LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF
EDUCATION

NATIONAL
SENIOR CERTIFICATE

GRADE 11

MATHEMATICAL LITERACY P2
MID-YEAR EXAMINATION 2025

MARKS:75

TIME: $1\frac{1}{2}$ **HOURS**

This question paper consists of 10 pages and an addendum

INSTRUCTIONS AND INFORMATION:

1. This question paper consists of **THREE** questions. Answer ALL the questions.

2. Use annexure to answer the following questions:

    2.1 Annexure A for question 3.1

    2.2 Annexure B for question 3.2

3. Number the questions correctly according to the numbering system used in this question paper.

4. Start EACH question on a NEW page.

5. You may use an approved calculator (non-programmable and non-graphical), unless stated otherwise.

6. Show ALL the calculations clearly.

7. Round ALL the final answers appropriately according to the context unless stated otherwise.

8. Write neatly and legibly.

9. Indicate the units of measurement, where applicable.

10. Diagrams are not necessarily drawn to scale, unless stated otherwise

Question 1

1.1 In TABLE 1 below is a list of explanations and definitions of concepts used in Mathematical Literacy.

TABLE 1 : EXPLANATIONS AND DEFINITIONS OF CONCEPTS

A	A symbolic representation of selected characteristics of a place drawn on a flat surface.
B	Show the design and dimensions of the outside of a building from a side view
C	A map of a small area such as a town or city.
D	Statement describing the chance of an outcome to happen based on given information
E	Information about the profile of a route as seen from the side.
F	The total distance around the boundary.
G	The number of times that something happens.
H	The amount of space available to hold something. Usually measured in litres.

Use the information above to write down the letter of the explanation or definition (A- H) of EACH of the following concepts.

1.1.1 Prediction (2)

1.1.2 Elevation Map (2)

1.1.3 Elevation Plans (2)

1.1.4 Perimeter (2)

1.1.5 Capacity (2)

1.2   Mahlatse's grandmother is turning 90 years old. She plans to bake some vanilla muffins using the recipe below , in addition to her birthday cake. It takes 20 minutes to bake 12 vanilla muffins, at an oven temperature of 400 °F.

VANILLA MUFFINS ingredients (makes 2 dozens of muffins)

4 cups /18 ounces all-purpose flour
2 cups granulated sugar
2tbsp. baking powder
$\frac{3}{4}$ tsp. salt
2 cups milk
2 large eggs
1 tbsp. vanilla extract
8 tbsp. butter(melted)

KEY: tablespoon = tbsp.. tea spoon = tsp. one cup = 250 ml

Use the information above to answer the following questions.

1.2.1   Calculate:

a) The milk needed for this recipe in milliliters.   (2)

b) The time it will take Mahlatse to finish baking the vanilla muffins if he starts to bake at 08:27.   (2)

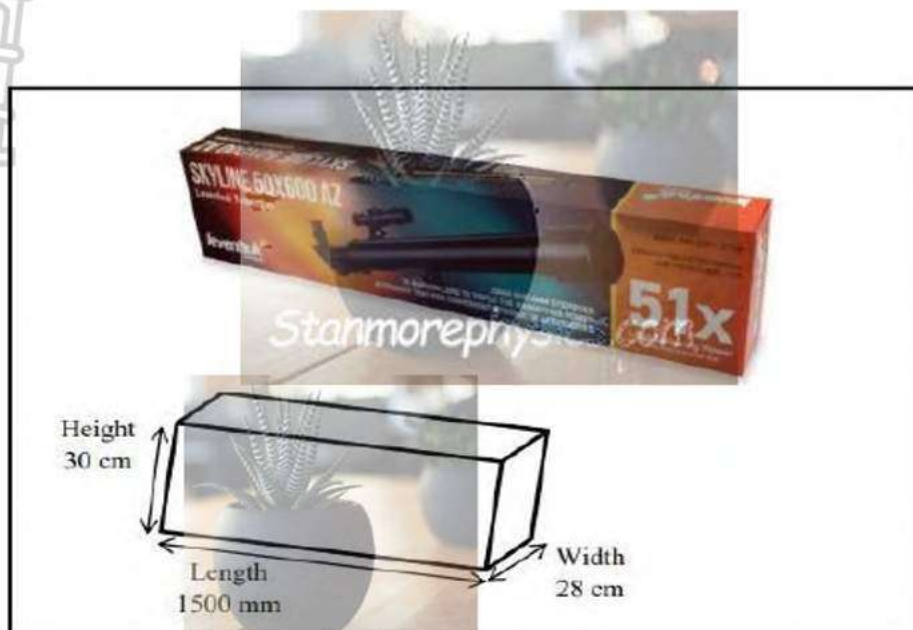1.2.2   Write down the ratio of sugar to flour in its simplest form.   (2)

