



Province of the
EASTERN CAPE
EDUCATION

**NATIONAL
SENIOR CERTIFICATE**

GRADE 11

NOVEMBER 2018

MATHEMATICAL LITERACY P2

MARKS: 100

TIME: 2 hours



This question paper consists of 9 pages and an addendum of 4 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. Use the ADDENDUM with ANNEXURES for the following questions:

ANNEXURE A for QUESTION 2.2

ANNEXURE B for QUESTION 3

ANNEXURE C for QUESTION 4.2

ANSWER SHEET 1 for QUESTION 2.2.3

Write your name in the space provided on the ANSWER SHEET and hand in the ANSWER SHEET with your ANSWER BOOK.

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



QUESTION 1

1.1 Mrs Day has a laundry business in town and charges:

- R16 per kg washing and drying
- R3 for Staysoft (fabric softener) per 5 kg
- R25 per kg for hand wash with Staysoft (fabric softener)
- R20 per 5 kg for ironing

1.1.1 How much will a person with 18 kg of washing pay for washing and drying with Staysoft (fabric softener) and ironing? (5)

1.1.2 A family has a helper coming on Mondays and Fridays for the month shown below for washing. They pay the helper R150 per day for washing and drying without ironing.

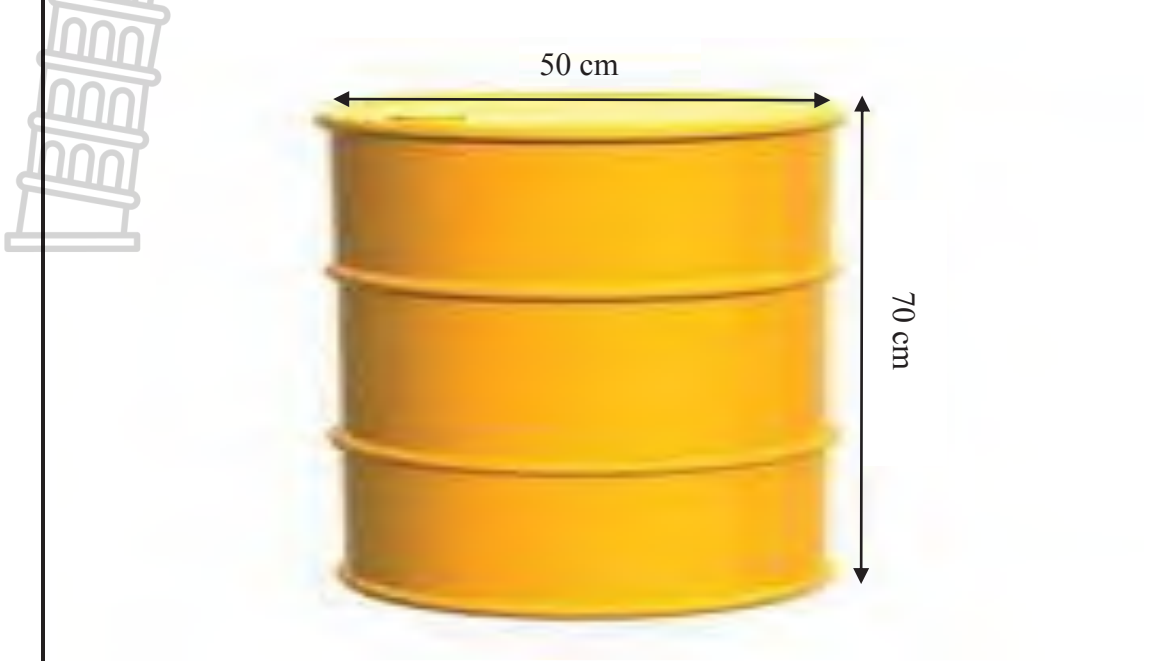
Use the calendar for March 2018 to answer the questions.

