



SUBJECT : MATHEMATICAL LIT

**PAPER : PAPER 2 TRIAL QUESTION PAPER &
MEMO**

YEAR : 2024

GRADE : 12

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education

Department of
Education
FREE STATE PROVINCE

PREPARATORY EXAMINATION

GRADE 12

MATHEMATICAL LITERACY P2

SEPTEMBER 2024

MARKS: 150

TIME: 3 HOURS

This question paper consists of 14 pages and an addendum with 5 annexures.

INSTRUCTIONS AND INFORMATION

1. This question paper consists of FIVE questions. Answer ALL the questions.
2. Use the ANNEXURES in the ADDENDUM to answer the following questions:
 - ANNEXURE A for QUESTION 1.1
 - ANNEXURE B for QUESTION 1.2
 - ANNEXURE C for QUESTION 2.1
 - ANNEXURE D for QUESTION 4.1
 - ANNEXURE E for QUESTION 5.1
3. Number the answers 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 calculations clearly.
7. Round off ALL final answers appropriately according to the given context unless stated otherwise.
8. Indicate units of measurement, where applicable.
9. Diagrams are NOT necessarily drawn to scale unless stated otherwise.
10. Write neatly and legibly.

QUESTION 1

- 1.1 Soccer City Stadium, also known as FNB Stadium, is one of the stadiums in South Africa used to host big soccer games.

ANNEXURE A shows the seating layout of the Soccer City Stadium in Johannesburg.

Use ANNEXURE A to answer the questions that follow.

- 1.1.1 State the view represented by the seating layout plan of the stadium. (2)
- 1.1.2 The capacity of the stadium is 88 000 spectators. Explain the concept *capacity* using the context given. (2)
- 1.1.3 Siba wanted to enter the stadium using entrance number 12. Write down the name of the road that passes next to that entrance. (2)
- 1.1.4 Write down the number of ticket-clearing points and entrances separately into the stadium. (2)
- 1.1.5 The organisers sold 85% of the tickets for a match played in the stadium. Calculate the number of unoccupied seats during the match in the stadium. (2)

- 1.2 The Central University of Technology wants to replace the old student desks in their student accommodation centres with new ones.

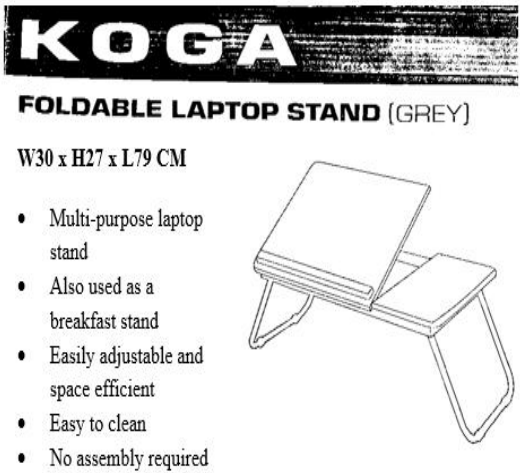
ANNEXURE B shows the item list that comes in the box of a student desk.

Use ANNEXURE B to answer the questions that follow.

- 1.2.1 Determine the total number of washers needed to assemble the student desk. (2)
- 1.2.2 Give ONE use of a student desk. (2)
- 1.2.3 Write down the item, using a symbol from step 2, which is not listed under the item list. (2)
- 1.2.4 Write down the number of screws used to attach the top unit in step 3. (2)
- 1.2.5 One apartment has four rooms. Calculate the number of new desks needed for fifteen apartments if one desk is placed in every room. (2)

1.3 One of the students bought a foldable laptop stand for his laptop.

Below are the pictures of the package box with the stand's dimensions.

PACKAGE BOX	DIMENSIONS OF THE FOLDABLE STAND
 KOGA FOLDABLE LAPTOP STAND (GREY) W30 x H27 x L79 CM • Multi-purpose laptop stand • Also used as a breakfast stand • Easily adjustable and space efficient • Easy to clean • No assembly required	

Use the information above to answer the questions that follow.

1.3.1 Calculate, in cm, the total length of the upper part of the stand. (2)

1.3.2 Write down the colour of the stand that the student bought. (2)

1.3.3 Explain the phrase 'No assembly required'. (2)

1.3.4 Convert the maximum height of the desk to mm. (2)

[28]

QUESTION 2

- 2.1 Mr Labuschagne, a paralympic athlete (athlete with disability) staying in South Africa, travelled to Tokyo to participate in the 42 km Paralympic marathon. Athletes participate in 3 groups: T12, T46 and T54.

ANNEXURE C shows a route map of the marathon from the start to the finish point.

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

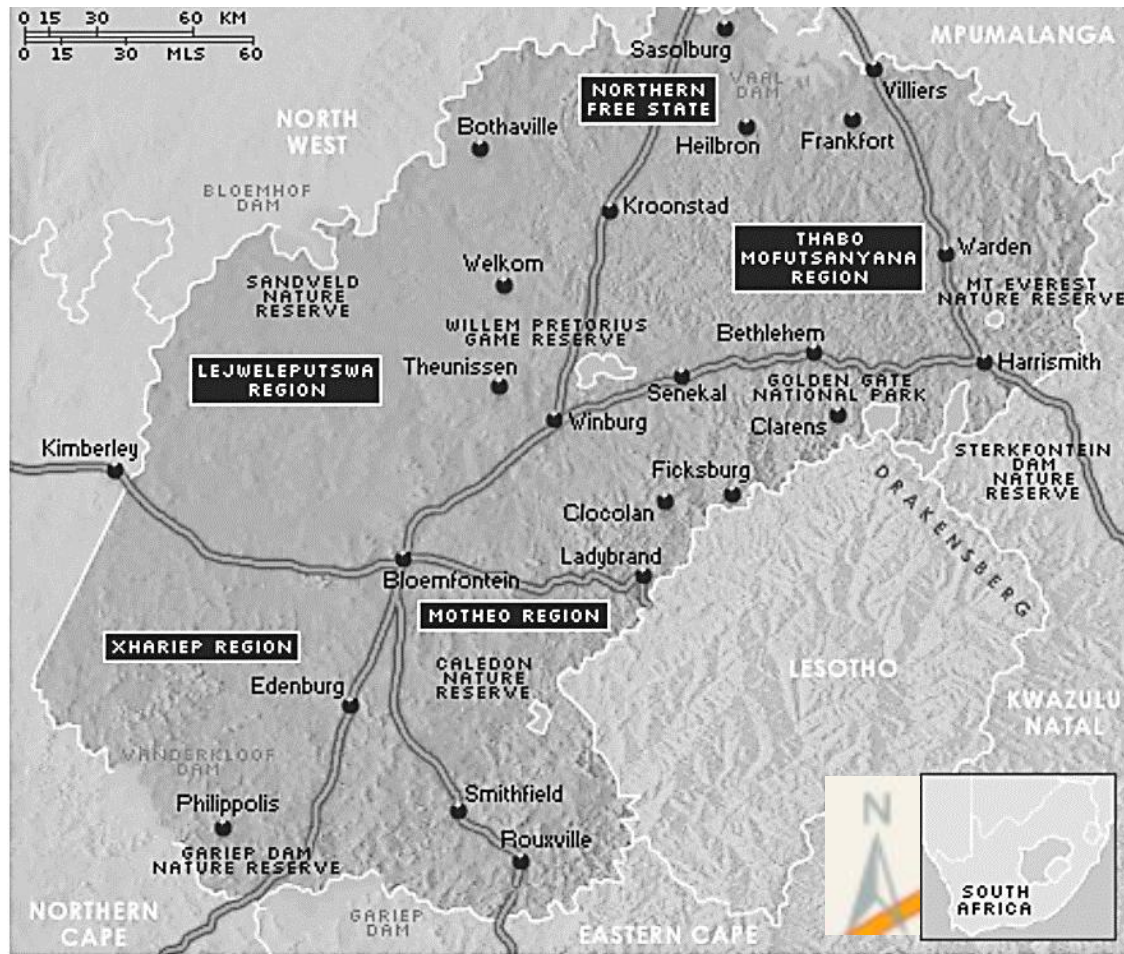
- 2.1.1 State the general direction of Tokyo Skytree from the starting point. (2)
- 2.1.2 Write down the probability of selecting a group of men and women participating in the marathon. Give your answer as a fraction. (2)
- 2.1.3 After completing his training in South Africa, Mr Labuschagne stated that he would be able to complete the marathon in 2 hours and 33 minutes. State TWO factors that may affect his running pace during the marathon. (4)
- 2.1.4 Write down the name of the station, which is situated at the 15 km mark of the marathon. (2)
- 2.1.5 Calculate how many kilometres will be left before reaching the finishing point when an athlete is at the 40 km mark of the marathon. (2)
- 2.1.6 Write down the number of U-turns shown on the map. (2)
- 2.1.7 The information about the different groups participating in the marathon, with the starting times, was provided on the Internet.

Group	Time
T12 – athletes with visual impairments	08:00 a.m.
T46 – athletes with upper limb deficiency	07:00 a.m.
T54 – athletes on wheelchairs	06:30 a.m.