1.2.3   Convert 400 °F (degree Farenheit) to °C (degree Celsius) using the following formula:

$$°F = (\frac{9}{5} × °C) + 32$$

(4)

[20]

Question 2

2.1   A cardboard box is used to pack a telescope. Study the diagram below and answer the questions that follow.

2.1.1   Convert the length of the box to cm.   (2)

2.1.2   Calculate the distance around the rectangular box in cm.   (3)

2.1.3   Calculate the surface area in cm^2 of the box in which you will pack the telescope.

You may use the formula:

$$SA = 2 (l \times w) + 2 (w \times h) + 2 (l \times h)$$ (5)

Please turn over

2.2

> Thato sells sets of canisters for coffee, tea and sugar. TABLE 1 below shows two options. Each canister lid is made of bamboo and 1 cm thereof goes into the canister.
>
> | OPTION 1 RECTANGULAR CANISTERS | OPTION 2 CYLINDRICAL CANISTERS |
> |---|---|
> | lid goes in 1 cm | lid goes in 1 cm |
> | **Dimensions of canister** | **Dimensions of canister** |
> | Height: 13,7 cm
Length: 11,5 cm
Width: 11 cm | Height: 13,7 cm
Diameter: 11,6 cm |
>
> [Source:www.therange.co.uk]
>
> You may use the following formulae.
>
> **Volume of a rectangular prism = length × width × height**
>
> **Volume of a cylinder = 3,142 radius² × height**

Use the information above to answer the following questions

2.2.1   Determine the height of the sugar in both types of canisters if the canisters are filled to below the lid   (2)

2.2.2   Calculate the volume of sugar in the cylindrical canister.   (3)

2.2.3   Thato decided to buy cylindrical types of canisters to sell. She packed the canisters in a box with dimensions as follows:

- Length = 70 cm
- Width = 45 cm
- Height = 27,5 cm

a)   Thato claims that she can pack more rectangular canisters than cylindrical canisters in ONE box, if she packs them length-to-length.

Verify whether her claim is VALID.   (6)

b)   Determine the number of cylindrical canisters that can be packed in ONE box   (3)

2.3 Below is a picture of a liquid soap kitchen dispenser Mr. Mahlokoane installed in his kitchen.

Study the diagram and answer the questions that follow.

Diameter of the dispenser = 54 mm

Height of dispenser head = 62 mm

Volume of cylinder = $\pi \times$ radius$^2 \times$ height, where π = 3,142

NOTE: 1 ml = 1000 mm^3

NOTE : Measurements are in millimetres

Use the diagram and information above to answer the questions that follow.

2.3.1 Calculate the capacity of the dispenser to the nearest millilitres.

You may use the following formula:

Volume of cylinder = $\pi r^2 h$ (4)

2.3.2 Determine the number of dispensers that can be filled from a 20 litre liquid soap bottle. (3)

[31]

Question 3

3.1 | ANNEXURE A reflects the new cell phone that Katlego bought. She wants to insert the SIM card into the phone. She must study the images with steps given on the annexure showing how to insert a SIM card into a cell phone

Use ANNEXURE A and the information above to answer the questions that follow.

3.1.1 How many SIM card(s) can the cellphone shown on the Annexure A accommodate? (2)

3.1.2 Write down the description of each step in your own words. (3)

3.1.3 Mention TWO advantages of using a cellphone with dual SIM option. (3)

3.2 | ANNEXURE B is a map of South African coastline and the interior parts of the country including some neighboring countries.

Use ANNEXURE B and the information above to answer the questions that follow.

