



LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA
**DEPARTMENT OF
EDUCATION**

NATIONAL SENIOR CERTIFICATE

GRADE 12

MATHEMATICAL LITERACY P2

SEPTEMBER 2025

MARKS: 150

TIME: 3 hours

This question paper consists of 13 pages and a 21- page SPECIAL ANSWER BOOK.

INSTRUCTIONS AND INFORMATION

Read the following instructions carefully before answering the questions.

1. This question paper consists of FIVE questions.
2. Answer ALL the questions in the SPECIAL ANSWER BOOK provided.
3. You may use an approved calculator (non-programmable and non-graphical), unless stated otherwise.
4. Show ALL calculations clearly.
5. Maps and diagrams are NOT necessarily drawn to scale, unless otherwise stated.
6. Indicate units of measurement, where applicable.
7. Round off ALL final answers appropriately according to the given context, unless stated otherwise.
8. Write neatly and legibly.

QUESTION 1

- 1.1 Tzaneen is a town found in the northern part of Limpopo. Annexure A in the ANSWER BOOK shows the map of part of Tzaneen.

Use ANNEXURE A to answer the questions that follow:

- 1.1.1 Identify the type of map shown above. (2)
- 1.1.2 Martin Dale Seedlings is found at the corner of which two streets? (2)
- 1.1.3 Name the hospital shown on the map. (2)
- 1.1.4 Mention two roads that passes through this part of map. (2)
- 1.1.5 Identify the type of roads in 1.1.4 (2)
- 1.1.6 Measure and write the distance (as the crow flies) in mm from Tzaneen swimming pool to Tzaneen animal clinic. (2)

- 1.2 Different watches displaying times are shown below:



Source: www.pinterest.com

Use the watches above to answer the questions that follow:

1.2.1 Name the time formats used to show time on the watches above. (2)

1.2.2 Write the time on watch A in the format which shows is in the evening, without writing PM. (2)

1.2.3 Clock C has a "03" what does it represent? (2)

1.2.4 Write the time on Clock D in words. (2)

1.3 Joanita bought a cabinet which needed to be assembled as in the picture below.

ANNEXURE B in the ANSWER BOOK shows steps for assembling the cabinet.

Picture of assembled cabinet



www.siyavula.com

Use the information above and match the pictures on Annexure B with the explanations on 1.3.1 to 1.3.5 Write only the letter A to E next to the explanation numbers e.g. 1.1.7 B.

1.3.1 Attach the top of the cabinet, screw it in. (2)

1.3.2 Screw the top support piece into the right side of the cabinet. (2)

1.3.3 Slide the bottom piece into the cabinet, screw it in place. (2)

1.3.4 Attach the wheels to the base of the cabinet. (2)

1.3.5 Screw the cabinet top support piece into the left side panel of the cabinet. (2)

[30]

QUESTION 2

- 2.1 ANNEXURE C in the ANSWER BOOK shows the map of Limpopo Province.

Use Annexure C to answer the questions that follow:

- 2.1.1 Identify the type of scale on the map. (2)
- 2.1.2 Write the scale of this map in the form of 1: ----- (4)
- 2.1.3 Give the general direction of Alldays from Magoebaskloof. (2)
- 2.1.4 Measure the distance from Belabela to Alldays in a straight line and calculate the actual distance in kilometres. (4)
- 2.1.5 Which national road can you use to travel from Mokopane to Musina. (2)
- 2.1.6 Name three provinces which share a boarder with Limpopo (3)
- 2.1.7 Calculate the probability of finding a National Park to a game reserve in Limpopo according to Annexure C as a decimal. (3)
- 2.1.8 Thapelo travelled with his family for 283km from Mokopane to Mapungubwe for Mapungubwe art festival, He left his place at 8:30, rested for 20 minutes along the way. He drove at a speed of 110km/h, he indicated that it will only take him 2h25 minutes including resting time to arrive. Prove with calculations if he is correct.

You may use the formula:

$$\text{Distance} = \text{speed} \times \text{time} \quad (7)$$

- 2.2 A gala dinner was held a week before the Mapungubwe Arts festival for Fund raising towards the event. The hall has a dimension of 20 m by 30m. Annexure D is a layout plan for the hall where the event was held.

Use the information above to answer the questions that follow:

- 2.2.1 Define the word layout plan according to context. (2)
- 2.2.2 Write down the total number of people who attended the gala dinner. If all tables were occupied. (2)
- 2.2.3 Identify a feature inside the men's bathroom which is not the same as the features in the women's bathroom. (2)

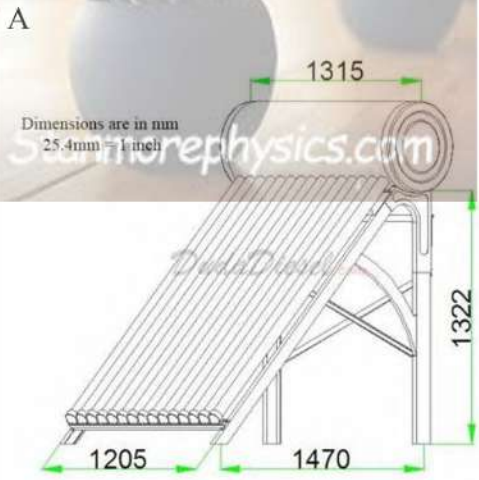
- 2.2.4 Which room share a common door with the dressing room and give a reason (3)
why the rooms have a common door.

[36]



QUESTION 3

- 3.1 Mr. Mohale who stays in Groblersdal is a contractor who installs solar geysers. Below is a picture of a geyser with its dimensions.

PICTURE OF A GEYSER	DIMENSIONS OF THE SOLAR GEYSER
	

www.bing.com

Use the information and the picture above to answer the questions that follow:

- 3.1.1 The volume of the geyser is $0,31246 \text{ m}^3$. Calculate, in m, the diameter of the geyser (round your answer to three decimal places).

You may use the following formula:

$$\text{Volume} = \pi \times \text{radius}^2 \times \text{height}$$

$$\text{Use } \pi = 3,142$$

(7)

- 3.1.2 Calculate the circumference of the geyser in cm.

(3)

You may use the following formula:

$$\text{Circumference} = \pi \times \text{diameter}$$

$$\text{Use } \pi = 3.142$$

- 3.1.3 The posts which hold the geyser form a triangle on opposite sides. Calculate the area of the 2 triangles in mm^2 (4)

You may use the following formula:

$$\text{Area of a triangle} = \frac{1}{2} \text{ base} \times \text{perpendicular height}$$

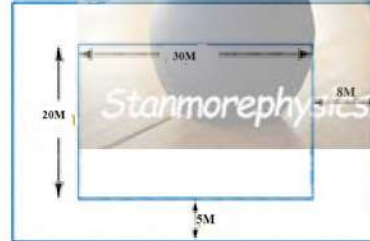
3.2

Mr. Mohale's wants to build a rectangular shaped swimming pool with dimensions 30 m by 20 m with 5 m paving along its length and 8 m along its width. Below is the picture of the swimming pool and its dimensions.

Picture of the swimming pool



Diagram of the pool



Adapted

from: www.pinterest.com

Use the information above together with the picture of the pool to answer the questions that follow:

- 3.2.1 Determine the outside length and outside width which includes the paving area. (4)

- 3.2.2 Calculate the total area which needs to be paved. (5)

You may use the formula:

$$\text{Area} = L \times B$$

- 3.2.3 Mr. Mohale budgeted R145 000 for paving, if the rate for paving is R200 per square metre. Determine if the money will be enough. (3)

- 3.2.4 The depth of the pool is 1,8 m all round calculate how much soil will be dug out to build the swimming pool. (2)

You may use the formula:

$$\text{Volume} = \text{Area} \times H$$

- 3.3. Paving bricks are packed on pallets for easy loading and deliver. The dimensions of a paving brick that Mr. Mohale will use is 200 mm by 100 mm by 60 mm, and the dimensions of a pallet is 120cm by 80cm as shown on the pictures below.