- (a) Give ONE possible reason why different groups start at different times. (2)
- (b) There were three thousand nine hundred and sixty athletes on the day of the marathon. Group T12 had 1 700 athletes, and T54 had 1 580 athletes.

Write down, in a simplified form, the ratio of the three groups. (3)

- 2.2 Mr Labuschagne stays in Edenburg; he regularly travels to Bloemfontein to visit his parents. The map below shows the location of the two places.



[Source: sa-venues.com]

Use the information above to answer the questions that follow.

- 2.2.1 Write down the number of **nature reserves** appearing on the map. (2)
- 2.2.2 Write down the name of the province situated in the north-easterly direction from Edenburg. (2)
- 2.2.3 Mr Labuschagne wanted to check the distance from Edenburg to Bloemfontein. He used the distance calculator on the Internet and discovered that the distance between the two places is 77,5 km.

Calculate the distance between the two places using accurate measurement and the scale provided. Give ONE possible reason why the calculated distance and the one from the Internet do not match.

(7)
[30]

QUESTION 3

- 3.1 A farmer in the United States of America uses the containers below to store and supply milk to local factories.

330 Gallon IBC Tote	55 Gallon drum
 Inside dimensions Length = 48 inches Width = 40 inches Height = 46 inches	

[Source: IBCtanks.com]

NOTE:

1 gallon = 4,546092 litres

1 inch = 2,54 cm

1 ml = 1 cm³

Use the information above to answer the following questions.

- 3.1.1 Convert 55 gallons to litres. Round your answer to the nearest whole number. (3)

- 3.1.2 Write down TWO dairy products that can be produced by using milk. (2)

- 3.1.3 Show, through calculations, that the IBC tote can hold more than 310 gallons of milk.

You may use the formula:

$$\text{Volume of a rectangular prism} = \text{length} \times \text{width} \times \text{height} \quad (6)$$

- 3.1.4 The farmer decided to paint the total external surface area of the drum to keep it away from rusting. The spread rate of the paint is 2,5 m²/ℓ, and the paint is sold in 1ℓ tins. Calculate how many tins of paint will be needed to paint one drum.

You may use the formula:

$$\begin{aligned} \text{Surface area of a cylinder (in m}^2\text{)} \\ = (2 \times 3,142 \times r^2) + (2 \times 3,142 \times r \times h) \end{aligned}$$

Where **r** = radius and **h** = height (9)

- 3.2 The farmer checks the weight of the cows once per term to make sure that they are healthy to produce enough milk. He uses a manual way of calculating the weight by measuring the cow's girth and body length.

NB: Girth is the measurement around the middle of the cow.

Use the information above to answer the following questions.

- 3.2.1 Choose the most accurate tool from the ones listed in the bracket.

The farmer may use a (measuring tape/ruler) to measure the girth and body length of the cow. (2)

- 3.2.2 Show, through calculations, that a cow with a girth of 70 inches and a body length of 78 inches weighs 577,88 kg.

You may use the formula:

$$\text{Animal weight in pounds} = \frac{(\text{girth})^2 \times \text{body length}}{300}$$

Note: 1 kg = 2,2046 pounds (4)
[26]

QUESTION 4

- 4.1 A team of netball players from Jacobsdal Agricultural School, with their coach, travelled to Cape Town to attend the Netball World Cup final match. Due to the unavailability of accommodation in Cape Town, they booked at a hotel in Paarl.
- A map on ANNEXURE D shows the distances in kilometres from Paarl to Cape Town and the surrounding towns.

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

- 4.1.1 Write down the name of the town that is closest to Paarl. (2)
- 4.1.2 On the day of the match, the team, with their coach, left the hotel at 08:30 in the morning. They travelled to the Waterfront Mall, where they had their breakfast. It took them 1 hour and 57 minutes from the hotel until they left the mall to Cape Town International Convention Centre netball courts.
- (a) Write down the time that they left the mall. (2)
- (b) Calculate the average speed, in km/h, of their vehicle from Paarl to Waterfront Mall if it took them 58 minutes to travel to Cape Town CBD (central business district).
- You may use the formula: **Distance = speed $\times$ time** (6)
- 4.1.3 The school arranged a friendly match between their team and a high school in one of the towns around Paarl. Use the directions below to write down the town where this match will take place.
- From Paarl, they travelled 25 km to Franschhoek.
 - 28 km from Franschhoek, at the T-junction, they turned right.
 - Their destination was the first town from the T-junction. (2)

- 4.2 The table below shows the accommodation arrangements for the team and their coach. The rates given are for one night only.

TABLE 1: RATES PER ROOM FOR ONE NIGHT

Rooms allocated	Number accommodated per room	Rates per room per night
3	4 adults	R2 800
4	2 adults	R2 950
1	1 adult	R3 200

NOTE: The team arrived at 17:00 on the 5th of August and checked out at 08:00 on the 7th of August. They travelled with a 22-seater bus with a fuel consumption of 10,5 ℓ/100 km.

The total distance for a round trip was 2 769,2 km.

Use the information above to answer the questions that follow.

- 4.2.1 Write down the total number of players in the team. (2)
- 4.2.2 Explain the meaning of *round trip* as used in the context. (2)
- 4.2.3 50% of the total amount for accommodation and petrol will be paid by the School Governing Body (SGB), and the other 50% will be shared equally amongst the team members and the coach.

Show, through calculations, that each member will pay R1 269,78.

You may use R22,46 as the fuel price per litre. (9)

- 4.3 The table below shows the weight and height of the netball players. The information is used by the coach to select the appropriate position for each player.

	Weight (in kg)	Height (in cm)		Weight (in kg)	Height (in cm)
Player 1	51	167	Player 6	56	166
Player 2	66	180	Player 7	80	188
Player 3	78	190	Player 8	79	189
Player 4	80	181	Player 9	68	179
Player 5	81	187	Player 10	58	162

BMI STATUS

BMI (kg/m²)	Weight Status
Below 18,5	Underweight
18,5 to 24,9	Normal
25,0 to 29,9	Overweight
30,0 and above	Obese

Use the information above to answer the questions that follow.

- 4.3.1 Write down, as a percentage, the probability of randomly selecting a player with a height of less than 170 cm and a weight of 60 kg from all players. (2)
- 4.3.2 Determine the weight status of a player with a height of 188 cm and a weight of 80 kg.

You may use the formula: $\text{BMI} = \frac{\text{mass (in kg)}}{(\text{height in metres})^2}$ (4)

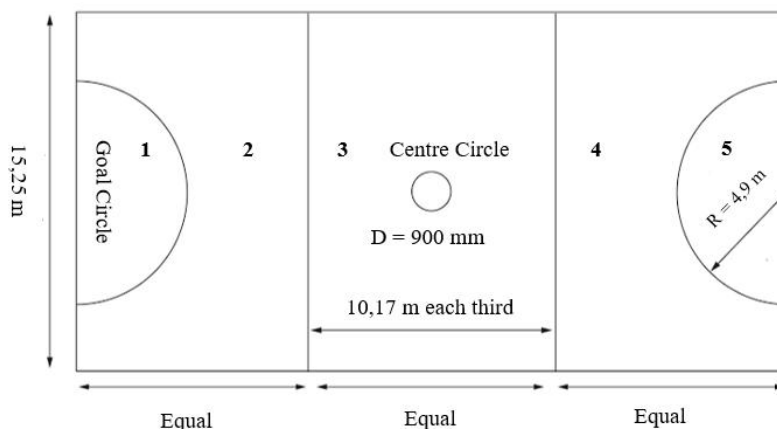
- 4.3.3 Each player has a specific playing area to play during the game. In Table 2 the playing areas per playing position are shown.

TABLE 2: PLAYING POSITIONS AND PLAYING AREAS

Player	Position	Playing Areas				
1	Goal Shooter	1	2			
2	Goal Attack	1	2	3		
3	Wing Attack		2	3		
4	Centre		2	3	4	
5	Wing Defence			3	4	
6	Goal Defence			3	4	5
7	Goalkeeper				4	5

Playing area: An area in which a player is allowed to play.

NETBALL COURT WITH SPECIFICATIONS



Where D = Diameter

R = Radius

1 to 5 are playing areas

Use the information above to answer the questions that follow.

- Write down which players may not play in playing areas 4 and 5. (3)
- Show, through calculations, that the difference between the radius of the goal circle and the radius of the centre circle is 4,45 m. (4)
- Calculate (in m^2) the area of the netball court.

You may use this formula:

$$\text{Area of rectangle} = \text{length} \times \text{width} \quad (3)$$

[41]

QUESTION 5

- 5.1 Mr Bartman is a businessman who owns a printing company. He bought a two-bedroom house and turned it into an office space.

ANNEXURE E shows a floor plan of the house he bought.

Use the information above to answer the questions that follow.

- 5.1.1 Give ONE reason why the plan is referred to as an open floor plan. (2)
- 5.1.2 Write down the probability of randomly selecting a window on the western side of the house. (2)
- 5.1.3 Mr Bartman wanted to change the master bedroom to a boardroom where he could hold meetings. He removed everything so that he could change the flooring of the room and use carpet tiles.