3.2.1 Identify the type of scale used in the map on Annexure B (2)

3.2.2 Use the given scale to determine the distance (as the crow flies), in km, between Kimberly and Pietersburg. (4)

3.2.3 The actual distance between Kimberly and Pietersburg via N12 and N1 is 805,7 km.
Katlego travelled from Kimberly to Pietersburg to visit a friend. She left Kimberly at 5:45 a.m. and arrived at 14:00 in Pietersburg. She made two stops of 30 minutes each along the journey.

a) Determine the time (in hours) Katlego took driving. Exclude the stoppage time. (3)

b) Hence, calculate the average speed that Katlego used for the journey.

You may use the formula:

$$Speed = \frac{Distance}{Time}$$ (2)

3.2.4 Katlego drives a BMW with a fuel consumption rate of 5,6 litres per 100km. Calculate the amount of fuel that will be needed for a return trip to Pietersburg. (3)

3.2.5 Determine the probability of capital cities in South Africa out of the capital cities on ANNEXURE B. (2)
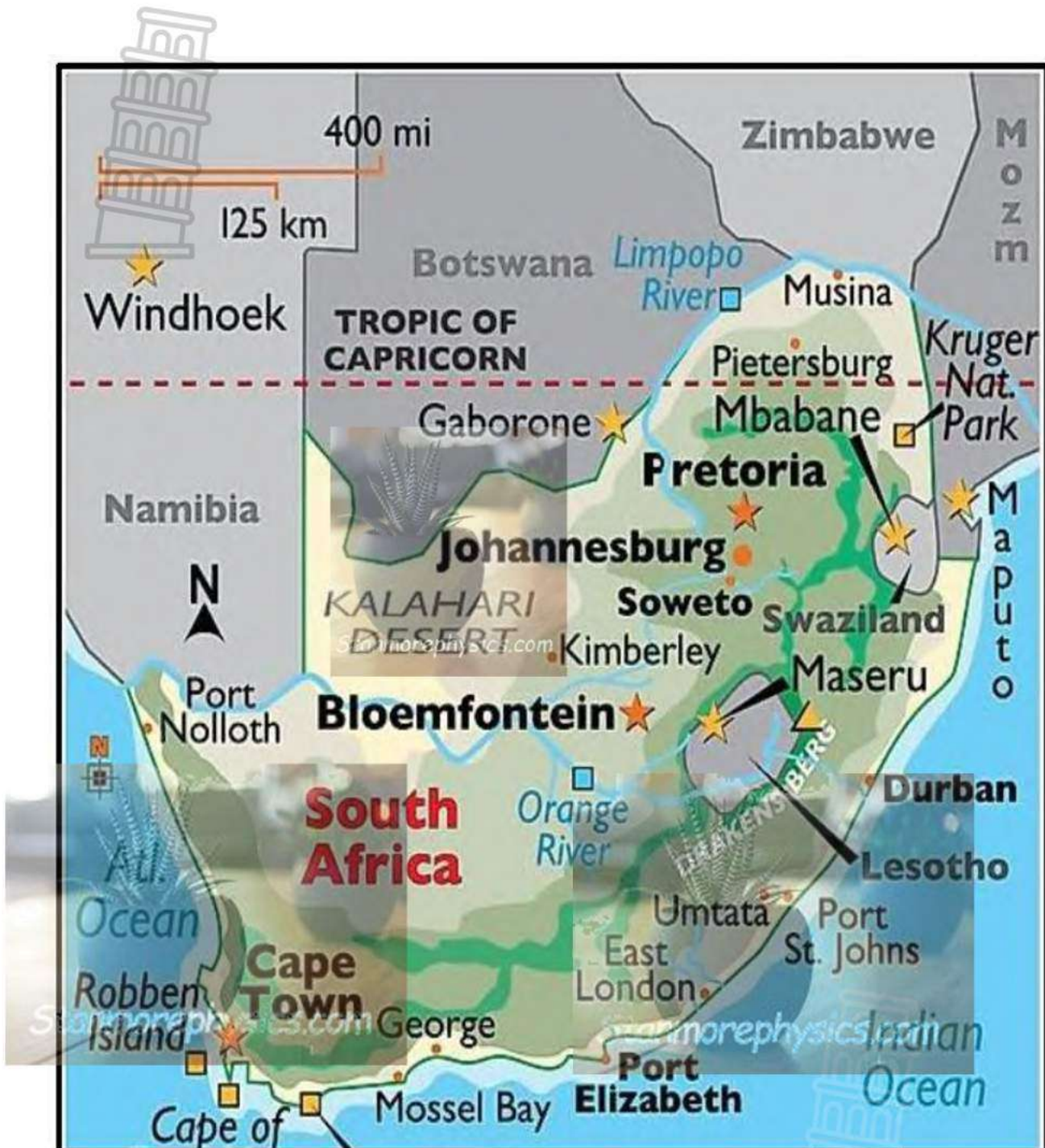
[24]