Source: Google pictures

- 3.3.1 Mr. Mohale claims that one pallet can carry a maximum number of 500 bricks if 10 rows are packed. Verify with calculations whether his statement is correct. (7)
- 3.3.2 Determine the height of one packed pallet (in mm) if the thickness of a pallet is 144 mm (2)

[37]

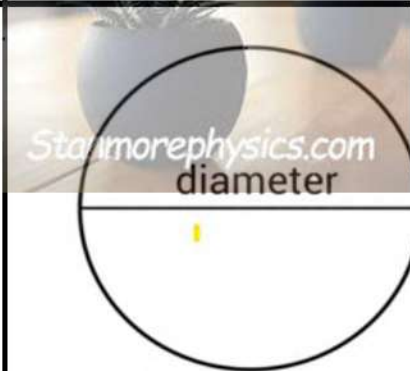
QUESTION 4

- 4.1 The Channel Tunnel, also known as the Chunnel, is a 31,35 mile under sea railway tunnel with diameter of 24,93 feet. It connects England with France beneath the English Channel.

PICTURE OF THE CHANNEL TUNNEL



DRAWING OF A CIRCLE



Source: en.wikipedia.org

NOTE: 1 mile = 1,609 km
1 cm = 0,0328 ft

- 4.1.1 Convert the length of the Channel tunnel to kilometres. (3)
- 4.1.2 Calculate the radius in metres. (5)
- 4.1.3 Calculate the surface area of the tunnel in metre squared. (4)

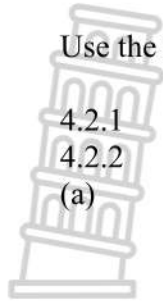
You may use the following formula:

$$\text{Surface Area} = 2 \times \pi \times \text{radius} \times \text{height}$$

Use $\pi = 3.142$

- 4.2.

The Eurostar is an international high-speed rail service in Western Europe connecting Belgium, France, Germany, the Netherlands and the United Kingdom. It can reach a maximum speed of 300 km/h.



Use the information above to answer the questions that follow:

4.2.1 Eurostar is a rail service in which continent. (2)

4.2.2 If the journey from London to Paris is 490 km, how long can a Eurostar take if it is moving at a maximum speed? (Write your answer in hours and minutes). (4)

You may use the formula:

$$D = S \times T$$

(b) Do you think it is practically possible for the train to take the duration on 4.2.1 (a). Give a reason for your answer. (3)

4.2.3(a) If you board the train in London at 10:30 AM and arrive at Paris 1:47 PM (local time), how long is the journey? (4)

Note: The time difference between London and Paris is 1 hour.

4.2.3(b) What does PM stand for? (2)

4.2.4 If 80 % of the seats on the Eurostar are sold, what is the probability (in simplified form) that a randomly chosen seat will be occupied. (3)

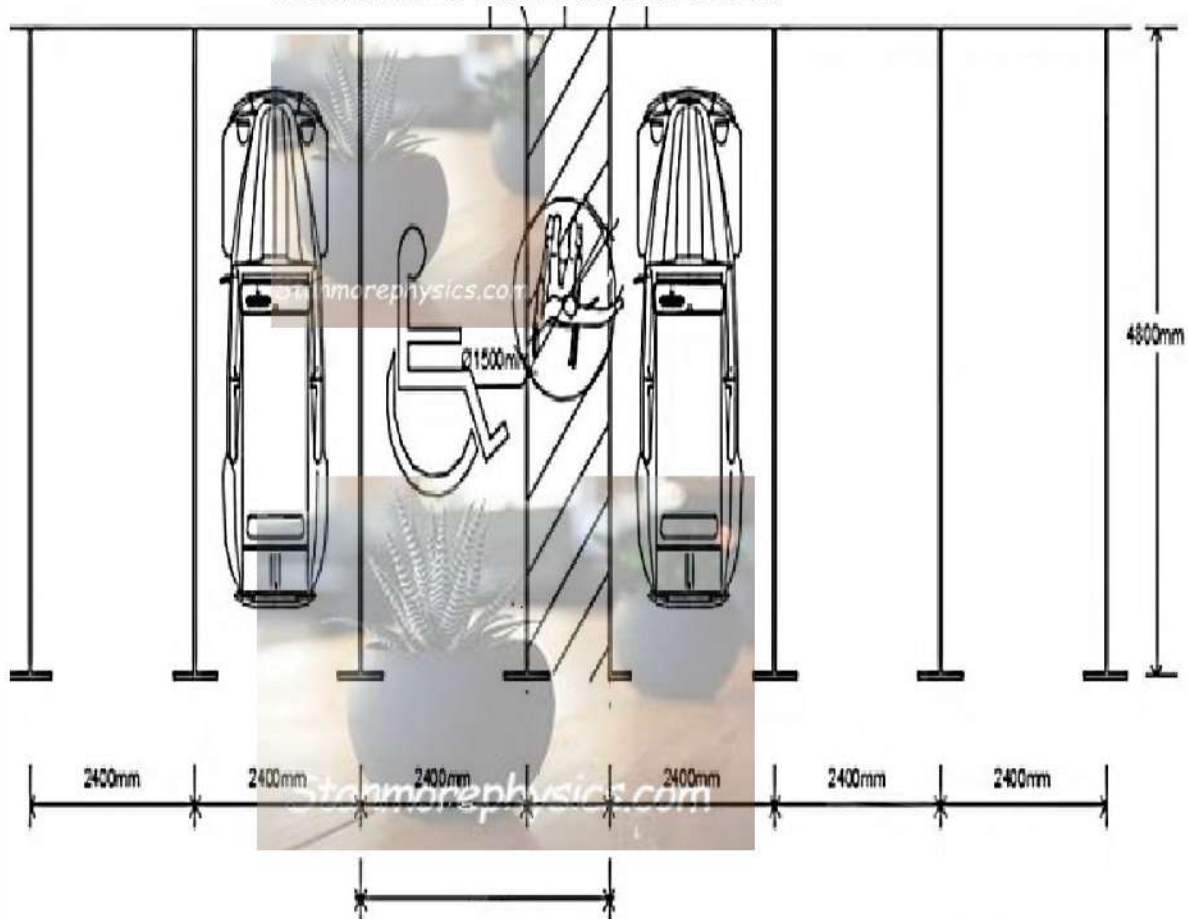
[30]

QUESTION 5

- 5.1. Muhluri an Engineer was hired to design the structure of parking bays in a mall. The diagram below shows the design of the parking bays. In south Africa, the National Building Regulations suggests that 4% of parking bays should be allocated for disabled parking.

The dimensions of a standard parking are 4800 mm by 2400 mm, the width of the disabled parking is 50% more than the width of a standard parking.

PICTURE OF CAR PARKING BAY



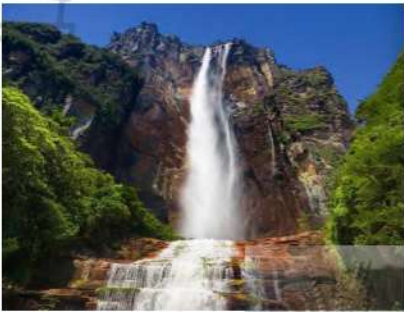
- 5.1.1 How much bigger is width of the disabled parking than the width of the standard parking? (3)
- 5.1.2 One of Muhluri 's employees said that the area of the disabled parking is 50% more than that of standard parking. Prove with calculation if he is correct. (6)

You may use the formula:
 $\text{Area} = L \times B$



- 5.2 Muhluri and his family has planned to go on a trip to Venezuela to see the Angela water fall during the holidays, when his company is closed.