Cost involved for carpet tiles:

- Carpet glue: 5ℓ for every 3 m²
- One tin has 5ℓ of glue.
- Carpet glue price: R359,00 per tin
- Carpet tiles: R550 per m²
- Cost for labour: R400 per m²

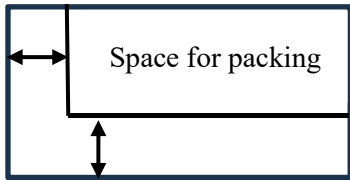
- (a) Calculate the number of 5ℓ carpet glue tins that Mr Bartman must buy to cover the whole room.

You may use this formula:

$$\text{Area of a rectangle} = \text{length} \times \text{width} \quad (4)$$

- (b) Determine the total cost to install the new flooring. (4)

- 5.2 Bedroom 2 will be used to store boxes of paper for printing purposes. As shown in the picture below, 20% of the space on each side will not be used, allowing movement when packing and unpacking the boxes.

LAYOUT PLAN FOR PACKAGING	PICTURE OF A BOX OF PAPER	DIMENSIONS OF THE BOX
		Length = 28 cm Width = 23 cm Height = 31,8 cm

Use the information above to answer the questions that follow.

- 5.2.1 One of the employees stated that they would be able to pack seven (7) layers of boxes in the bedroom.

Verify, using calculations, whether his statement is valid. (5)

- 5.2.2 Calculate the maximum number of boxes that can be packed in the bedroom if the boxes are packed length-wise along the width of the room and the width of the boxes along the room's length. (8)

[25]

TOTAL: 150



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GRADE 12

MATHEMATICAL LITERACY P2

SEPTEMBER 2024

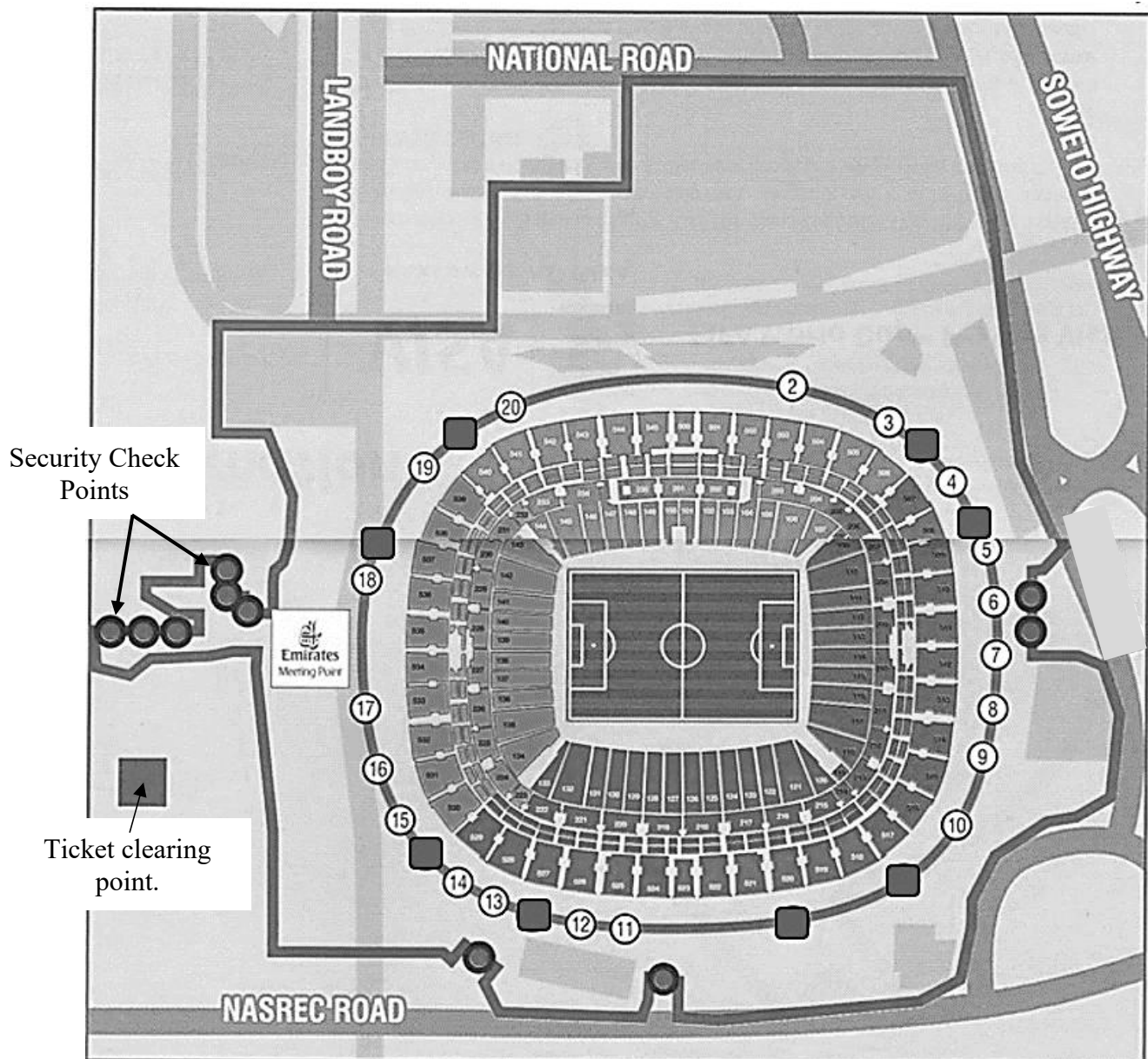
ADDENDUM

This addendum consists of 6 pages with 5 annexures.

ANNEXURE A

QUESTION 1.1

SEATING LAYOUT PLAN OF SOCCER CITY STADIUM



Stadium Map Key

Entrances

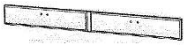


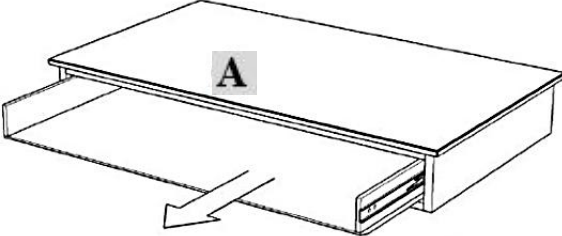
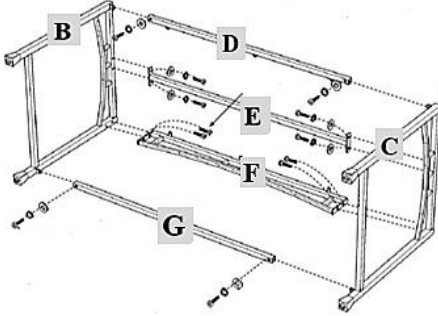
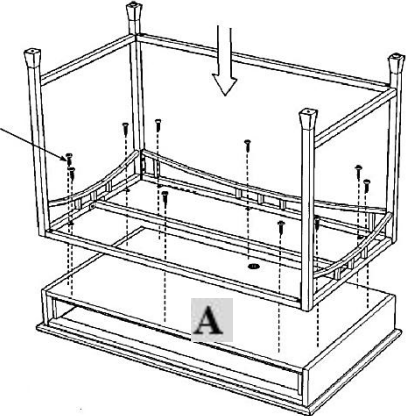
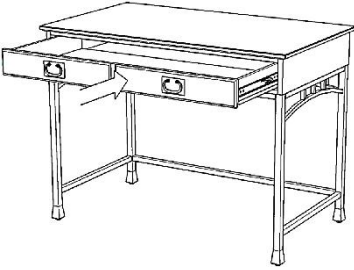
Ticket clearing points