March 2018						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

(a) The family claims that if they can take their washing every Friday to the laundry for washing and drying with Staysoft (fabric softener), instead of hiring a helper, they could save R70 per month. Verify, showing all calculations, whether their claim is valid if they have an average of 15 kg of washing and drying and 2 kg of hand wash for Fridays in March 2018. (8)

(b) Calculate the probability of having a Friday in March with a date as an even number. Give your final answer as a percentage to one decimal place. (3)

- 1.2 To cater for hand washing and to save water, the laundry uses water collected from rain and stored in cylindrical storage containers, as shown in the figure below. They have 10 such containers.



- 1.2.1 Show, with calculations, whether the 10 containers can fit on the floor of a storeroom which is 3 m by 2,5 m. (5)

- 1.2.2 For hand washing, they use 100 litres of water per 25 kg of washing. The average of hand washing is 30 kg per day.

You may use formula:

Volume of cylindrical container =
 $\pi \times \text{radius} \times \text{radius} \times \text{height}$; where $\pi = 3,142$
 Given that **1 litre = 1 000 cm³**

- (a) Calculate the capacity of the container as shown in the diagram. (3)
- (b) The supervisor claims that five containers of water will be enough for 5 days. Verify with calculations, whether the claim is valid or not. (5)
- 1.2.3 Provide ONE possible reason why some clothes are hand washed. (2)

[31]

QUESTION 2

- 2.1 A printing company has employed people for typing and editing material to be used in workshops. They are paying the editors R97 to edit one document.

For typists, they use the following formula:

$$\text{Amount paid for typist} = \frac{\text{norm time}}{60} \times \text{rate} \times \text{number of documents typed}$$

NOTE: Norm time is the time in minutes spent on typing and is 28 minutes per document. The rate is R195 per document.

The employer is claiming that he is paying an editor 5% more than a typist for every 100 documents edited. Verify, with calculations, whether the statement is valid or not.

(8)

- 2.2 Use ANNEXURE A that shows the information on the amount of sugar in different types of drinks.

2.2.1 Determine the range of the number of grams of sugar for all the 330 mℓ drinks.

(3)

2.2.2 In a hotel, guests are allowed two drinks per person. One guest has a Play energy drink and a Powerade. Another guest has an Appletiser and a Coca-Cola.

The guest drinking the energy drinks, claims she is taking 2 teaspoons of sugar less than the other guest. Verify, with calculations, whether the statement is valid or not.

(6)

2.2.3 Use the ANSWER SHEET provided, and draw a bar graph showing the amount in grams for the following drinks only:

- (a) Bonaqua flavoured water
- (b) Glaceau Vitamin water
- (c) Sparletta Iron Brew
- (d) Fanta Orange
- (e) Coca-Cola

(5)

[22]

QUESTION 3

3.1 Use the distance table in ANNEXURE B to answer the following questions.



3.1.1 A couple is travelling from Durban to Nelspruit at a speed of 110 km per hour. How long will this journey take them? Give your final answer to the nearest hour and minute.

You may use the following formula:

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}} \quad (6)$$

3.1.2 Determine the median distance between Pretoria and all the other towns and cities. (4)

3.1.3 Calculate the difference between the mean distance for all towns to Pretoria and the mean distances for all towns to Port Elizabeth. (7)