Table 1 List of water falls

picture of the Angela water fall	List of some of the waterfalls		
	waterfall	Location	Height
	1. Angela	Venezuela	979 m
	2. Victoria falls	Zambia/Zimbabwe	961 m
	3. Niagara - falls	Canada	51 m
	4. Tugela waterfall	South Africa	947m
	5. Johannesburg falls	Washington	751 m

Source: www.audleytravel.com

Use the information above and the table below to answer the questions that follow:

- 5.2.1 Identify the waterfall which is shared by two countries. (2)

- 5.2.2 Niagara - falls has an average flow rate of 2 400 cubic metres per second. How much water flows over it in an hour? (3)

You may use the formula:

$$\text{Volume of flow} = \text{flow rate per second} \times \text{time}$$

- 5.2.3 Determine the ratio of the height of Niagara - falls to the height of Angela falls as a unit ratio (correct to one decimal). (3)

TOTAL: [17]
150



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NSC SEPTEMBER 2025 Answer Book

SCHOOL'S NAME							
NAME And SURNAME							
GRADE AND CLASS							
DATE	Stanmorephysics.com		BOOK NUMBER		OF		BOOKS
SUBJECT NAME	MATHEMATICAL LITERACY		PAPER NUMBER	2			

MARKER/NASIENER			MODERATOR'S INITIALS IN RELEVANT BLOCK									
Question	Marks	Marker Initials	Marks	DH	Marks	DM	Marks	PM	Marks	DBEM	Marks	EM
1												
2												
3												
4												
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TOTAL TOTAAL												
			READ NSTRUCTIONS ON NEXT PAGE.									

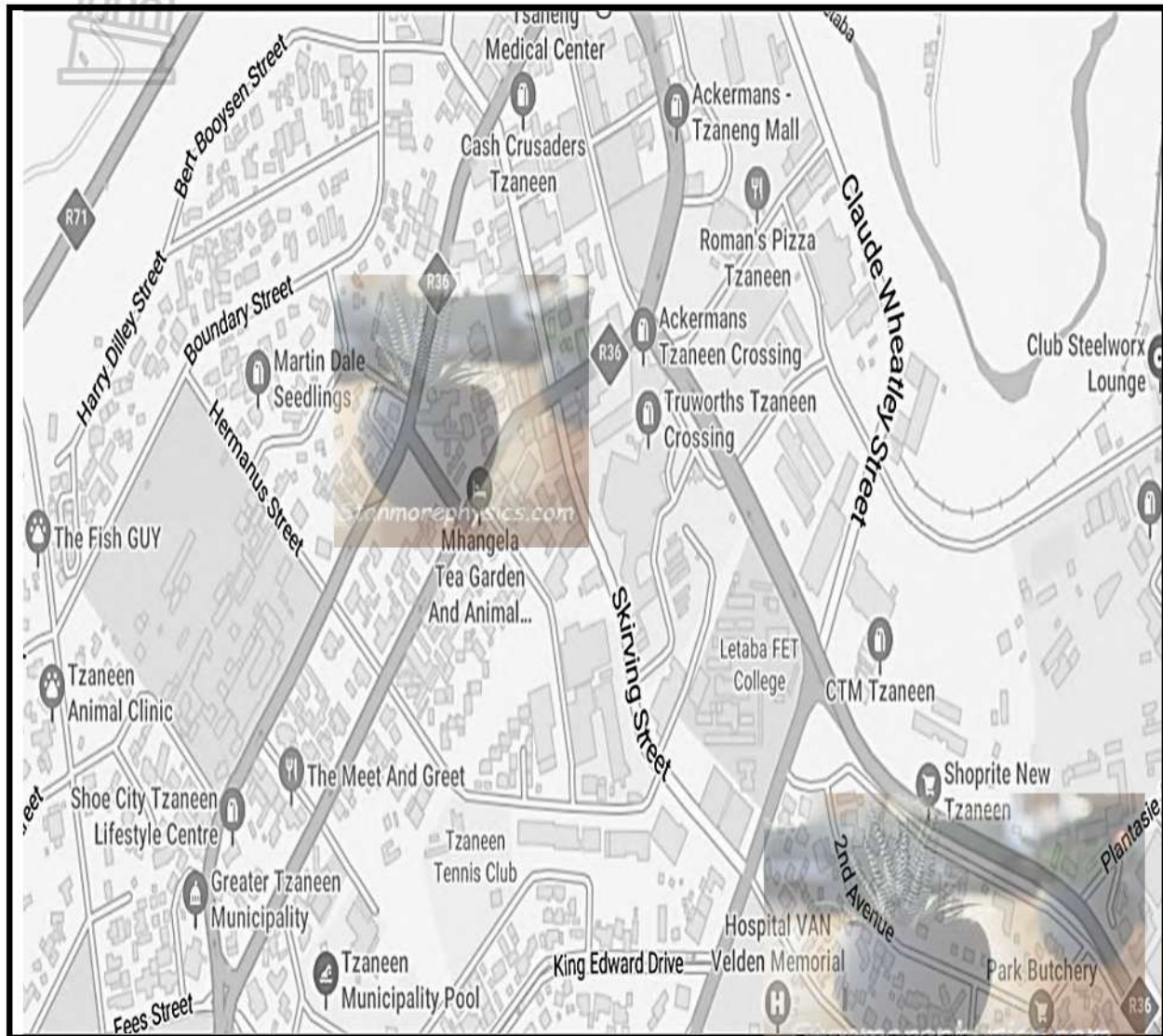
FOLLOW THESE INSTRUCTIONS CAREFULLY.

1. Clearly write your name and surname in the space provided.
2. Answer ALL the questions in the spaces provided.
3. No pages may be torn from this answer book.
4. Answers must be written in black/blue ink as distinctly as possible.
5. Read all the instructions which may be given on the examination paper.
6. Candidates may not retain an answer book or remove it from the examination room.
7. Do not write in the margins.
8. If you require additional space for your answers:
 - 8.1. Use the additional space provided at the end of the answer book.
 - 8.2. When answering a question in additional space, indicate clearly the question number in the column on the left-hand side.
9. Draw a neat line through any work that must not be marked.