ANNEXURE B

QUESTION 1.2

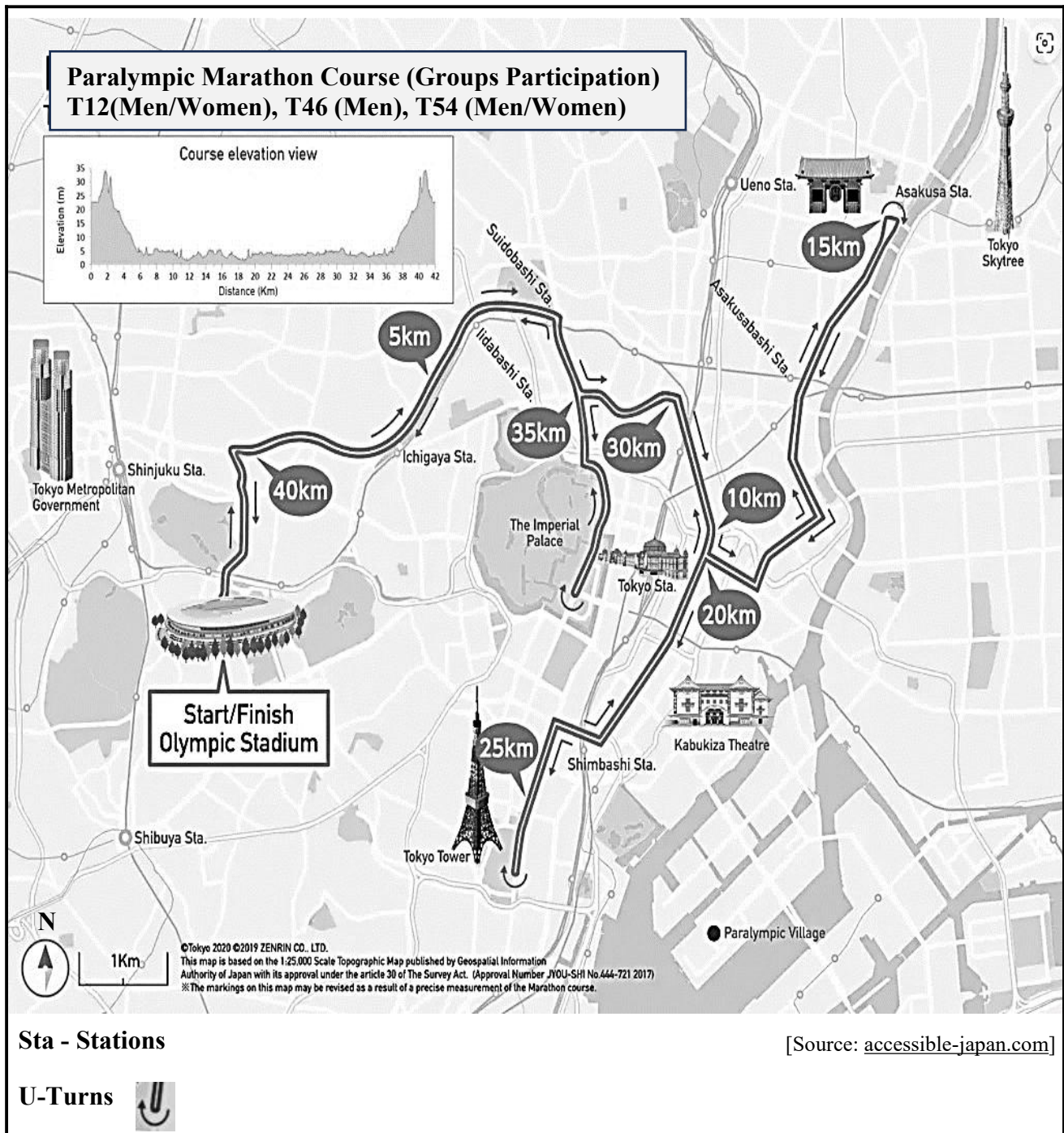
ITEM LIST			
	 F Back Stretcher Top Unit		
 D Front Rail		 Flat Washer 9 pieces	
 E Middle Rail		 Spring Washer 8 pieces	
		 Tapered Wood Screw 7 pieces	 Wood Screw 11 pieces
		 Head Cap Bolt 9 pieces	

STEPS TO ASSEMBLE A DESK		
STEP 1 	STEP 2 	
STEP 3 	STEP 4 	Final Product 

[Source: shwdesks.com]

