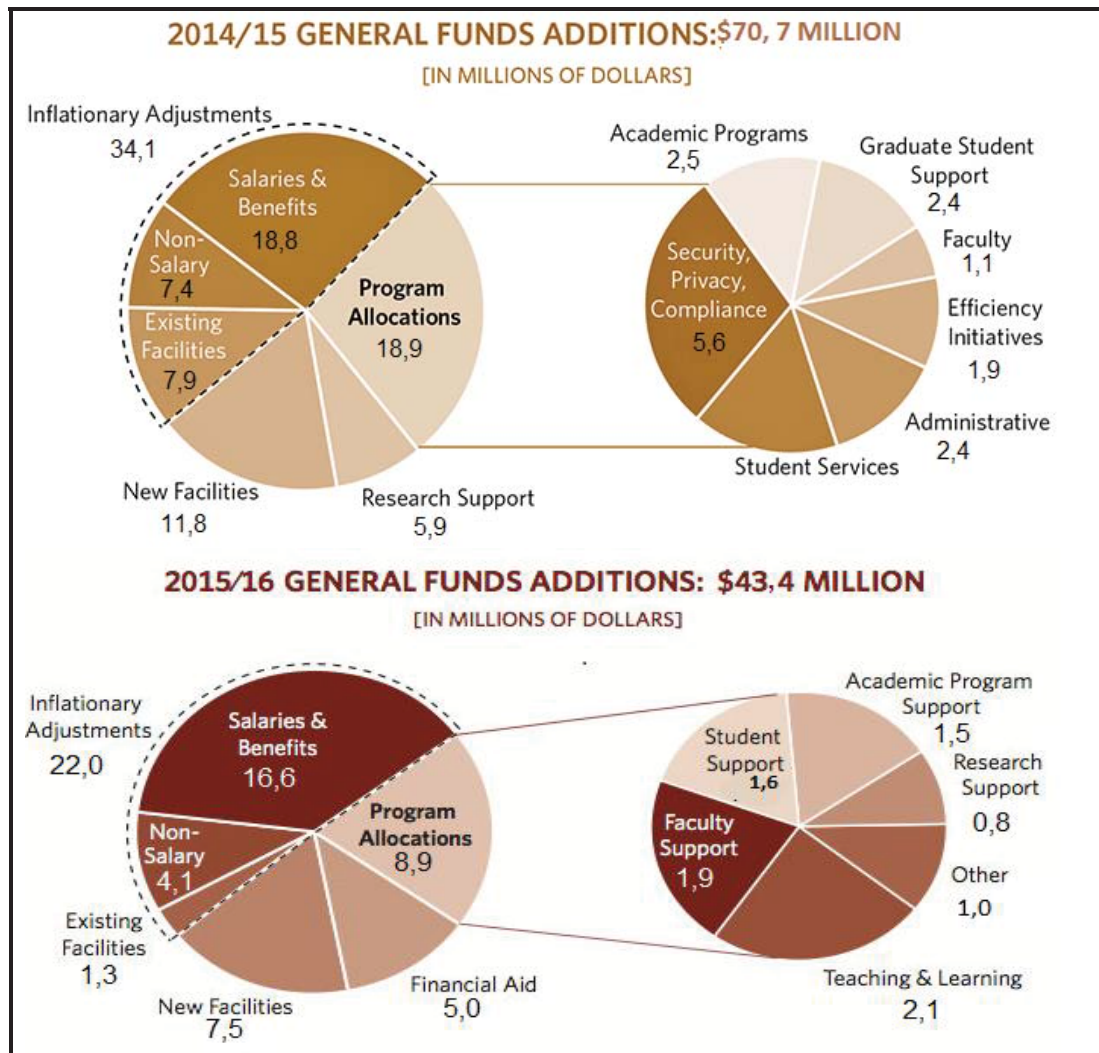
You may use the following formula:

$$\text{Total operating costs} = [\text{Fixed cost} + (\text{Petrol factor} \times \text{Petrol price} + \text{Service and Repair cost} + \text{Tyre cost})] \times \text{distance travelled} \quad (6)$$

[26]

QUESTION 4

- 4.1 The pie charts below shows the General Funds for 2014/15 and 2015/16 financial years. Study these pie charts below to answer the questions that follow.



- 4.1.1 Calculate the amount that was spent for Student Services for 2014/2015. (3)
- 4.1.2 Calculate the difference in percentage on the amounts spent for Salaries and Benefits in the 2014/2015 and 2015/2016 financial years. Give your final answer to one decimal place. (6)
- 4.1.3 Why can it NOT be said with certainty that the amount spent on Financial Aid for 2015/2016 has decreased from 2014/2015? (2)
- 4.1.4 Give ONE reason why you think that ALL funds were included in the pie charts. (2)

- 4.2 Mr Heyns, the parent of a first-year student, approached a bank for a loan. He wants to borrow R35 000 at an interest of 7,5% for the first two years and 7,75% for the third year compounded annually.

Mr Heyns claims that he will pay more than R45 000 on this loan at the end of this period. Verify, with the necessary calculations, whether the statement is valid or not.

(6)
[19]

TOTAL: 100