QUESTION 1

1.1 ANNEXURE A

Map of Tzaneen

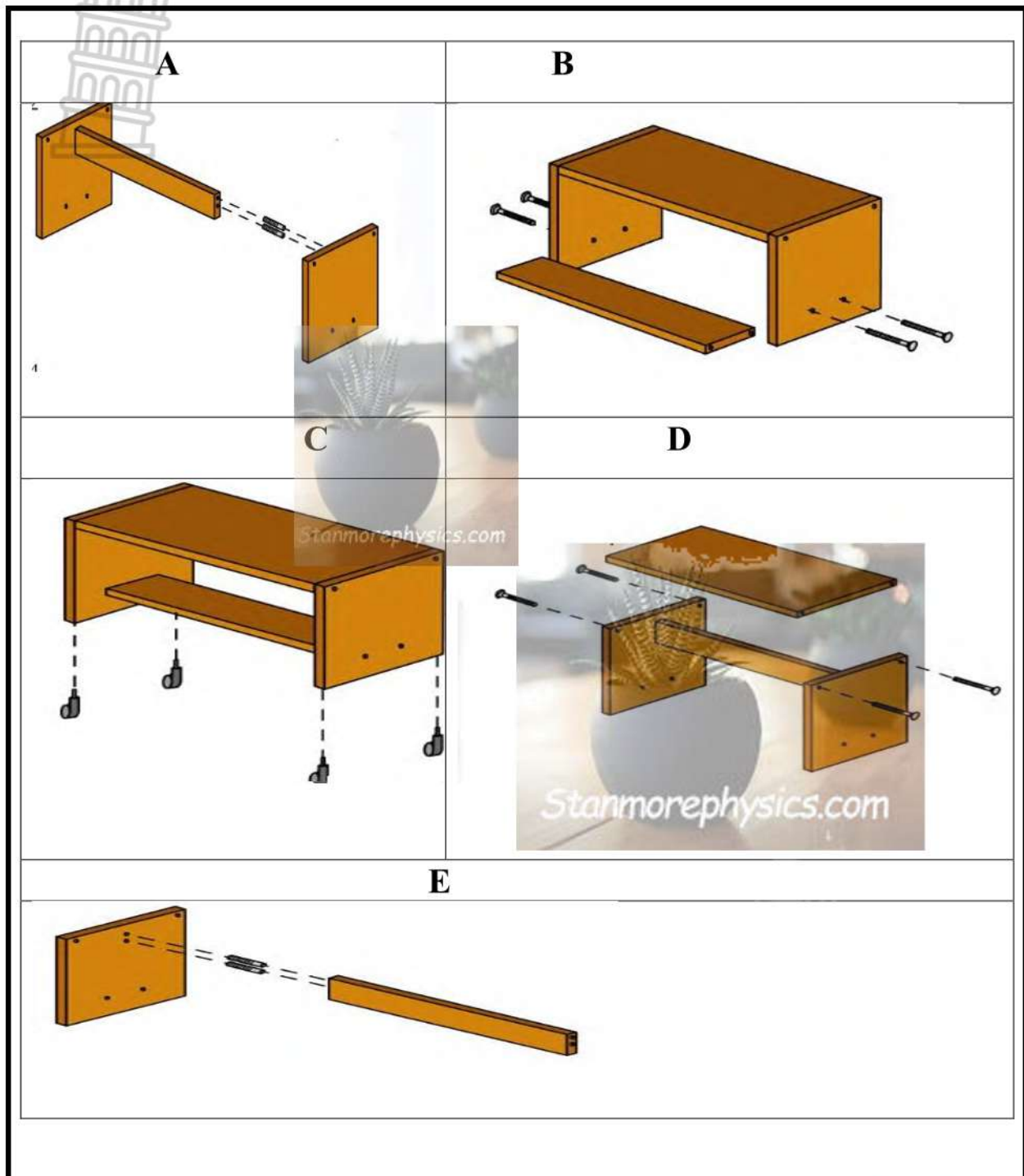


Source: www.googlemaps.com

	Solution	Marks
1.1.1		(2)
1.1.2		(2)
1.1.3		(2)
1.1.4		(2)
1.1.5		(2)
1.1.6		(2)
1.2.1		(2)
1.2.2		(2)
1.2.3		(2)
1.2.4		(2)

1.3 ANNEXURE B

STEPS FOR ASSEMBLING THE CABINET



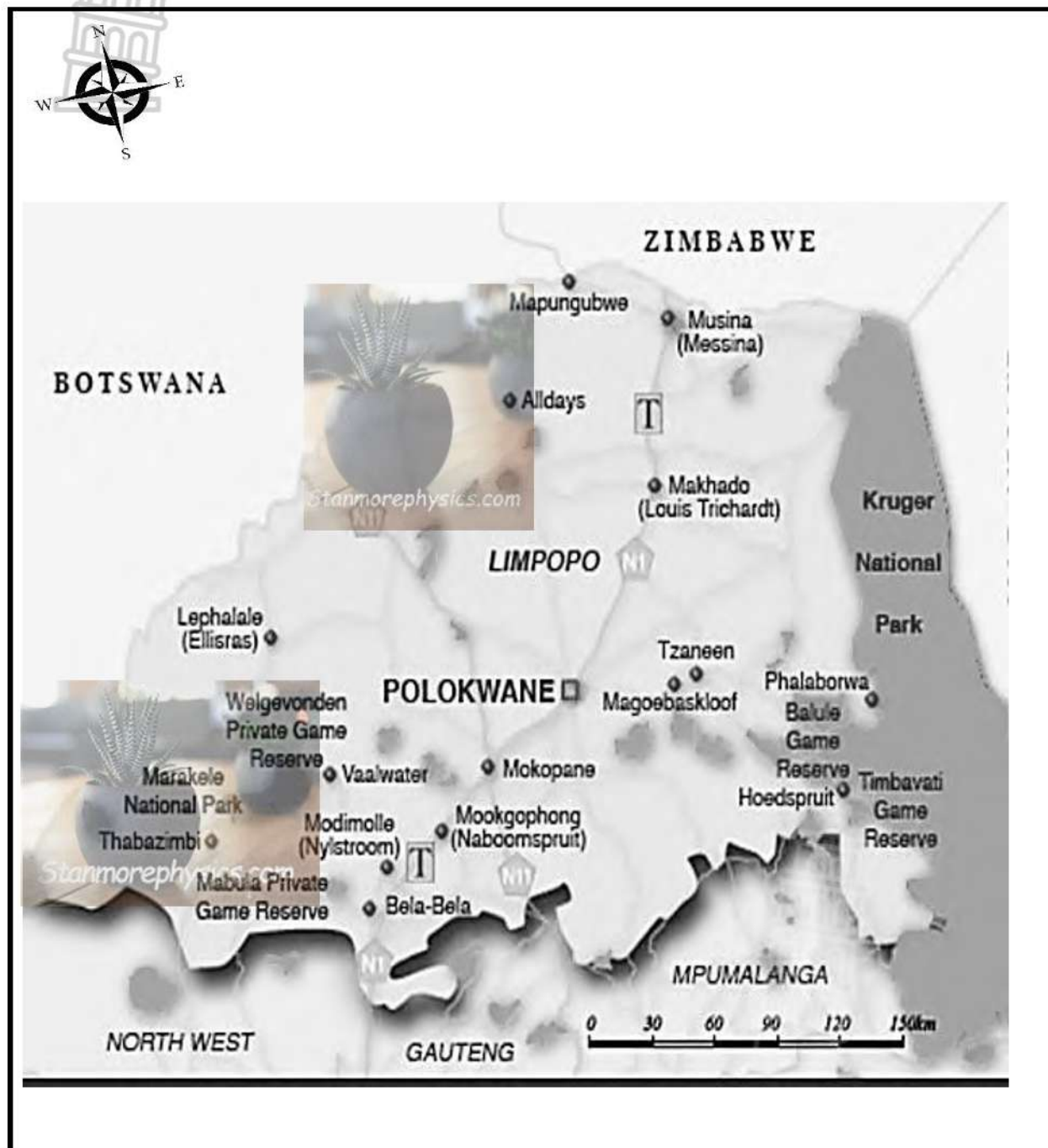
Adapted from www.siyavula.com

	Solution	Marks
1.3.1		(2)
1.3.2		(2)
1.3.3		(2)
1.3.4		(2)
1.3.5		(2)
		[30]

QUESTION 2

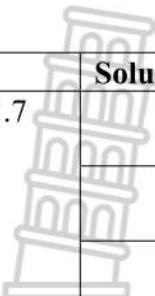
2.1. ANNEXURE C

MAP OF LIMPOPO



Source: www.googlemaps.com

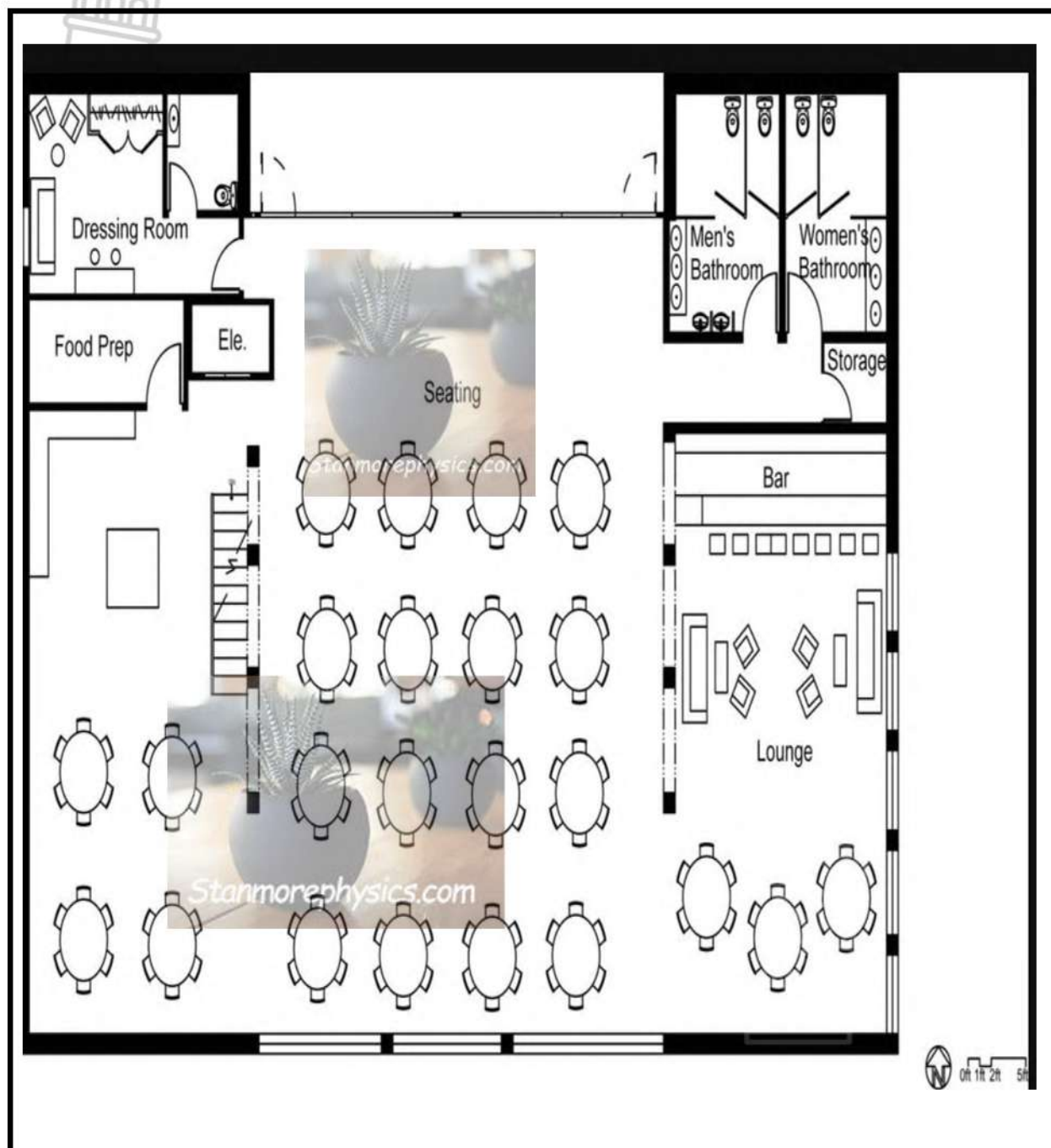
	Solution	Marks
2.1.1		(2)
2.1.2		(4)
2.1.3		(2)
2.1.4		(4)
2.1.5		(2)
2.1.6		(3)