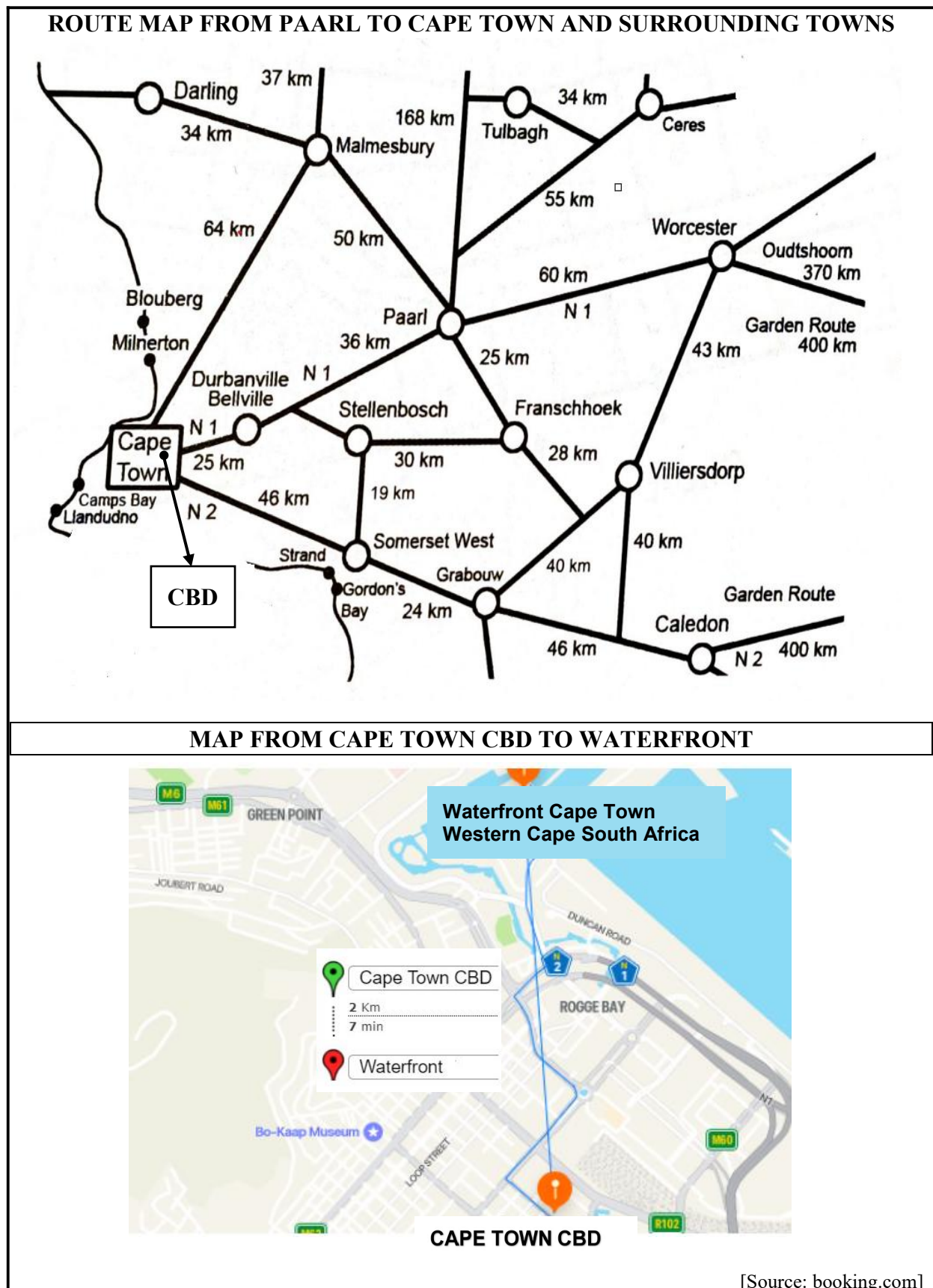
ANNEXURE C

QUESTION 2.1



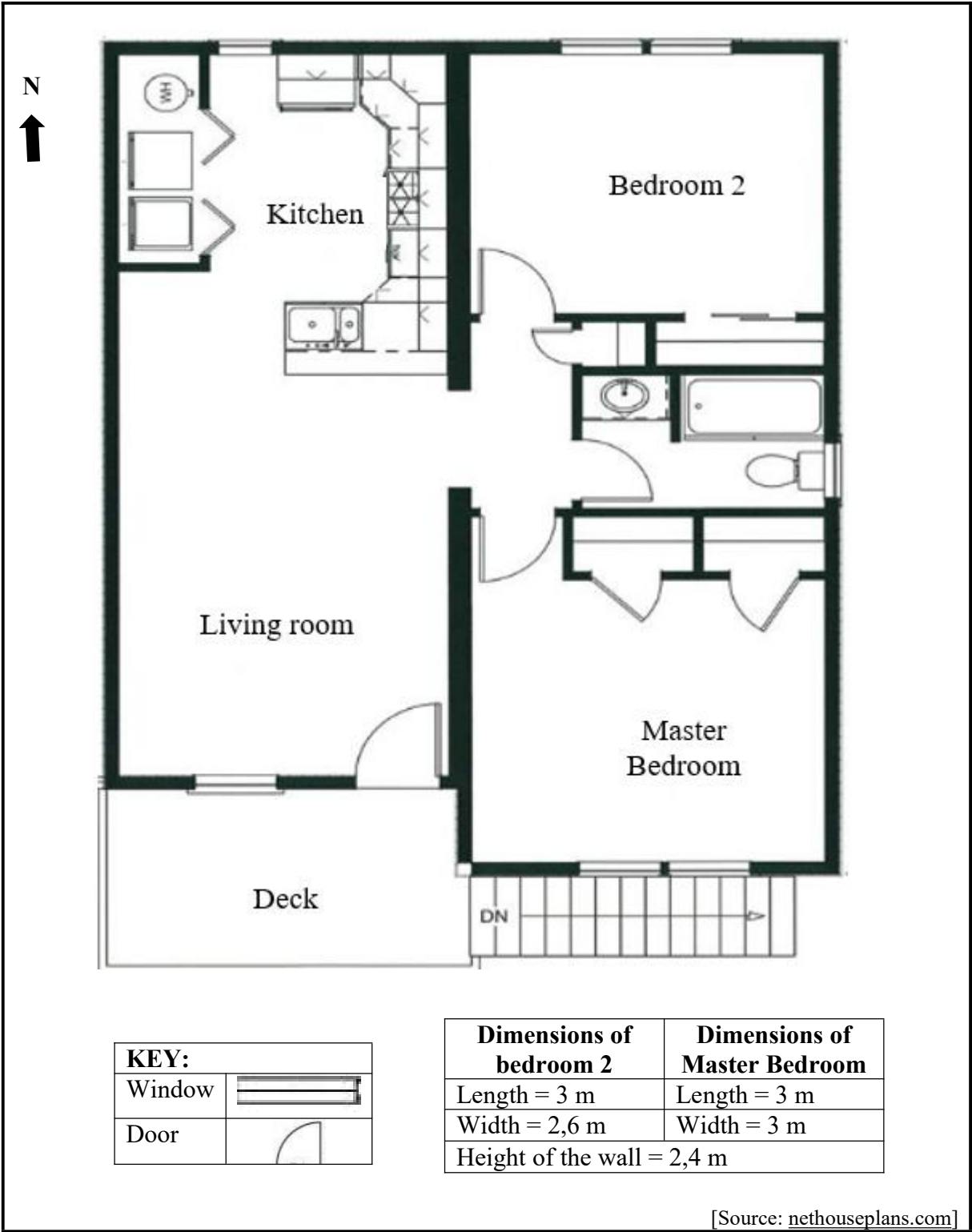
ANNEXURE D

QUESTION 4.1



ANNEXURE E

QUESTION 5.1





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PREPARATORY EXAMINATION *VOORBEREIDENDE EKSAMEN*

GRADE/*GRAAD* 12

MATHEMATICAL LITERACY P2 *WISKUNDIGE GELETTERDHEID V2*

SEPTEMBER 2024

MARKS/*PUNTE*: 150

MARKING GUIDELINES/*NASIENRIGLYNE*

Symbol/ <i>Kode</i>	Explanation/ <i>Verduideliking</i>
M	Method/ <i>Metode</i>
MA	Method with accuracy/ <i>Metode met akkuraatheid</i>
CA	Consistent accuracy/ <i>Volgehoue akkuraatheid</i>
A	Accuracy/ <i>Akkuraatheid</i>
C	Conversion/ <i>Herleiding</i>
S	Simplification/ <i>Vereenvoudiging</i>
RT	Reading from a table/a graph/document/diagram/ <i>Lees vanaf tabel/'n grafiek/dokument/diagram</i>
SF	Correct substitution in a formula/ <i>Korrekte vervanging in 'n formule</i>
O	Opinion/Explanation/ <i>Opinie/Verduideliking</i>
P	Penalty, e.g. for no units, incorrect rounding off, etc./ <i>Penalisasie, bv. vir geen eenhede, verkeerde afronding ens.</i>
R	Rounding off/ <i>Afronding</i>
NPR	No penalty for correct rounding/ <i>Geen penalisasie vir korrek afronding nie</i>
AO	Answer only/ <i>Slegs antwoord</i>
MCA	Method with constant accuracy/ <i>Metode met volgehoue akkuraatheid</i>
NPU	No penalty for unit/ <i>Geen penalisasie vir eenheid nie</i>

**These marking guidelines consist of 11 pages.
*Hierdie nasienriglyne bestaan uit 11 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 or map, then penalise for every extra item presented.
- General principle of marking: If the candidate makes one mistake, he/she loses one mark.

LET WEL:

- *As 'n kandidaat 'n vraag TWEE KEER beantwoord, merk slegs die EERSTE poging.*
- *As 'n kandidaat 'n antwoord van 'n vraag doodtrek (kanselleer) en nie oordoen nie, merk die doodgetrekte (gekanselleerde) poging.*
- *Volgehoue akkuraatheid (CA) word in ALLE aspekte van die nasienriglyne toegepas, dit hou op by die tweede berekeningsfout.*
- *Wanneer 'n kandidaat aflesings vanaf 'n grafiek, tabel, uitlegplan en kaart geneem en ekstra antwoorde gee, penaliseer vir elke ekstra item.*
- *Die algemene beginsel van merk: as 'n leerder een fout maak verloor hy/sy een punt.*

QUESTION/VRAAG 1		[28 MARKS/PUNTE]	
ANSWER ONLY FULL MARKS			
Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
1.1.1	Top view/ <i>boaansig</i> ✓✓A OR/OF Bird's eye view/ <i>Voëlperspektief</i> ✓✓A	2A correct view OR/OF 2A correct view (2)	MP L1 E
1.1.2	✓✓A The maximum number of spectators that Soccer City stadium can accommodate. <i>Die maksimum aantal toeskouers wat Soccer City Stadion kan akkomodeer.</i>	2A correct definition (2)	M L1 E
1.1.3	Nasrec road/ <i>Nasrecweg</i> ✓✓A	2A correct road (2)	MP L1 E
1.1.4	Ticket clearing points = 09 ✓A <i>Kaartjieklaringspunte</i> = 09 Entrances = 19 ✓A <i>Ingange</i> = 19	1A correct number 1A correct number (2)	MP L1 E
1.1.5	Number of unoccupied seats: <i>Aantal onbesette sitplekke:</i> $\frac{85}{100} \times 88\,000 = 74\,800$ ✓MA $88\,000 - 74\,800 = 13\,200$ ✓A OR/OF	1MA % calculation 1A answer OR/OF	M L1 M

Marking Guidelines/*Nasienriglyne*

	$100\% - 85\% = 15\%$ ✓MA $\frac{15}{100} \times 88\,000 = 13\,200$ ✓A	1MA % calculation 1A answer (2)	
1.2.1	Total no of washers: <i>Totale aantal wassers:</i> $= 9 + 8$ ✓MA $= 17$ ✓A	1MA adding correct values 1A correct total number of washers (2)	MP L1 E
1.2.2	To study ✓✓A <i>Om te studeer</i>	2A opinion (2)	MP L1 E
1.2.3	G ✓✓A	2A correct symbol (2)	MP L1 M
1.2.4	10 ✓✓A	2A number of screws (2)	MP L1 E
1.2.5	✓MA $4 \times 15 = 60$ desks/ <i>lessenaars</i> ✓A	1MA multiply correct numbers 1A no of desks (2)	MP L1 E
1.3.1	✓MA $44\text{ cm} + 20\text{ cm} = 64\text{ cm}$ ✓A	1MA adding correct values 1A correct answer (2)	M L1 E
1.3.2	Grey/ <i>Grys</i> ✓✓A	2A correct colour (2)	M L1 E
1.3.3	Parts have already been put together. ✓✓A <i>Dele is reeds aanmekaar gesit.</i> OR/OF The laptop stand does not need to be reconstructed. ✓✓A <i>Die skootrekenaarstaander hoef nie gebou te word nie.</i>	2A correct statement OR/OF 2A correct statement (2)	MP L1 D
1.3.4	27×10 ✓MA $= 270\text{ mm}$ ✓A	1MA multiplied by 10 1A correct answer (2)	M L1 E
		[28]	

QUESTION/ <i>VRAAG</i> 2		[30 MARKS/ <i>PUNTE</i>]	
Q/V	Solution/ <i>Oplossing</i>	Explanation <i>Verduideliking</i>	T&L
2.1.1	North East (NE) ✓✓A <i>Noord-Oos (NO)</i>	2A correct direction (2)	MP L2 M
2.1.2	Probability/ <i>Waarskynlikheid</i> : $\frac{2}{3}$ ✓A	1A numerator 1A denominator (2)	P L2 E
2.1.3	✓✓O The type of route of the marathon. <i>Die tipe roete van die maraton.</i> OR/OF The weather during the day of the marathon ✓✓O <i>Die weer op die dag van die maraton.</i>	2O correct opinion OR/OF 2O correct opinion (4)	MP L4 M
2.1.4	Asakusa Station/ <i>Asakusa Stasie</i> ✓✓A	2A correct station (2)	MP L1 E
2.1.5	✓MA 42 km – 40 km = 2 km ✓A	1MA correct values 1A answer AO (2)	MP L1 E
2.1.6	3/three/ <i>drie</i> ✓✓A	2A correct no of turns (2)	MP L1 E
2.1.7 (a)	Because it is people with different disabilities ✓✓O <i>Omdat dit mense met verskillende gestremdhede is</i> OR/OF Because of different impairments ✓✓O <i>As gevolg van verskillende liggaamlike beperkinge</i> OR/OF They may run into each other ✓✓O <i>Hulle kan dalk teen mekaar vas hardloop.</i>	2O correct opinion OR/OF 2O correct opinion OR/OF 2O correct opinion (2)	MP L4 E