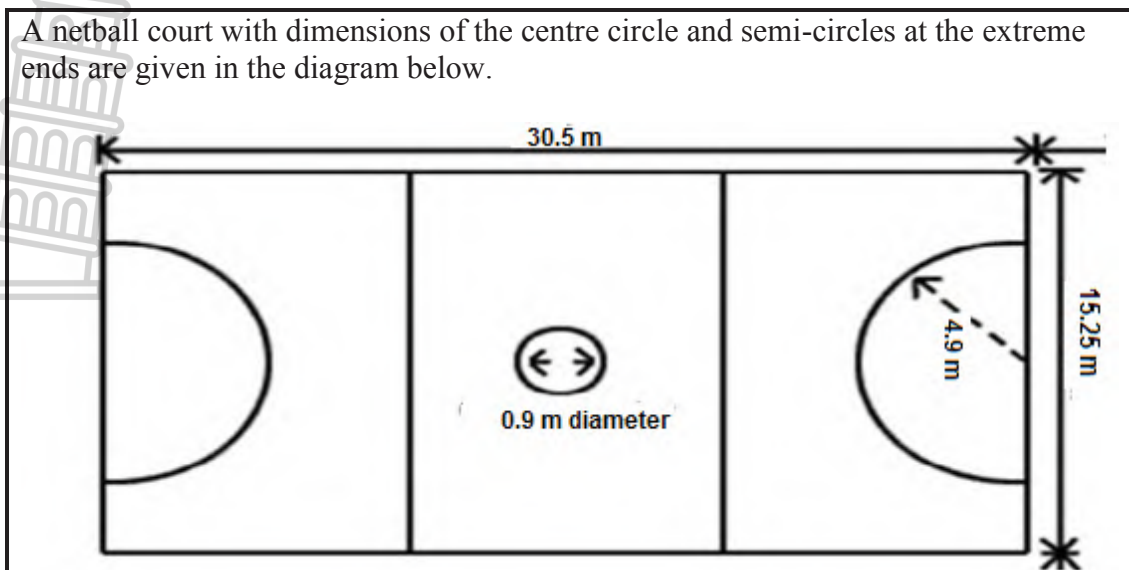
3.1.4 To travel by bus, cost 70c per km. Calculate how much a person will pay for transport from Bloemfontein to Cape Town. Give your final answer rounded off to the nearest rand. (3)

[20]



QUESTION 4

4.1 A netball court with dimensions of the centre circle and semi-circles at the extreme ends are given in the diagram below.



The netball court has the following dimensions:

- Length of the court = 30,5 m
- Breadth of the court = 15,25 m
- Diameter of centre circle = 0,9 m
- Radius of semi-circle = 4,9 m

Calculate the difference between the area of the centre circle and the area of one of the semi-circles at the extreme ends of the netball court.

You may use the following formulae:

Area of circle = $\pi \times \text{radius} \times \text{radius}$

Area of semi-circle = $\frac{\pi \times \text{radius} \times \text{radius}}{2}$; where $\pi = 3,142$ (5)

4.2 ANNEXURE C shows the seating plan of a school hall. Use the seating plan to answer the following questions.

4.2.1 After the match, the school has an entertainment activity for the guests in the school hall. How many seats are on the left side of the stage? (3)

4.2.2 Calculate the probability of having a row on the right side of the stage with 15 seats. (2)

4.2.3 The hall is sometimes used for hiring. The cost for seating in the middle of the hall is 8% more than the seats on the left and right side of the hall. For a certain function, the tickets are R150 for a seat on the sides of the hall.

The board claims that if all seats are occupied, they will be able to collect more than R100 000. Verify, with calculations, whether the statement is valid or not. (8)

- 4.3 TABLE 1 below shows the number of learners at Komga High School in Grade 10, 11 and 12.