	Solution	Marks
2.1.7		(3)
2.1.8		(7)

ANNEXURE D

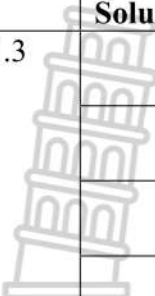
QUESTION 2.2

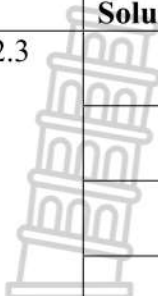
LAYOUT PLAN OF THE HALL



	Solution	Marks
2.2.1		(2)
2.2.2		(2)
2.2.3		(2)
2.2.4		(3)
		[36]

	Solution	Marks
3.1.1		(7)
3.1.2		(3)

	Solution	Marks
3.1.3		(4)
3.2.1		(4)
3.2.2		(5)

	Solution	Marks
3.2.3		(3)
3.2.4		(2)
3.3.1		(7)

	Solutions	Marks
3.3.2		
		(2)
		[37]

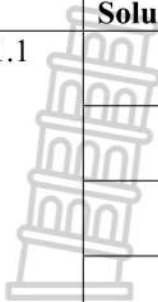


	Solution	Marks
4.1.1		(3)
4.1.2		(5)
4.1.3		(4)

	Solution	Marks
4.2.1		(2)
4.2.2 (a)		(4)
4.2.2 (b)		(3)
4.2.3 (a)		(4)
4.2.3 (b)		(2)

	Solution	Marks
4.2.4		(3)
		[30]



	Solution	Marks
5.1.1		(3)
5.1.2		(6)
5.2.1		(2)

	Solution	Marks
5.2.2		(3)
5.2.3		(3)
		[17]

[illegible]

Additional Space	Marks

TOTAL: 150



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GRADE/GRAAD 12

MATHEMATICAL LITERACY P2
WISKUNDIGE GELETTERHEID V2
SEPTEMBER EXAMINATION 2025
MARKING GUIDELINE / NASIENRIGLY

MARKS/PUNTE: 150

Symbol/Kode	Explanation / Verduideliking
M	Method / Metode
MA	Method with accuracy / Metode met akkuraatheid
CA	Consistent accuracy / Volgehoue akkuraatheid
A	Accuracy / Akkuraatheid
C	Conversion / Herleiding
S	Simplification / Vereenvoudiging
RT	Reading from a table/graph/document/diagram / Lees vanaf table / grafiek / document / diagram
SF	Correct substitution in a formula / Korrekte vervanging in 'n formule
O	Opinion/Explanation / Opinie / Verduideliking
P	Penalty, e.g. for no units, incorrect rounding off, etc. /Penalising, bv. Vir geen eenhede, verkeerde afronding ens.
R	Rounding off / Afronding
NPR	No penalty for rounding / Geen penalising vir korrekte afronding nie
NPU	No penalty for omitting correct unit / Geen penalisinge indien die eenheid uitgelaat is nie, maar wel indien 'n verkeerde eenheid gebruik word
AO	Answer only / Slegs antwoord
MCA	Method with consistent accuracy / Metode met volgehoue akkuraatheid
RCA	Rounding consistent with accuracy / Afronding met volgehoue akkuraatheid

This marking guideline consists of 15 pages / Hierdie nasienriglyne bestaan uit 15 bladsye

NOTE:

- If a candidate answers a question TWICE, only mark the FIRST attempt.
- If a candidate has crossed out (cancelled) an attempt to a question and NOT redone the solution, mark the crossed out (cancelled) version.
- Consistent accuracy (CA) applies in ALL aspects of the marking guidelines; however it stops at the second calculation error.
- If the candidate presents any extra solution when reading from a graph, table, layout plan and map, then penalise for every extra item presented.
- Rounding is an independent mark.
- General principle for marking, if a candidate makes one mistake one mark is deducted.
- A conclusion mark can only be given if relevant calculations precedes it.
- No penalty for rounding (NPR) if the first decimal is correct.

LET WEL:

- As 'n kandidaat 'n vraag TWEE KEER beantwoord, sien slegs die EESRSTE poging na.
- As 'n kandidaat 'n antwoord van 'n vraag doodtrek (kanselleer) en nie oordoen nie, sien die doodgetrekte (gekanselleerde) poging na.
- Volgehoue akkuraatheid (CA) word in ALLE aspekte van die nasiernriglyne toegepas; di thou egter op by die tweede berekeningsfout.
- Wanneer 'n kandidaat aflesings vanaf 'n grafiek, tabel, uitlegplan en kaart aanbied en ekstra antwoorde gee, penaliseer vir elke ekstra item.
- Afronding tel as 'n afsonderlike punt.
- Die algemene beginsel van nasien is; as 'n leerder een fout maak, word een punt afgetrek
- 'n Gevolgtrekkingspunt kan slegs toegeken word indien relevante berekeninge dit voorafgaan.
- Geen penaliseering vir afronding (NPR) nie as die eerste desimaal korrek is.

QUESTION / VRAAG 1 [30 MARKS/30 PUNTE] Answer only AO- full marks / Slegs antwoorde (AO) – vol punte			
Q / V	Solution / Oplossing	Explanation / Verduideliking	T & L
1.1			
1.1.1	Street map / Straat kaart ✓✓A	2 A correct answer (2)	MP L1
1.1.2	Boundary street and Hermanus street / Boundary straat en Hermanus straat ✓✓A	2A for correct streets (2)	MP L1
1.1.3	Hospital van Velden Memorial / Hospitaal van Velden Memorial ✓✓A	2A correct name (2)	MP L1
1.1.4	✓RT ✓RT R36 and / en R71	1 RT for R36 1RT for R71 (2)	MP L1