2.1.7 (b)	$T46 = 3\,960 - 1\,700 - 1\,580 \checkmark \text{MA}$ $= 680 \checkmark \text{CA}$ $1\,700 : 680 : 1\,580$ $85 : 34 : 79 \checkmark \text{CA}$	1MA subtracting the two values 1CA simplification 1CA simplified ratio (3)	MP L2 M
Q/V	Solution/Oplossing	Explanation Verduideliking	T&L
2.2.1	5 (five/vyf) $\checkmark \checkmark \text{A}$	2A correct number (2)	MP L1 E
2.2.2	Mpumalanga $\checkmark \checkmark \text{A}$	2A correct province (2)	MP L2 E
2.2.3	Bar Scale/ <i>Grafiese skaal</i> = 22 mm $\checkmark \text{A}$ Map Distance from Edenburg to Bfn: <i>Kaartafstand van Edenburg na Bfn:</i> = 21 mm $\checkmark \text{A}$ $\checkmark \text{MA}$ Actual distance/ <i>Werklike afstand</i> $= \frac{21}{22} \times 60 \text{ km} \checkmark \text{MA}$ $= 57,3 \text{ km} \checkmark \text{CA}$ It was a direct measurement on the map not taking into account that the road is not straight when you travel $\checkmark \checkmark \text{O}$ <i>Dit was 'n direkte meting op die kaart wat nie in ag neem dat die pad in werklikheid nie reguit is nie.</i>	1A correct measurement 1A correct measurement 1MA correct fraction 1MA multiplied by 60 1CA simplification 2O correct opinion (7)	MP L4 M
		[30]	

QUESTION/ <i>VRAAG</i> 3		[26 MARKS/ <i>PUNTE</i>]	
Q/V	Solution/ <i>Oplossing</i>	Explanation <i>Verduideliking</i>	T&L
3.1.1	$55 \times 4,546092 \ell \checkmark \text{MA}$ $= 250,03506 \ell \checkmark \text{A}$ $\approx 250 \ell \checkmark \text{R}$	1MA multiplying 1A correct litres 1R rounding down (3)	M L2 E
3.1.2	Cheese/ <i>kaas</i> $\checkmark \text{A}$ Yogurt/ <i>Jogurt</i> $\checkmark \text{A}$	1A product 1A product (2)	M L1 E
3.1.3	Length/ <i>Lengte</i> = 48 inch = 121,92 cm $\checkmark \text{C}$ Width/ <i>Wydte</i> = 40 inch = 101,60 cm Height/ <i>Hoogte</i> = 46 inch = 116,84 cm $\checkmark \text{SF}$ Volume = $121,92 \text{ cm} \times 101,60 \text{ cm} \times 116,84 \text{ cm}$ $= 1\,447\,305,492 \text{ cm}^3 \checkmark \text{CA}$ $= 1\,447\,305,492 \text{ ml} \div 1\,000 \checkmark \text{C}$ $= 1\,447,305492 \ell \div 4,546092 \checkmark \text{C}$ $= 318,3625612 \text{ gallons/gelling}$ $= 318 \text{ gallons/pgelling} \checkmark \text{CA}$ It can hold more than 310 gallons <i>Dit kan meer as 310 gelling bevat</i> OR/OF Volume = 48 inches $\times$ 40 inches $\times$ 46 inches $\checkmark \text{SF}$ $= 88\,320 \text{ inches}^3/\text{duim}^3 \checkmark \text{SF}$ $88\,320 \times 2,54 \times 2,54 \times 2,54 \checkmark \text{C}$ $= 1\,447\,305,49248 \text{ cm}^3$ $= 1\,447\,305,49248 \text{ ml} \checkmark \text{C}$ $= 1\,447,30549248 \ell$ $1 \text{ gallon/gelling} = 4,546092 \ell$ $\frac{1447,30549248}{4,546092} \checkmark \text{C} = 318,36 \text{ gallon/gelling} \checkmark \text{CA}$ It can hold more than 310 gallons <i>Dit kan meer as 310 gelling bevat</i>	1C conversion to cm 1SF substitution 1CA simplification 1C conversion to litres 1C conversion to gallons 1CA no of gallons OR/OF 1SF substitution 1CA simplification 1C conversion to cm 1C conversion to litres 1C conversion to gallons 1CA no of gallons (6)	M L3 D

3.1.4	$\checkmark$ MA $\checkmark$ C Radius = 11,25 inch = 28,575 cm = 0,28575 m Height/ <i>Hoogte</i> = 33 inch = 83,82 cm = 0,8382 m $\checkmark$ C Surface area of a cylinder (in m²): <i>Buite-oppervlakte van 'n silinder (in m²):</i> $= (2 \times 3,142 \times r^2) + (2 \times 3,142 \times r \times h)$ $= (2 \times 3,142 \times 0,28575^2) + (2 \times 3,142 \times 0,28575$ $\times 0,8382) \checkmark$ SF $= 0,5131078448 + 1,505116345 \checkmark$ S $\checkmark$ CA $= 2,018224189 \text{ m}^2 \div 2,5 \checkmark$ MCA $= 0,81 \text{ litres of paint/liter verf} \checkmark$ CA $= 1 \text{ tin of paint/l blik verf} \checkmark$ R	1MA radius 1C convert inch to cm 1C convert cm to m 1SF substitution into the formula 1S simplification 1CA answer 1MCA conversion to litres 1CA answer 1R no of tins (9)	M L3 D
3.2.1	Measuring tape $\checkmark\checkmark$ A <i>Maatband</i>	2A correct tool (2)	M L1 E
3.2.2	Animal weight in pounds = $\frac{(\text{girth})^2 \times \text{body length}}{300}$ $= \frac{70 \times 70 \times 78}{300} \checkmark$ SF $= 1274 \text{ pounds} \checkmark$ A Conversion into kg = $\frac{1274 \text{ pounds}}{2,2046} \checkmark$ C $= 577,88 \text{ kg} \checkmark$ CA <i>Dieregewig in pond</i> = $\frac{(\text{omtrek})^2 \times \text{liggaamslengte}}{300}$ $= \frac{70 \times 70 \times 78}{300} \checkmark$ SF $= 1274 \text{ pond} \checkmark$ A <i>Omskakeling na kg</i> = $\frac{1274 \text{ pond}}{2,2046} \checkmark$ C $= 577,88 \text{ kg} \checkmark$ CA	1SF substitution into the formula 1A simplification 1C conversion 1CA answer (4)	M L2 M
		[26]	

QUESTION/VRAAG 4 MARKS/PUNTE]			[41
Q/V	Solution/Oplossing	Explanation Verduideliking	T&L
4.1.1	Franschhoek ✓✓A	2A correct town (2)	MP L1 E
4.1.2 (a)	08:30 + 1 hour/ <i>uur</i> 57 minutes/ <i>minute</i> ✓MA = 10:27 ✓A	1MA adding 1A correct time (2)	M L2 M
4.1.2 (b)	Distance from Paarl to Waterfront Mall: <i>Afstand vanaf Paarl na Waterfront-inkopiesentrum</i> = 36 km + 25 km + 2 km = 63 km ✓A Time/ <i>Tyd</i> = 58 min + 7 min = 65 min ✓A Distance = speed × time/ <i>Afstand = spoed × tyd</i> 63 km = speed × (65 ÷ 60) ✓SF Speed = $\frac{63 \text{ km}}{(65 \div 60)}$ ✓S ✓C = 58,15 km/h ✓CA <i>Afstand = spoed × tyd</i> 63 km = spoed × (65 ÷ 60) ✓SF Spoed = $\frac{63 \text{ km}}{(65 \div 60)}$ ✓S ✓C = 58,15 km/h ✓CA	1A total distance 1A time 1SF substitution of distance and time 1S changing subject 1C conversion 1CA answer (6)	M L2 M
4.1.3	Grabouw ✓✓A	2A correct town (2)	MP L2 M
4.2.1	$3 \times 4 = 12$ $4 \times 2 = 08$ ✓M $12 + 08 = 20$ players/ <i>spelers</i> ✓A	1M adding values 1CA no of players (2)	M L2 E
4.2.2	Total distance travelled from the place of departure to destination and back. ✓✓A <i>Totale afstand afgelê vanaf die vertrekpunt tot by</i> <i>eindpunt en terug.</i>	2A correct statement (2)	M L1 E
4.2.3	$R2\ 800 \times 3 = R8\ 400$ $R2\ 950 \times 4 = R11\ 800$ ✓M $R3\ 200 \times 1 = R\ 3\ 200$ Total amount/ <i>Totale Bedrag</i> = R23 400 ✓CA For two nights/ <i>Vir twee nagte</i> = R23 400 × 2 = R46 800 ✓MCA Petrol cost/ <i>Brandstofkoste</i>	1M amount per room 1CA total amount 1MCA amount for two nights	F M L3 D