TABLE 1

Grade	Boys	Girls	Total
10	73	85	158
11	A	73	137
12	54	45	99
Total	191	203	B

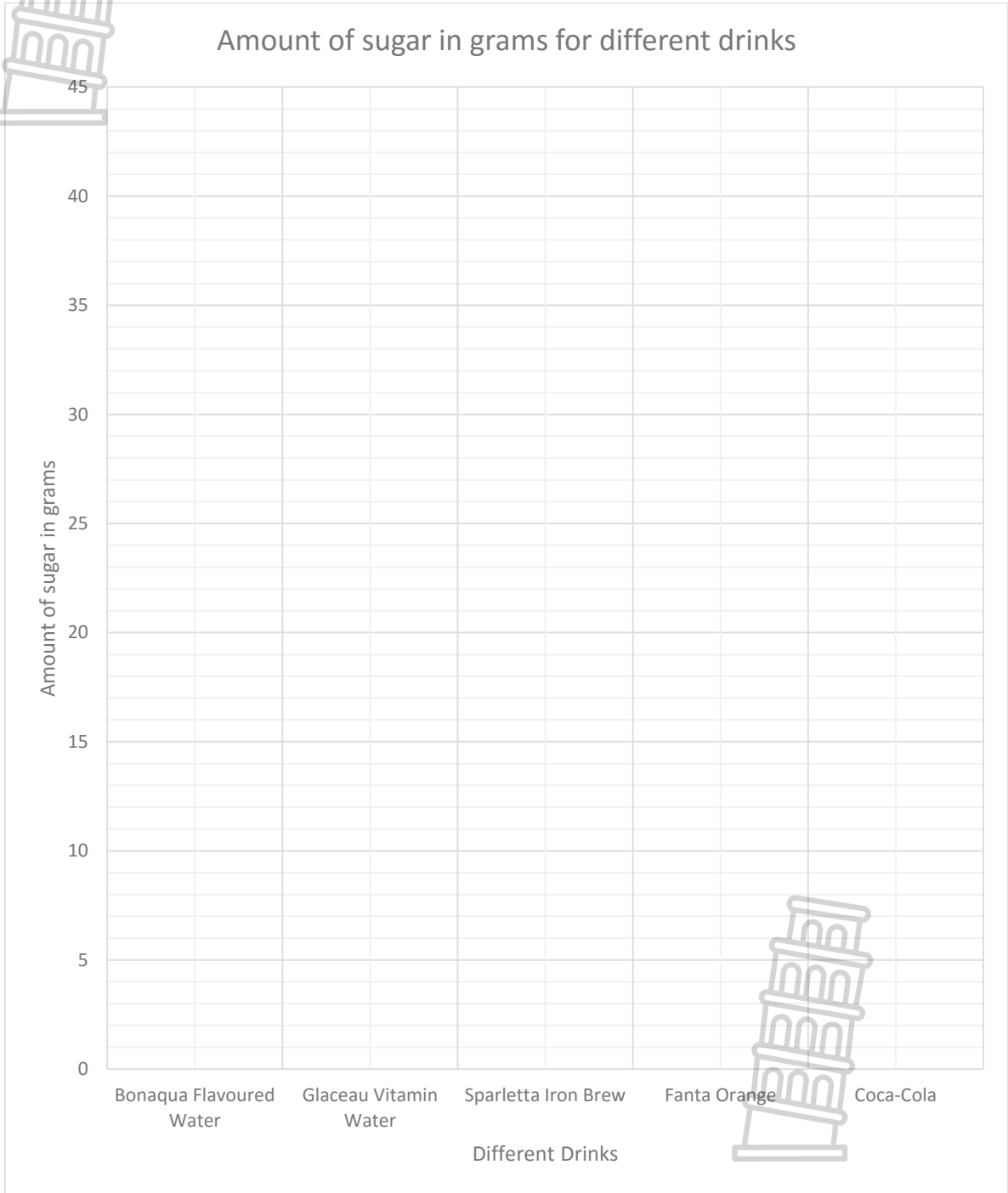
- 4.3.1 Calculate the number of boys in Grade 11 as a percentage of the total number of learners. (5)
- 4.3.2 Describe the trend and give a possible reason for the trend observed in the total number of learners from Grade 10 to Grade 12. (4)

[27]**TOTAL: 100**

ANSWER SHEET for QUESTION 2.2.3

NAME and SURNAME:

GRADE 11:





Province of the
EASTERN CAPE
EDUCATION

**NATIONAL
SENIOR CERTIFICATE**

GRADE 11

NOVEMBER 2018

**MATHEMATICAL LITERACY P2
ADDENDUM**



This addendum consists of 4 pages with a 3-page of annexures

ANNEXURE A


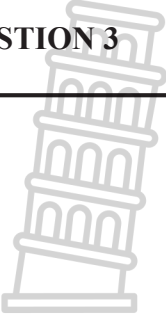
QUESTION 2.2

We gathered a few popular drinks from our canteen's refrigerator to check how much sugar each one contains. The results were surprising. Even 'healthier' drinks, such as flavoured mineral water and drinking yoghurt, contain a large amount of sugar.