1.1.5	Regional / Provincial roads / Streek / Provinsiale paaie ✓✓A	2A correct answer (2)	MP L1
1.1.6.	58 mm ✓✓A	2A correct distance Accept 57 mm - 59 mm (2)	MP L1
1.2			
1.2.1	✓A ✓A 12 - hour format and 24 - hour format 12 – uur formaat en 24 – uur formaat OR ✓A ✓A Analogue and Digital Analogies en Digitaal	1A correct format 1A second correct format OR 1A correct format 1A second correct format (2)	M L1
1.2.2	20:59 ✓✓A	2 A correct time Accept 21:00 (2)	M L1
1.2.3	Seconds / Sekondes ✓✓A	2A correct answer (2)	M L1
1.2.4	Ten minutes past ten / Tien minute oor tien ✓✓A	2A correct answer Accept: ten past ten (2)	M L1
1.3			
1.3.1	D ✓✓A	2A correct answer (2)	MP L1
1.3.2	A ✓✓A	2A correct answer (2)	MP L1
1.3.3	B ✓✓A	2A correct answer (2)	MP L1
1.3.4	C ✓✓A (NB: If all learners in class did not write, mark out of 28 and scale to 30 marks)	2A correct answer (2)	MP L1
1.3.5	E ✓✓A	2A correct answer (2)	MP L1
		[30]	

QUESTION / VRAAG 2 (36 MARKS / 36 PUNTE)			
Q / V	Solution / Oplossing	Explanation / Verduideliking	T & L
2.1			
2.1.1	Bar scale / staafskaal. ✓✓A	2A correct answer (2)	MP L1
2.1.2	50 mm ✓A $50 \text{ mm} = 150 \text{ km} \times 1\,000\,000$ ✓C $50 \text{ mm} = 150\,000\,000 \text{ mm} (\div 50)$ ✓M 1: 3 000 000 ✓CA OR / OF 5 cm ✓A $5 \text{ cm} = 150 \text{ km} \times 100\,000$ ✓C $5 \text{ cm} = 15\,000\,000 \text{ cm} (\div 5)$ ✓M 1: 3 000 000 ✓CA	1A measured value 1C correct conversion 1M dividing by 50 1CA simplification Accept: 49 – 51 mm OR 1A measured value 1C correct conversion 1M dividing by 5 1CA simplification Accept: 4,9 – 5,1 cm NPR (4)	MP L2
2.1.3	North West / Noord - Wes ✓✓A	2A correct direction (2)	MP L2

2.1.4	8,8 cm ✓A Distance / Afstand = $8,8 \text{ cm} \times 3\,000\,000$ ✓M = $26\,400\,000 \text{ cm} \div 100\,000$ ✓C = 264 km ✓CA OR / OF 88 mm ✓A Distance / Afstand = $88 \text{ mm} \times 3\,000\,000$ ✓M = $264\,000\,000 \text{ mm} \div 1\,000\,000$ ✓C = 264 km ✓CA OR/OF 8,8cm ✓A Distance / Afstand = $\frac{8,8 \text{ cm} \times 150 \text{ km}}{5 \text{ cm}}$ ✓M✓A = 264 km ✓CA OR/OF 88 mm ✓A Distance / Afstand = $\frac{88 \text{ mm} \times 150 \text{ km}}{50 \text{ mm}}$ ✓M✓A = 264 km ✓CA	CA from 2.1.2 1A measured distance 1M multiplying by scale 1C correct conversion 1CA correct answer Accept 8,7cm-8,9cm OR 1A measured distance 1M multiplying by scale 1C correct conversion 1CA correct answer Accept 87mm – 89mm (4)	MP L3
2.1.5	N1 ✓✓A	2A correct answer (2)	MP L1
2.1.6	✓ ✓ ✓RT North West, Gauteng, Mpumalanga Noord Wes, Gauteng, Mpumalanga	3 RT correct provinces (3)	MP L1

2.1.7	$P = \frac{2}{6} \sqrt{A}$ $= 0,33 \sqrt{CA}$	1A numerator 1A denominator 1CA answer (3)	MP L2
2.1.8	$T = \frac{D}{S} \sqrt{RT}$ $= \frac{283 \text{ km}}{110 \text{ km/h}} \sqrt{SF}$ $= 2,572727273 \text{ h} \sqrt{CA}$ $= 2\text{h} + 0,572727273 \times 60 \sqrt{C}$ $= 2\text{h } 34,37\text{min} + 20 \text{ min} \sqrt{MCA}$ $= 2\text{h } 54,37 \text{ min} \sqrt{CA}$ $\therefore \text{Not correct / Verkeerd} \sqrt{O}$	1A changing the subject of the formula 1 SF substitution 1CA simplification 1C multiplying by 60 1 MCA adding 20 min 1CA correct answer 1O conclusion (7)	MP L4
2.2			
2.2.1	Layout Plan shows the structure of the hall and the arrangement of tables and chairs inside the hall. / Uitlegplan toon die struktuur van die saal en die rangskikking van tafels en stoele binne die saal. $\checkmark\checkmark A$	2A Explanation (2)	MP L2
2.2.2	Number of people / Aantal mense $= 23 \times 6 \checkmark M$ $= 138 \text{ people / mense} \checkmark A$	1MA Multiplying by 6 1A correct number AO (2)	MP L1
2.2.3	Urinals / Men stand up toilets $\checkmark\checkmark A$ Urinale / Mans staantoilette	2A correct answer Accept: any suitable name for urinals (2)	MP L1
2.2.4	$\checkmark A$ Bath room, ideal for quick changes or freshening up./ Badkamer, ideaal vir vinnige veranderinge van kleredrag of verfrissing $\checkmark\checkmark O$	1A for correct name 2O Justification (3)	MP L4
		[36]	

QUESTION / VRAAG 3 [37 MARKS / 37 PUNTE]			
Q / V	Solution / Oplossing	Explanation / Verduideliking	T & L
3.1			
3.1.1	Volume = $\pi \times radius^2 \times height/hogte$ $0,31246 m^3 = 3,142 \times radius^2 \times 1,315m$ ✓SF $radius^2 = \frac{0,31246 m^3}{3,142 \times 1,315m}$ ✓A $radius = \sqrt[2]{0,07562449628 m^2}$ ✓MA $radius = 0,2749990841 m$ ✓CA Diameter / deursnee = $0,2749990841 m \times 2$ ✓MCA Diameter / deursnee = $0,549998 m$ ✓CA $= 0,550 m$ ✓R OR / OF Volume = $\pi \times radius^2 \times height/hogte$ $radius^2 = \frac{volume}{\pi \times height/hogte}$ ✓A $radius^2 = \frac{0,31246 m^3}{3,142 \times 1,315 m}$ ✓SF $radius = \sqrt[2]{\frac{0,31246 m^3}{3,142 \times 1,315 m}}$ ✓MA $radius = 0,2749990841 m$ ✓CA Diameter / deursnee = $0,2749990841 m \times 2$ ✓MCA Diameter / deursnee = $0,549998 m$ ✓CA $= 0,550 m$ ✓R	1SF substitution 1A changing the subject of the formula 1MA square root 1CA for correct radius 1MCA multiplying by 2 1CA correct answer 1R rounding 1A changing the subject of the formula 1 SF substitution 1 MA square root 1CA simplification 1MCA multiplying by 2 1CA correct answer 1R rounding (7)	M L3

3.1.2	 Circumference / Omtrek = $\pi \times \text{diameter} / \text{deursnee}$ $\checkmark C$ $= 3.142 \times (0.550 \text{ m} \times 100) \quad \checkmark SF$ $= 3.142 \times 55 \text{ cm}$ $= 172,81 \text{ cm} \quad \checkmark CA$	CA from 3.1.1 1C conversion 1SF substitution 1CA simplification (3)	M L2
3.1.3	Area of a triangle = $\frac{1}{2} \text{ base} \times \text{perpendicular height}$ Oppervlakte van 'n driehoek = $\frac{1}{2} \text{ basis} \times \text{loodregte hoogte}$ $= \frac{1}{2} \times 1470 \text{ mm} \times 1322 \text{ mm} \quad \checkmark SF$ $= 971\,670 \text{ mm}^2 \quad \checkmark CA$ $= 971\,670 \text{ mm}^2 \times 2 \quad \checkmark M$ $= 1\,943\,340 \text{ mm}^2 \quad \checkmark CA$  Stanmorephysics.com	1SF substitution 1CA simplification 1M multiplying by 2 1CA correct answer (4)	M L3
3.2			
3.2.1	Outside Length / Buitenste lengte $= 30 \text{ m} + 8 \text{ m} + 8 \text{ m} \quad \checkmark M$ $= 46 \text{ m} \quad \checkmark A$ Outside width / Buitenste breedte $= 20 \text{ m} + 5 \text{ m} + 5 \text{ m} \quad \checkmark M$ $= 30 \text{ m} \quad \checkmark A$	1M adding 1 A correct length 1M adding 1A correct width (4)	M L2