	No of litres/<i>Aantal liter</i> = $\frac{10,5 \times 2\,769,2}{100}$ ✓MA = 290,766 ✓A Cost/<i>Koste</i> = $290,766 \times 22,46$ = R6 530,60 ✓MCA Tot Amount/<i>Tot bedrag</i> = R46 800 + R6 530,60 = R53 330,60 ✓MCA 50% = R26 665,30 ✓A Each member will pay/<i>elke lid sal betaal</i>: = $\frac{R26\,665,30}{21}$ ✓A = R1 269,78	1MA calculating no. of litres 1A no of litres 1MCA petrol amount 1MCA total amount 1A 50% 1A division by 21	(9)
Q/V	Solution/ <i>Oplossing</i>	Explanation <i>Verduideliking</i>	T&L
4.3.1	0% ✓✓A	2A correct probability (2)	P L1 E
4.3.2	188 cm = 1,88 m ✓C BMI/<i>LMI</i> = $\frac{80\,kg}{(1,88\,m)^2}$ ✓SF = 22,63 kg/m² ✓A Normal/<i>Normaal</i> ✓MCA	1C conversion 1SF substitution 1A correct BMI 1MCA status	M L2 M
4.3.3 (a)	Goal Shooter/<i>Hoofdoel</i> ✓A Goal Attack/<i>Hulpdoel</i> ✓A Wing Attack/<i>Aanvallende vleuel</i> ✓A	1A 1st player 1A 2nd player 1A 3rd player	M L1 M
4.3.3 (b)	D = 900 mm ✓C = 0,9 m ÷ 2 = 0,45 m ✓A Difference/<i>Verskil</i> = 4,9 m – 0,45 m ✓MA = 4,45 m ✓CA	1C conversion 1A radius 1MA subtracting 1CA answer	M L2 M
4.3.3 (c)	Area of rectangle/<i>Oppervlakte van reghoek</i> = (10,17 m × 3) × 15,25 m ✓SF ✓MA = 30,51 m × 15,25 = 465,2775 m² ✓CA	1SF 10,71 and 15,25 1MA correct length 1CA answer NPR	M L2 M
		(3)	
		[41]	

QUESTION/VRAAG 5		[25 MARKS/PUNTE]	
Q/V	Solution/Oplossing	Explanation Verduideliking	T&L
5.1.1	No walls are separating the living room and the kitchen ✓✓O <i>Geen mure skei die sitkamer en kombuis nie</i>	2O opinion (2)	MP L4 E
5.1.2	0% ✓✓A	2A correct percentage (2)	P L1 E
5.1.3 (a)	Area of a rectangle = length × width = 3 m × 3 m ✓SF = 9 m ² ✓A No of 5ℓ of Carpet glue = 9 m ² ÷ 3 m ³ ✓MCA = 3 ✓CA <i>Oppervlakte van die reghoek = lengte × breedte</i> = 3 m × 3 m ✓SF = 9 m ² ✓A <i>Aantal 5 ℓ matgom = 9 m² ÷ 3 m³ ✓MCA</i> = 3 ✓CA	1SF correct values 1A area 1MCA dividing 1CA no of 5 ℓ (4)	M L2 M
5.1.3 (b)	Total cost/totale koste ✓RT ✓MCA = (3 × R359) + (9 × R550) + (9 × R400) = R1 077 + R4 950 + R3 600 ✓MCA = R9 627,00 ✓CA	CA from 5.1.3 (a) 1RT all costs 1MCA multiplying costs with numbers 1MCA adding all the values 1CA cost (4)	F L2 M
5.2.1	Height of the box/ <i>Hoogte van die boks</i> = 31,8 cm = 0,318 m ✓C Number of layers/ <i>Aantal lae</i> = $\frac{2,4m}{0,318m}$ ✓MA = 7,547... ✓CA = 7 layers/ <i>lae</i> ✓R His Statement is valid . ✓O <i>Sy stelling is geldig.</i>	1C conversion 1MA dividing 1CA no of layers 1R rounding down 1O opinion (5)	MP L4 M

5.2.2	Length of the box and width of the room <i>Lengte van die boks en breedte van die kamer</i> Length of the box/<i>Lengte van die boks</i>: = 28 cm ÷ 100 = 0,28 m ✓C Width of the room/<i>Breedte van die kamer</i> = 2,6 m – 20% = 2,08 m ✓A ✓MA $\frac{2,08m}{0,28m} = 7,43$ ✓CA = 7 boxes/<i>bokse</i> ✓R Width of the box and length of the room <i>Breedte van die boks en lengte van die kamer</i> Width of the box/<i>Breedte van boks</i> = 0,23 m Length of the room/<i>Lengte van kamer</i> = 2,4 m 3 m – 20% = 2,4 m $\frac{2,4m}{0,23m} = 10,434 \dots$ = 10 boxes/<i>bokse</i> ✓A Total no of boxes to be packed <i>Totale aantal bokse om te pak</i>: = 7 × 10 × 7 ✓MCA = 490 boxes ✓CA	CA from 5.2.1 1C converted length 1A 80% width 1MA dividing by length of a box 1CA unrounded answer 1R rounding down 1A no of boxes 1MCA multiplying values 1CA total no of boxes (8)	MP L3 D
		[25]	

TOTAL/TOTAAL: 150

PREPARATORY EXAMINATION

2024

10602
MATHEMATICAL LITERACY
(PAPER 2)

MATHEMATICAL LITERACY: Paper 2



10602E

TIME: 3 hours

MARKS: 150

15 pages and an addendum with 4 annexures

X05



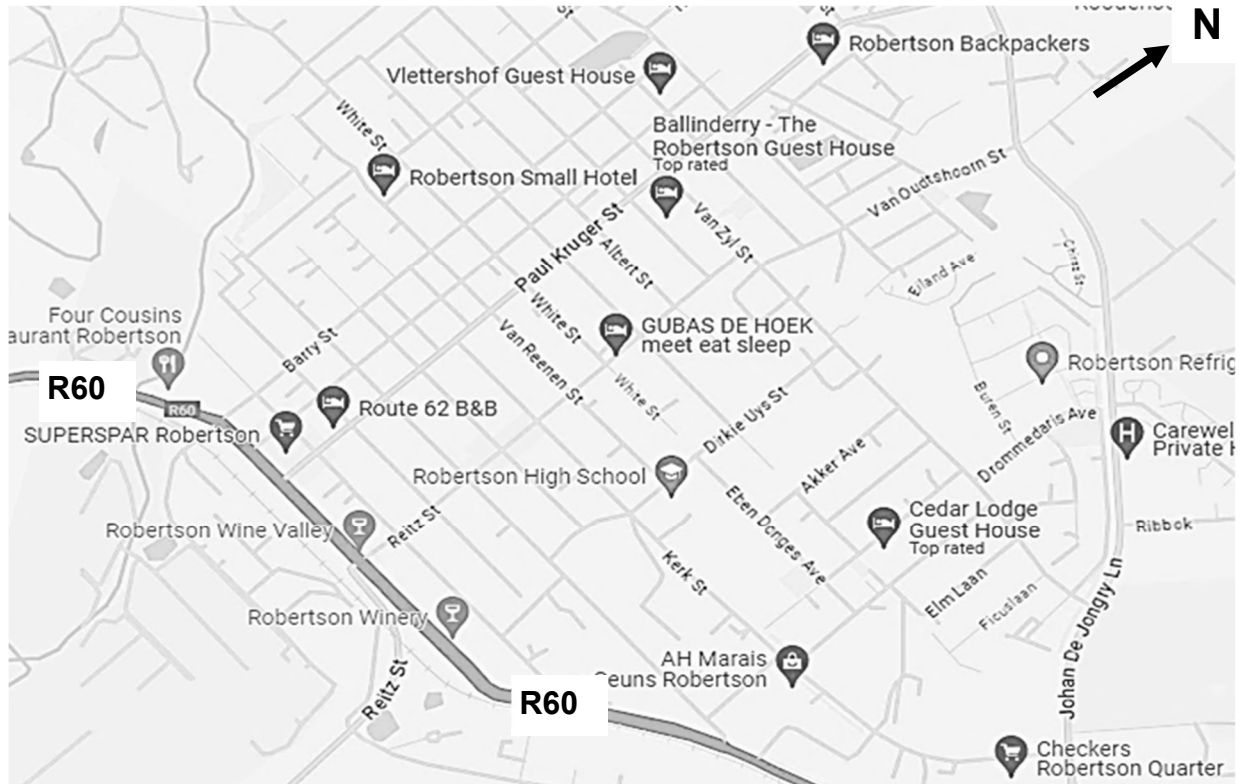
INSTRUCTIONS AND INFORMATION

1. This question paper consists of FIVE questions. Answer ALL the questions.
2. Use the ANNEXURES in the ADDENDUM to answer the following questions:

ANNEXURE A for QUESTION 2.1
ANNEXURE B for QUESTION 3.1
ANNEXURE C for QUESTION 5.1
ANNEXURE D for QUESTION 5.2
3. Number the answers 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 calculations clearly.
7. Round-off ALL final answers appropriately according to the given context, unless stated otherwise.
8. Indicate units of measurement, where applicable.
9. Maps and diagrams are NOT necessarily drawn to scale, unless stated otherwise.
10. Write neatly and legibly.