ANNEXURE B

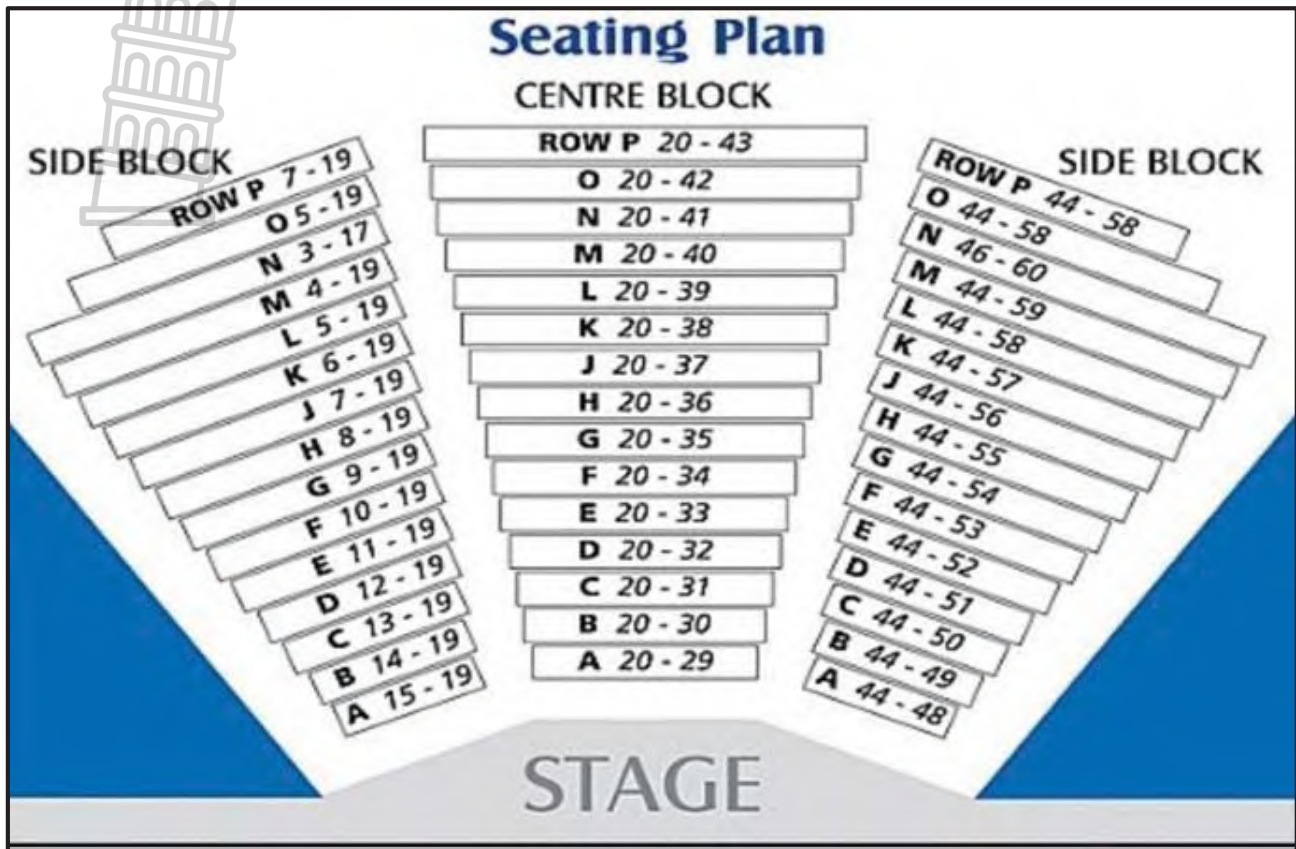
QUESTION 3



										Pretoria										
										Port Elizabeth	1120									
										Polokwane	1393	273								
										Nelspruit	320	1373	342							
										Mafikeng	589	565	1122	292						
										Kimberley	360	832	805	752	532					
										Johannesburg	467	273	358	331	1062	58				
										East London	992	750	1029	1214	1323	300	1050			
										Durban	667	598	842	859	689	929	927	656		
										Cape Town	1660	1042	1402	960	1320	1779	1736	756	1463	
										Bloemfontein	998	667	575	417	175	427	771	748	635	475