3.2.2	Area of the pool and paving = $L \times B$ Oppervlakte van die swembad and plavleisel = $L \times B$ $= 46 \text{ m} \times 30 \text{ m} \quad \checkmark \text{SF}$ $= 1380 \text{ m}^2 \quad \checkmark \text{CA}$ Area of the pool = $L \times B$ Oppervlakte van die swembad = $L \times B$ $= 30 \text{ m} \times 20 \text{ m}$ $= 600 \text{ m}^2 \quad \checkmark \text{CA}$ Area to be paved/ oppervlakte wat geplavlei moet word $= 1380 \text{ m}^2 - 600 \text{ m}^2 \quad \checkmark \text{MCA}$ $= 780 \text{ m}^2 \quad \checkmark \text{CA}$ OR/ OF Area to be paved/ oppervlakte wat geplavlei moet word $\checkmark \text{M} \quad \checkmark \text{M}$ $= 2(46 \text{ m} \times 5 \text{ m}) + 2(20 \text{ m} \times 8 \text{ m}) \quad \checkmark \text{M}$ $= 2 \times 230 \text{ m}^2 + 2 \times 160 \text{ m}^2 \quad \checkmark \text{S}$ $= 460 \text{ m}^2 + 320 \text{ m}^2$ $= 780 \text{ m}^2 \quad \checkmark \text{CA}$	CA from 3.2.1 1 SF substitution 1CA simplification 1CA simplification 1MCA subtraction 1CA correct answer (5)	M L3
3.2.3	Cost / Koste = $780 \text{ m}^2 \times \text{R}200 \quad \checkmark \text{M}$ $= \text{R}156\,000 \quad \checkmark \text{CA}$ $\therefore$ It will not be enough / Dit sal nie genoeg wees nie $\checkmark \text{O}$	CA From 3.2.2 1M multiplying by R200 1CA correct amount 1O conclusion (3)	M/F L4

3.2.4	Volume = Area $\times$ height Volume = oppervlakte $\times$ hoogte $= 600 \text{ m}^2 \times 1,8 \text{ m} \checkmark \text{SF}$ $= 1080 \text{ m}^3 \checkmark \text{CA}$	CA from 3.2.2 SF substitution CA simplification (2)	M L2
3.3			
3.3.1	Length of pallet in mm / Lengte van palette in mm $= 120 \text{ cm} \times 10$ $= 1\,200 \text{ mm} \checkmark \text{C}$ Width of pallet in mm / Breedte van die palette in mm $= 80 \text{ cm} \times 10$ $= 800 \text{ mm} \checkmark \text{MCA}$ Number of paving bricks packed across the length / aantal plaveisel bakstene teen die lengte $= \frac{1200 \text{ mm}}{200 \text{ mm}} \checkmark \text{CA}$ $= 6 \text{ paving bricks / plaveisel bakstene} \checkmark \text{CA}$ Number of paving bricks packed across the width / Aantal plaveisel bakstene teen die breedte $= \frac{800 \text{ mm}}{100 \text{ mm}}$ $= 8 \text{ paving bricks} \checkmark \text{CA}$ Total number of paving bricks packed / Aantal gepakte plaveisel bakstene $= 6 \times 8 \times 10 \checkmark \text{M}$ $= 480 \text{ bricks / bakstene} \checkmark \text{CA}$ The statement is not correct / Die stelling is verkeerd $\checkmark \text{O}$	1C Converting length and width to mm 1MCA Dividing length by length 1CA Simplification 1CA Simplification 1M multiplying correct values 1CA Number of paving bricks 1O Conclusion	M L4

OR / OF Length of pallet in mm / Lengte van die pallet in mm $= 120\text{cm} \times 10$ $= 1\,200\text{mm} \quad \checkmark\text{C}$ Width of pallet in mm / Breedte van die palet in mm $= 80\text{cm} \times 10$ $= 800\text{mm}$ Number of paving bricks packed across the length / Aantal gepakte plaveisel bakstene teen die lengte $= \frac{1200\text{mm}}{100\text{mm}} \quad \checkmark\text{MCA}$ $= 12 \text{ paving bricks / plaveisel bakstene} \quad \checkmark\text{CA}$ Number of paving bricks packed across the width / aantal van gepakte bakstene teen die breedte $= \frac{800\text{mm}}{200\text{mm}}$ $= 4 \text{ paving bricks / plaveisel bakstene} \quad \checkmark\text{CA}$ Total number of paving bricks packed/ Aantal gepakte plaveisel bakstene = $12 \times 4 \times 10 \quad \checkmark\text{M}$ $= 480 \text{ bricks /bakstene} \quad \checkmark\text{CA}$ The statement is not correct / Die stelling is verkeerd $\checkmark\text{O}$	OR 1C Converting length and width to mm 1MCA Dividing length by length 1CA Simplification 1CA Simplification 1M multiplying correct values 1CA Number of paving bricks 1O Conclusion	
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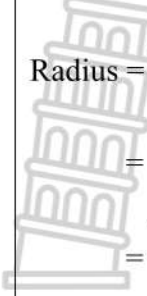
OR / OF Length of paving brick in cm / Lengte van plaveisel bakstene in cm $= 200\text{mm} \div 10$ $= 20\text{cm} \quad \checkmark\text{C}$ Width of pallet in cm / Breedte van die palet in cm $= 100\text{mm} \div 10$ $= 10\text{cm}$ Number of paving bricks packed across the length / Aantal gepakte plaveisel bakstene teen die lengte $= \frac{120\text{cm}}{20\text{cm}} \quad \checkmark\text{MCA}$ $= 6 \text{ paving bricks / plaveisel bakstene} \quad \checkmark\text{CA}$ Number of paving bricks packed across the width / Aantal gepakte plaveisel bakstene teen die breedte $= \frac{80\text{cm}}{10\text{cm}}$ $= 8 \text{ paving bricks / plaveisel bakstene} \quad \checkmark \text{CA}$ Total number of paving bricks packed / Aantal gepakte plaveisel bakstene $= 6 \times 8 \times 10 \quad \checkmark\text{M}$ $= 480 \text{ bricks / bakstene} \quad \checkmark\text{CA}$ The statement is not correct / Die stelling is verkeerd $\checkmark$ O	OR 1C Converting length and width to cm 1MCA Dividing length by length 1CA Simplification 1CA Simplification 1M multiplying correct values 1CA Number of paving bricks 1O Conclusion	
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OR / OF Length of paving brick in cm / Lengte van die plaveisel bakstene in cm $= 200\text{mm} \div 10$ $= 20\text{cm} \quad \checkmark C$ Width of pallet in cm / Breedte van plaveisel bakstene in cm $= 100\text{mm} \div 10$ $= 10\text{cm} \quad \checkmark MCA$ Number of paving bricks packed across the length / Aantal gepakte plaveisel bakstene teen die lengte $= \frac{120\text{cm}}{10\text{cm}}$ $= 12 \text{ paving bricks / plavei bakstene} \quad \checkmark CA$ Number of paving bricks packed across the width / Aantal gepakte plaveisel bakstene teen die breedte $= \frac{80\text{cm}}{20\text{cm}}$ $= 4 \text{ paving bricks/ plaveisel bakstene} \quad \checkmark CA$ Total number of paving bricks packed / Aantal gepakte plaveisel bakstene $= 12 \times 4 \times 10 \quad \checkmark M$ $= 480 \text{ bricks/bakstene} \quad \checkmark CA$ The statement is not correct./ Die stelling is verkeerd $\checkmark O$	OR 1C Converting length and width to cm 1MCA Dividing length by length 1CA Simplification 1CA Simplification 1M multiplying correct values 1CA Number of paving bricks 1O Conclusion (7)
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3.3.2	Height of the packed pallet / Hoogte van die gepakte palet $= 60\text{mm} \times 10 \text{ rows / rye} + 144\text{mm} \quad \checkmark\text{M}$ $= 744 \text{ mm} \quad \checkmark\text{CA}$	1M multiplying by 10 and adding 144 1CA Simplification (2)	M L2
		[37]	