GRAND TOTAL: 75

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ANNEXURE A for question 3.1

DIAGRAM: STEPS TO INSERT SIM CARD INTO THE CELLPHONE

Step 2

Step 3
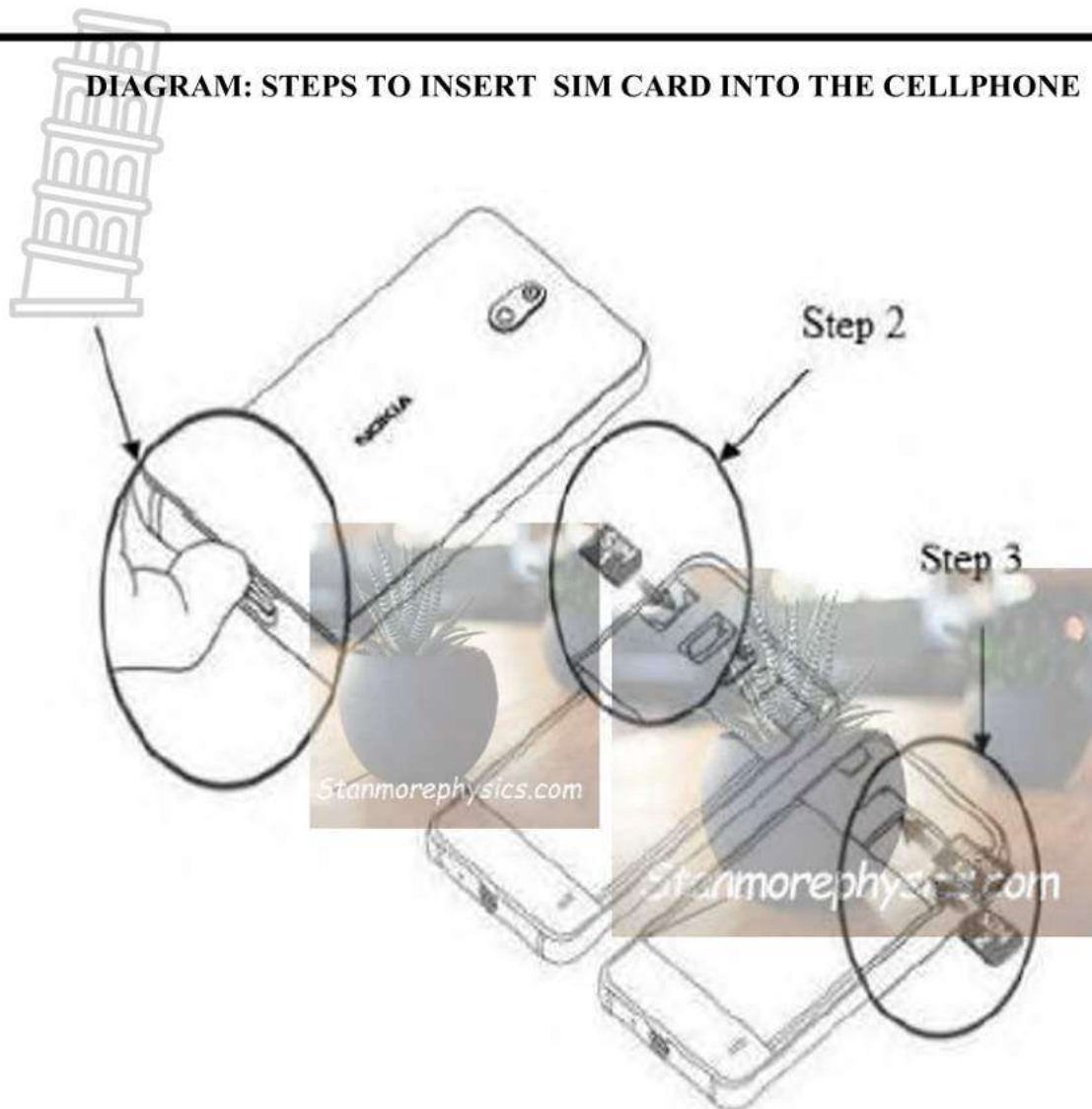
[www.Nokia.com/phones]