ANNEXURE C

QUESTION 4.2





**NATIONAL
SENIOR CERTIFICATE**

GRADE 11

NOVEMBER 2018

**MATHEMATICAL LITERACY P2
MARKING GUIDELINE**

MARKS: 100

Symbol	Explanation
M	Method
MA	Method with accuracy
CA	Consistent accuracy
A	Accuracy
C	Conversion
S	Simplification
RT/RG/RM	Reading from a table/Reading from a graph/Reading from a map
F	Choosing the correct formula
SF	Substitution in a formula
J	Justification
P	Penalty, e.g. for no units, incorrect rounding off etc.
R	Rounding Off/Reason
AO	Answer only
NPR	No penalty for rounding

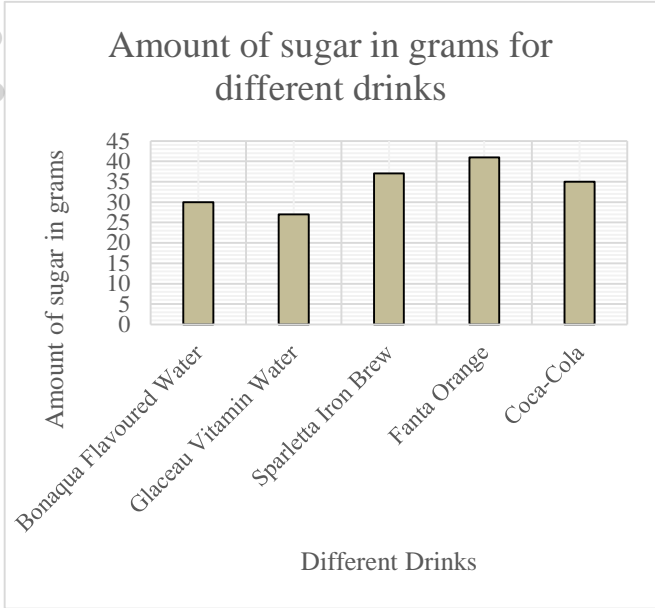
This marking guideline consists of 7 pages.

QUESTION 1 [31]			
Question	Solution	Explanation	Topic and Level
1.1.1	<p>Washing and drying = 18×16 = R288 ✓</p> <p>Staysoft = $5 = 3$ $18 = \frac{3}{1} \times \frac{18}{5}$ ✓ = R10,80 ✓</p> <p>Ironing = $5 = 20$ $18 = \frac{20}{1} \times \frac{18}{5}$ = R72 ✓</p> <p>Total = $288 + 10,80 + 72$ = R370,80 ✓</p>	<p>1 MA Amount for washing and drying</p> <p>1M Calculating Staysoft 1CA Cost for Staysoft</p> <p>1CA Cost for Ironing</p> <p>1CA Total (5)</p>	L3 F
1.1.2 (a)	<p>Helper amount No. of days = 9 ✓ Amount = 9×150 = R1 350 ✓</p> <p>Wash and dry = $15 \times 5 \times 16$ = R1 200 ✓</p> <p>Stay soft = $5 = 3$ $75 = \frac{3}{1} \times \frac{75}{5}$ = R45 ✓</p> <p>Handwash = $2 \times 5 \times 25$ = 250 ✓</p> <p>Total amount for laundry = $250 + 45 + 1200$ = R1 495 ✓</p> <p>Difference = $R1 495 - R1 350$ = R145 ✓</p> <p>Invalid laundry more expensive ✓</p>	<p>1A No. of days</p> <p>1CA Amount for helper</p> <p>1CA Amount for wash and dry</p> <p>1CA Staysoft</p> <p>1CA Hand wash</p> <p>1CA Total amount</p> <p>1CA Difference</p> <p>1O Invalid (8)</p>	L4 F
1.1.2 (b)	<p>Probability = $\frac{3}{31} \times 100$ ✓✓ = 9,7% ✓</p>	<p>1A Numerator 1A Denominator 1CA Answer as a % to 1 decimal place (3)</p>	L2 P