QUESTION/VRAAG 4 [30 MARKS/30 PUNTE]

Q/V	Solution / Oplossing	Explanation / Verduideliking	T & L
4.1.1	$\checkmark\text{RT}$ Length / Lengte = $31,35\text{miles} \times 1,609 \quad \checkmark\text{C}$ $= 50,44 \text{ km} \quad \checkmark\text{A}$	1RT reading 31.35 1C correct conversion 1A correct answer (3)	M L 2
4.1.2	$\text{Radius} = \frac{24,93 \text{ feet}}{2} \quad \checkmark\text{MA}$ $= 12,465 \text{ feet} \quad \checkmark\text{A}$ $= \frac{12,465 \text{ feet}}{0,0328}$ $= 380,0304878 \text{ cm} \quad \checkmark\text{C}$ $= \frac{380,0304878 \text{ cm}}{100} \quad \checkmark\text{C}$ $= 3,8003 \dots \text{m}$ $= 3.8 \text{ m} \quad \checkmark\text{CA}$	1MA concept of radius 1A simplification 1C conversion to centimetre 1C conversion to metres 1CA correct answer NPU (5)	M L3

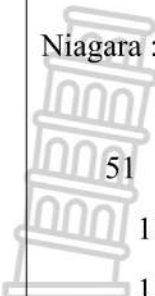
	OR/OF  $\text{Radius} = \frac{24,93 \text{ feet}}{0,0328} \checkmark C$ $= 760.06097561 \checkmark A$ $= \frac{760,06097561 \text{ cm}}{2}$ $= 380,0304878 \text{ cm} \checkmark S$ $= \frac{380,0304878 \text{ cm}}{100} \checkmark C$ $= 3,8003... \text{ m}$ $= 3.8 \text{ m} \checkmark CA$ 		
4.1.3	$L = 50,44 \text{ km} \times 1000 \checkmark M$ $= 50\,440 \text{ m} \checkmark A$ $SA = 2 \times \pi \times \text{radius} \times \text{height/hoopte}$ $= 2 \times 3,142 \times 3,8 \text{ m} \times 50\,440 \text{ m} \checkmark SF$ $= 1\,204\,466,848 \text{ m}^2 \checkmark CA$	CA from 4.1.1 and 4.1.2 1M multiplying by 1 000 1A correct conversion 1 SF substitution 1CA simplification (4)	M L3
4.2			
4.2.1	Europe / Europa $\checkmark\checkmark A$	2A correct continent (2)	MP L1
4.2.2 (a)	$D = s \times t$ $A \checkmark$ $\text{Time/tyd} = \frac{490 \text{ km}}{300 \text{ km/h}} \checkmark SF$ $= 1,63 \text{ hrs / ure} \checkmark S$ $= 1 \text{ hr } 38 \text{ min} \checkmark C$	1A changing the subject 1SF substitution 1S simplification 1C conversion of time (4)	M L2

4.2.2 (b)	✓ A No, real-world factors like speed restrictions and stops may extend the time. / Nee, werklike faktore soos spoedbeperkings en stilhouplekke kan die tyd verleng ✓✓ O	1A correct answer 2O reasoning (3)	M/F L4
4.2.3 (a)	London time / tyd : 1:47 – 1hour ✓MA = 12:47 ✓A Time taken / tyd geneem = 12:47 – 10:30 ✓MCA = 2 hours 17 minutes ✓CA OR/OF Paris time / Parys tyd : 10:30 + 1 hour ✓MA = 11:30 ✓A Time taken/ tyd geneem = 1:47 – 11:30 ✓ MCA = 2 hours 17 minutes ✓CA	1MA subtracting 1 hour 1A difference 1MCA subtracting 10:30 1CA answer OR 1MA adding 1 hour 1A correct answer 1MCA for subtraction from 1:47 1CA correct answer (4)	M L3
4.2.3 (b)	Post meridiem / After midday/Afternoon / Middag ✓✓A	2A Explanation (2)	M L2
4.2.4	P (occupied seat/ sitplekke beset) $= \frac{80}{100}$ ✓✓A $= \frac{4}{5}$ OR 0,8 ✓CA	1A numerator 1A Denominator 1 CA correct answer (3)	P L2
		[30]	

QUESTION/VRAAG 5 [17 MARKS/17 PUNTE]

Q/V	Solution /Oplossing	Explanation / Verduidelikings	T&L
5.1			
5.1.1	Disabled parking / Parkeerplek vir gestremdes $= 2\,400\text{ mm} \times \frac{150}{100} \checkmark M$ $= 3\,600\text{ mm} \checkmark A$ $= 3\,600\text{ mm} - 2\,400\text{ mm}$ $= 1\,200\text{ mm} \checkmark CA$	1M calculating % 1A Answer CA difference (3)	M L2
5.1.2	Area of disabled parking = $L \times B$ Oppervlakte van die parkeerplekke vir gestremdes = $L \times B$ $= 3\,600\text{ mm} \times 4\,800\text{ mm} \checkmark SF$ $= 17\,280\,000\text{ mm}^2 \checkmark CA$ Area of standard parking = $L \times B$ Oppervlakte van standaard parkeerplekke $= 2\,400\text{ mm} \times 4\,800\text{ mm}$ $= 11\,520\,000\text{ mm}^2 \checkmark CA$ Difference / Verskil $= 17\,280\,000\text{ mm}^2 - 11\,520\,000\text{ mm}^2 \checkmark M$ $= 5\,760\,000\text{ mm}^2 \checkmark CA$ $\therefore$ Correct / Korrekte $\checkmark O$	MCA from 5.1.1 1SF Correct Substitution 1CA Simplification 1CA Simplification 1 M difference 1CA correct answer 1 O conclusion	M L4

	OR/OF Area of disabled parking = $L \times B$ Oppervlakte van parkeerplekke vir gestremdes = $L \times B$ $= 3\,600\text{ mm} \times 4\,800\text{ mm} \checkmark \text{SF}$ $= 17\,280\,000\text{ mm}^2 \checkmark \text{CA}$ Area of standard parking / oppervlakte van standaard parkeerplek $= L \times B$ $= 2\,400\text{ mm} \times 4\,800\text{ mm}$ $= 11\,520\,000\text{ mm}^2 \checkmark \text{CA}$ 50 % area = $\frac{17\,280\,000\text{ mm}^2}{11\,520\,000\text{ mm}^2} \checkmark \text{M}$ $= 1,5 \checkmark \text{CA}$ $\therefore$ Correct / Korrekte $\checkmark \text{O}$	OR 1SF Correct Substitution 1CA Simplification 1CA Simplification 1M dividing disabled parking by standard parking 1CA correct answer 1O conclusion (6)	
5.2.1	Victoria falls / Victoria valle $\checkmark \checkmark$ RT	2 RT correct name (2)	MP L1
5.2.2.	Volume of flow = flow rate per second $\times$ time Volume van vloeï = vloeitempo per sekonde $\times$ tyd $\checkmark \text{C}$ $= 2\,400\text{ m}^3 \times (60 \times 60) \checkmark \text{SF}$ $= 8\,640\,000\text{ m}^3 \checkmark \text{CA}$ OR/OF Volume of flow = flow rate per second $\times$ time Volume van vloeï = vloeitempo per sekonde $\times$ tyd $\checkmark \text{C}$ $= 2\,400\text{ m}^3 \times 3\,600 \checkmark \text{SF}$ $= 8\,640\,000\text{ m}^3 \checkmark \text{CA}$	1SF Substituting correct values 1C Conversion 1CA Simplification (3) 1SF Substituting correct values 1C Conversion 1CA Simplification	M L3

5.2.3	 Niagara : Angela ✓ RT 51 : 979 ✓ A 1 : 19,196078.... 1 : 19,2 ✓ CA	1 RT both values 1 A correct order 1 CA simplification (3)	MP L2
		[17]	
		TOTAL/TOTAAL : 150	