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ANNEXURE B for question 3.2

[Adapted from WorldAtlas.com]

NOTE :

⭐ --- **Represent capital cities.**

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MEMORANDUM

JUNE 2025

SYMBOL/SIMBOOL	EXPLANATION/VERDUIDELIKING
M	Method/METODE
MA	Method with Accuracy/metode met akkuraatheid
CA	Consistent accuracy/konstanteakkuraatheid
RCA	Rounding consistent Accuracy/afrondkonstanteakkuraatheid
A	Accuracy/akkuraatheid
O	Opinion/Explanation/verduideliking
C	Conversion/omskakeling
S	Simplification/vereenvoudiging
RT/RG/RD/RM	Reading from table/Reading from graph/Reading from diagram/Reading from map/lees van grafiekdiagram,kaart
F	Choosing the correct formula/korrekteformule
SF	Correct substitution in a formula/korrektesubstitusie in formule
J	Justification/regverdiging
P	Penalty e.g. for no units, incorrect rounding off etc./pennaliseervireenhede,afrondens.
Re	Reason/rede
Ro	Rounting /afrond
NPU/NPR	No Penalty for units/ No Penalty for rounding.
AO	Answer only ,full marks/antwoordalleenvolpunte.

QUESTION 1 [20 MARKS]			
Ques	Solution	Explanation	T/L
1.1			
1.1.1	D✔✔	2A correct option (2)	P L1
1.1.2	E✔✔	2A correct option (2)	MP L1
1.1.3	B✔✔	2A correct option (2)	MP L1
1.1.4	F✔✔	2A correct option (2)	M L1
1.1.5	H✔✔	2A correct option (2)	M L1
1.2			
1.2.1a	2 250 = 500 ml✔✔	2A C correct answer (2)	M L1
1.2.1b	08:27 + 20 min✔ = 08: 47✔	1A adding correct values 1A answer (2)	M L1
1.2.2	2 : 4✔ 1 : 2✔	1A correct order 1A simplification (2)	M L1
1.2.3	$°F = (\frac{9}{5} \times °C) + 32$ $400 \, °F = (\frac{9}{5} \times °C) + 32$✔ $368 \, °F$ ✔$= (\frac{9}{5} \times °C)$✔ $°C = 204,44$✔	1 A Substitution 1 A Simplification 1 A subject of formula 1 A answer (4)	M L2
			[20]

QUESTION 2 [31 MARKS]			
QUES	SOLUTION	EXPLANAITION	T/L
2.1			
2.1.1	= 1 500 ÷ 10✔ = 150 cm✔	1M divide by 10 1 C answer (2)	M L1

2.1.2	Length = 1500 mm ÷ 10 = 150 cm✔
	Perimeter = 2 (L + W)
	  = 2(150 cm + 28 cm)✔
	  = 356 cm ✔
		1 C conversion
		
		1 M substitution
		1 CA Answer
		(3)
			M
			L2

2.1.3	SA = 2(l × w) + 2(b × w) + 2(l × h)
	= 2(150×28)✔+ 2(28 ×30)✔+ 2(150 ×30)✔
	   = 8 400 + 1 680 + 9 000✔
	   = 19 080 cm^2✔
		1 SF length substitution
		1 SF breath substitution
		1 SF height substitution
		1 Simplification
		1 CA answer
		(5)
			M
			L3