1.2.1	<p>Across the length = $\frac{3}{0,5}$ ✓ = 6</p> <p>Across the breadth = $\frac{2,5}{0,5}$ ✓ = 5 ✓</p> <p>Number of containers fitting = 6×5 = 30 ✓</p> <p>10 can fit ✓</p>	<p>1M Dividing 1C Conversion to metres</p> <p>1CA Breadth/Width</p> <p>1CA Number of containers 1O Opinion (5)</p>	L3 Maps
1.2.2 (a)	<p>Volume of container $V = \pi \times (\text{radius})^2 \times \text{height}$ = $3,142 \times 25 \text{ cm} \times 25 \text{ cm} \times 70 \text{ cm}$ ✓ = $137\,462,5 \text{ cm}^3$ = $137\,462,5 \text{ cm}^3$ ✓ No. of litres = $137\,462,5 \div 1\,000$ = $137,4625 \text{ litres}$ ✓</p>	<p>1 Calculating radius</p> <p>1CA Volume</p> <p>1C Litres NPR (3)</p>	L3 M
1.2.2 (b)	<p>Capacity for 5 containers = $137,4625 \text{ litres} \times 5$ = $687,3125 \text{ litres}$ ✓</p> <p>Water for 5 days of hand wash Washing = 30×5 = 150 kg ✓</p> <p>25 kg = 100 litres $150 = \frac{100}{1} \times \frac{150}{25}$ ✓ = 600 litres ✓</p> <p>Statement is valid ✓</p>	<p>CA from 1.2.2 (a) 1MA Litres for 5 containers</p> <p>1MA Amount of washing</p> <p>1M Number of litres</p> <p>1CA Total litres</p> <p>1 O Valid (5)</p>	L4 M
1.2.3	<p>Some material cannot be washed using machine. ✓✓ OR Clothes can be damaged ✓✓ Accept any other relevant reason.</p>	<p>2A Reason or explanation</p> <p>(2)</p>	L4 D
[31]			

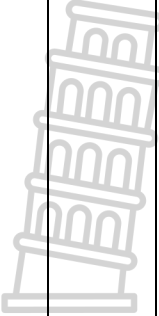


QUESTION 2 [22]				
Question	Solution	Explanation	Topic and Level	
2.1	<p>Amount for editing = $97 \times 100 \checkmark$ = R 9 700 \checkmark</p> <p>Typist = $\frac{\text{norm time}}{60} \times \text{rate} \times \text{no. of documents}$ = $\frac{28}{60} \times 195 \times 100 \checkmark \checkmark$ = R9 100 \checkmark</p> <p>% = $\frac{105}{100} \times 9\ 100 \checkmark$ OR $\frac{9\ 700}{9\ 100} \times 100$ = R9 555 \checkmark = 106,59% – 100% = 6,59%</p> <p>Not valid, more than 5% \checkmark</p>	<p>1M Multiply correct values 1A Amount for editing</p> <p>1SF Substituting 1A Correct values 1CA Amount for typist</p> <p>1M Increasing by 5% 1CA Increased amount</p> <p>1O Invalid (8)</p>	L4 F	
2.2	2.2.1	<p>31,7; 33,7; 35; 36,3; 36,4; 37; 39,2; 40,6; 41; 42,3; 44,1 Range = $44,1\ \text{g} - 31,7\ \text{g} \checkmark \checkmark$ = $12,4\ \text{g} \checkmark$</p>	<p>1RT Reading the correct high and low values. 1M Subtraction 1CA Range (3)</p>	L2 D
	2.2.2	<p>Guest 1: Play energy drink = 29,2 g Powerade = 38,8 g \checkmark Total = 68 g \checkmark</p> <p>Guest 1: 5g = 1 teaspoon $\therefore 68 = \frac{1}{5} \times \frac{68}{1}$ = 13,6 teaspoons \checkmark</p> <p>Guest 2: Appletiser = 31,7g Coca-Cola = 35g Total = 66,7 g \checkmark</p> <p>Guest 2: $\frac{66,7}{5}$ = 13,34 teaspoons \checkmark</p> <p>Statement not valid. Energy drink contains more sugar. \checkmark</p>	<p>1RT Correct values for guests 1CA Total number for grams for guest 1</p> <p>1CA Teaspoons sugar guest 1</p> <p>1CA Total no of grams for guest</p> <p>1CA Teaspoons sugar guest 2</p> <p>1O Invalid (6)</p>	L4 M

	2.2.3	 <p style="text-align: center;">Amount of sugar in grams for different drinks</p>	5M One mark for each correct bar	L2 D
(5)				[22]

QUESTION 3 [20]

Question	Solution	Explanation	Topic and Level
3.1	3.1.1 Distance from Durban to Nelspruit = 689 km ✓ $\text{Speed} = \frac{D}{T}$ $110 = \frac{689}{\text{time}} \checkmark$ $110 \times \text{time} = 689$ $\text{Time} = \frac{689}{110} \checkmark$ $= 6,26 \text{ hrs } \checkmark$ $= 6\text{hrs } 16 \text{ min } \checkmark \checkmark$	1RT Distance 1SF Substituting correct values 1S Change subject of the formula 1CA Answer in hours 1C Converting 6,26 hrs to minutes 1CA Hours and min (6)	L3 Maps and M
	3.1.2 Ascending order 58; 273; 292; 342; 475; 532; 656; 1050; 1120; 1463 ✓✓ $\text{Median} = \frac{475+532}{2} \checkmark$ $= 503,5 \checkmark$	1RT Correct values 1M Ascending order 1M Concept of median 1CA Median (4)	L2 Maps and D

	3.1.3	Pretoria: $\frac{1120+273+342+292+532+58+1050+656+1463+475}{10}$ $= \frac{6261 \checkmark}{10 \checkmark}$ $= 626,1 \text{ km} \checkmark$ Port Elizabeth: \checkmark $\frac{1120 + 1393 + 1373 + 1122 + 752 + 1062 + 300 + 927 + 756 + 635}{10}$ $\frac{9440}{10} = 944 \text{ km} \checkmark$ Difference = $944 - 626,1 \checkmark$ $= 317,9 \text{ km} \checkmark$	1M Adding all correct values 1M Divide by 10 1CA Mean 1RT Adding all correct values 1CA Mean 1M Subtraction 1CA Difference (7)	L2 and L3 Maps and D
	3.1.4	Distance = $998 \text{ km} \checkmark$ Cost = $70 \times 998 \checkmark$ $= 69860 \text{ cents}$ $= 698,60$ $= \text{R}699 \checkmark$ <p style="text-align: center;">OR</p> $998 \times 0,7 \checkmark$ $= 698,60 \checkmark$ $= \text{R}699 \checkmark$	1RT Correct distance 1M Multiplying by 70 1R Nearest rand 1RT Correct distance 1M Multiplying by 70 1R Nearest rand (3)	L2 F and Maps
			[20]	

QUESTION 4 [27]

Question	Solution	Explanation	Topic and Level
4.1	<p>Area of circle = $\pi \times \text{radius} \times \text{radius}$</p> $= 3,142 \times 0,45 \times 0,45 \checkmark \checkmark$ $= 0,636255 \text{ m}^2 \checkmark$ <p>Area of semicircle = $\frac{\pi \times \text{radius} \times \text{radius}}{2}$</p> $= \frac{3,142 \times 4,9 \times 4,9}{2}$ $= 37,71971 \text{ m}^2 \checkmark$ Difference = $37,71971 - 0,636255$ $= 37,08 \text{ m}^2 \checkmark$	1A Radius 1SF Substitution 1CA Area of centre 1CA Area of semi-circle 1CA Difference NPR (5)	L3 M
4.2.1	$169 \text{ seats} \checkmark \checkmark \checkmark$	3A No of seats (3)	L2 Maps
4.2.2	$\frac{4 \checkmark}{15 \checkmark}$	1A Numerator 1A Denominator (2)	L2 P