2.2			
2.2.1	Height = 13,7 cm − 1 cm✔ = 12,7 cm✔	1 MA subtracting 1cm 1 A answer (2)	M L1
2.2.2	Radius = 11,6 cm ÷ 2 = 5,8 cm✔ Volume of cylinder = 3,142 ×(5,8)^2× 12,7✔ = 1 342,350376 cm^3✔	CA height from 2.2.1 1 A radius 1SF substitution 1CA volume (3)	M L3
2.2.3a	Along the length = $\frac{70}{11,5}$ ✔ = 6,086 = 6✔ Along the width = $\frac{45}{11}$ = 4,0909 = 4✔ Along the height = $\frac{27,5}{13,7}$ = 2,007 = 2✔ Total = 6 × 4 × 2 = 48 canisters✔ The claim is VALID ✔	1 M dividing 70 by 11,5 1 A answer 1A answer 1A answer 1 CA number of canisters 1 O opinion (6)	M L4
2.2.3b	Along the length = $\frac{70}{11,6}$ ✔ = 6,0344 = 6✔ Along the width = $\frac{45}{11,6}$ = 3,879 = 3 Along the height = $\frac{27,5}{13,7}$ = 2,007 = 2 Total = 6 × 3 × 2 = 36 canisters✔	1 M dividing 1 R correct rounding 1 A total canisters (3)	M L2
2.3			
2.3.1	✔SF Volume = 3,142 × 2,7^2 x 15 ✔	1SF substituting to correct formula 1 C convert 2,7 and 15	M L3

      Please turn over

	$= 343,5777$ cm$^3 \div 1000$ ✓A	1 C convert to ml	
		1R volume in ml	
	$= 344$ millilitres ✓R	(4)	
2.3.2	✓C	**CA from 2.3.1**	M
		1C convert to millilitres	L2
	$\dfrac{20 \text{ litres} \times 1\,000}{344}$ ✓MA	1MA divide by 344	
	$= 58,14$	1A correct number of bottles	
	≈ 58 bottles ✓A		
	OR	1C volume of cylinder to litres	
	✓C	1MA divide 20 litres by 0,344	
	$\dfrac{20 \text{ litres}}{0,344}$ ✓MA	1A correct number of bottles	
	$= 58,14$		
	≈ 58 bottles ✓A	(3)	

QUESTION 3 [24 MARKS]			
QUES	SOLUTION	EXPLANAITION	T/L
3.1			
3.1.1	2✓✓	2 RT correct answer	MP
			L1
		(2)	
3.1.2	Step 1: Remove the back cover✓	1 A remove cover	MP
	Step 2: Insert SIM card 1 in a SIM card slot✓	1 A insert SIM 1	L4
	Step 3: Insert SIM card 2 and memory card into their slot✓	1 A insert SIM 2 and memory card	
		(3)	
3.1.3	If one SIM card slot is damaged you can still use the other slot✓✓	2O first advantage	MP
		1O second advantage	L4
	If one SIM card has network problems you can use the other SIM card for calls and messages. ✓		
	OR		

	Can be helpful if the other SIM card does not have airtime. ✓✓		(3)	
3.2				
3.2.1	Bar/line scale✓✓	2 A correct scale	(2)	MP L1
3.2.2	Map length = 6,5 cm. accept(6,4 cm – 6,6 cm)✓ 64 mm (64 mm – 66 mm) 2,9 cm : 125 km✓ 6,5 cm : ? Distance = $\dfrac{125 \times 6,5}{2,9}$✓ = 280,1724 km✓	1 A map length 1 A measuring bar 1 MCA multiplying 125 by 5 and dividing by 2,9 1 CA answer (4)	MP L3
3.2.3a	Driving time = 14:00 – 5:45✓ = 8 hours 15 minutes – 1 hour✓ = 7,25 hours✓	1 MA subtracting 1 M subtracting stoppage time 1 CA time in hours (3)	MP L2
3.2.3b	$Speed = \dfrac{805,7}{7,25}$✓ = 111,13 km/h✓	CA from 3.2.3a 1 SF substitution 1 CA answer (2)	MP L2
3.2.4	$Fuel\ needed = \dfrac{805,7 \times 5,6}{100}$✓ = 45,1192l Return trip = 2 × 45,1192l✓ = 90,2384l✓	1 M ratio concept 1 M multiplying by 2 1 CA answer (3)	MP L2
3.2.5	$P(cities) = \dfrac{3}{8}$ ✓✓	1 A numerator 1 A denominator (2)	P L1
			[24]	