QUESTION 1

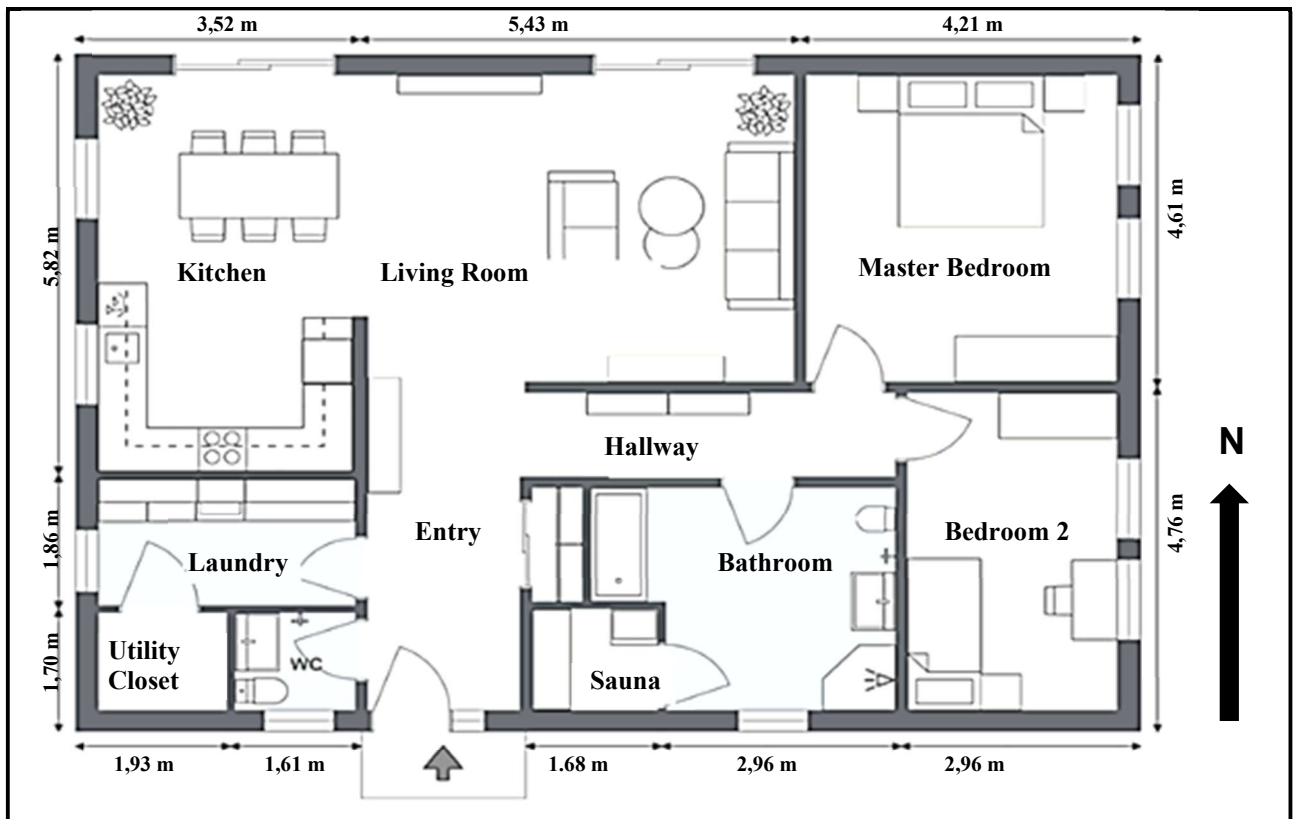
- 1.1 Kriel travelled to Robertson (a town in the Western Cape) during the school holidays to visit his aunt Nini. A part of the map of Robertson that Kriel used for his journey is shown below. Study the map and use it to answer the questions that follow.



[Source: <https://www.google.com/maps/@-33.8060619,19.8805874,15z?entry=ttu>]

- 1.1.1 Name the road that passes through Robertson Winery and Robertson Wine Valley. (2)
- 1.1.2 Determine the general direction of the Robertson Small Hotel from the Cedar Lodge Guest House. (2)
- 1.1.3 Name TWO grocery stores indicated on the map. (2)
- 1.1.4 Identify the name of the high school indicated on this map. (2)
- 1.1.5 Kriel arrived in Robertson at 11:03. Write down the time of Kriel's arrival in words. (2)
- 1.1.6 Identify the type of map shown above. (2)

1.2 Mr Soetmelk owns a house. A floor plan of the house is shown below.



[Source: <https://www.roomsketcher.com/blog/floor-plan-dimensions/>]

Study the floor plan above and use it to answer the following questions.

- 1.2.1 Determine the number of windows on the eastern elevation of the floor plan. (2)
- 1.2.2 How many bedrooms are indicated on the floor plan? (2)
- 1.2.3 Write, as a simplified ratio, the number of doors to the number of windows on the floorplan. (2)
- 1.2.4 Mr Soetmelk stated that the perimeter of the floor plan is 45,06 m. Explain the word *perimeter* in the given context. (2)
- 1.2.5 Select from the options below the correct unit that can be used for the area of the master bedroom. Write only the letter (A – C) next to the question number (1.2.5). (2)
 - A. m
 - B. m^2
 - C. m^3

- 1.3 Mr Soetmelk's wife bakes homemade all-bran rusks for her family. The recipe that she uses is shown below.

INGREDIENTS

Makes 30 rusks

Baking time: 55 minutes

- 500 g butter
- 370 g sugar
- 500 ml buttermilk
- 1 ml lemon juice
- 3 large free-range eggs
- 1 kg flour
- 2 t baking powder
- 1 t salt
- 240 g all-bran wheat flakes
- 100 g oats (uncooked)
- 100 g pecan nuts or almonds



The oven should be heated to 180 °C.

Study the recipe above and answer the questions that follow.

- 1.3.1 How many grams of all-bran wheat flakes are needed for this recipe? (2)

- 1.3.2 Each batch of rusks needs to be baked for 55 minutes. The last batch was taken out at the time indicated on the watch alongside.

Convert 55 minutes to hours.



- 1.3.3 Write down the type of time format displayed on the watch. (2)

- 1.3.4 Write down the time indicated on the watch in 24-hour format. (2)

[30]

QUESTION 2

- 2.1 North West is the sixth largest of the nine provinces in South Africa. It has an area of 40 495 square miles and a population of about 4,1 million people as of 2021.

About 3,6% of the people in the North West Province live in Potchefstroom and the surrounding areas. The rest live in rural parts of the province.

The map of the province is shown in ANNEXURE A. Use the map and the given information to answer the following questions.

- 2.1.1 Write down the name of the town farthest to the south-west of Mafikeng as shown on the map. (2)
- 2.1.2 Use a ruler to measure the distance (as the crow flies) from Lichtenburg to Taung. Give your answer in millimetres. (2)
- 2.1.3 Use the scale on the map to calculate the actual distance in kilometres between Lichtenburg and Taung. (4)
- 2.1.4 Determine the actual number of people living in rural parts of the province. (3)
- 2.1.5 Convert the land area of the North West Province to the nearest km^2 given that $1 \text{ km} = 0,62137119 \text{ miles}$. (3)
- 2.1.6 Calculate the population density of the North West Province in $\text{people}/\text{km}^2$.

You may use the following formula:

$$\text{Population density} = \frac{\text{Population}}{\text{Area}} \quad (3)$$

- 2.2 One of the activities to participate in while in the North West Province is to ride in the Aerial Cableway, located at Hartbeespoort.

Read the following information and answer the questions that follow.

- Each of the cable cars can carry **6 people**.
- Each cable car travels at a maximum speed of **5 metres/second**.
- It takes a cable car **5 minutes** to reach the top of the Magaliesburg Mountains.
- A cable car goes to the top of the mountain every **7 minutes**.
- The maximum weight of passengers that a cable car can carry is **480 kg**.



- 2.2.1 A tourist is 30th in the queue waiting to go to the top of the mountain. At what time will she reach the top of the mountain if the first group in the queue boards the cable car at 09:43?

Assume that there is only one cable car operating on that day, and it is filled to capacity for each trip.

(6)

- 2.2.2 Calculate the distance in metres, travelled by a cable car to transport people to the top of the mountain.

You may use the following formula: **Average Speed = $\frac{\text{Distance}}{\text{Time}}$**

(4)
[27]

QUESTION 3

- 3.1 Mrs. Masenya gave birth to twins, a boy and a girl. She monitored their weight over the first six months and summarised it as shown in the table below.

Table 1: Weight of babies over 6 months

	Birth	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6
		Weight (kg)					
Boy	3,6	4,6	5,7	6,4	7,0	7,5	8,0
Girl	3,2	4,2	5,1	5,9	6,4	6,9	7,4

Use the information in Table 1 above and the growth chart shown in ANNEXURE B to determine which descriptions correctly represent the twins' growth over six months.

Write down the question numbers (3.1.1 to 3.1.5) followed by TRUE or FALSE. If FALSE, correct the statement.

- 3.1.1 The baby girl lay in the 10th percentile when she was born. (2)
- 3.1.2 When the baby boy was 3 months old, only 10% of other baby boys were heavier than he was. (2)
- 3.1.3 At the time the twins were 6 months old, they both lay close to the 50th percentile. (2)
- 3.1.4 At 4 months, both babies were developing at the same rate as the average growth rate. (2)
- 3.1.5 The baby boy's mass increased by a little more than 139% in the first six months of his life. (2)

PREPARATORY EXAMINATION

2024

10602

MATHEMATICAL LITERACY

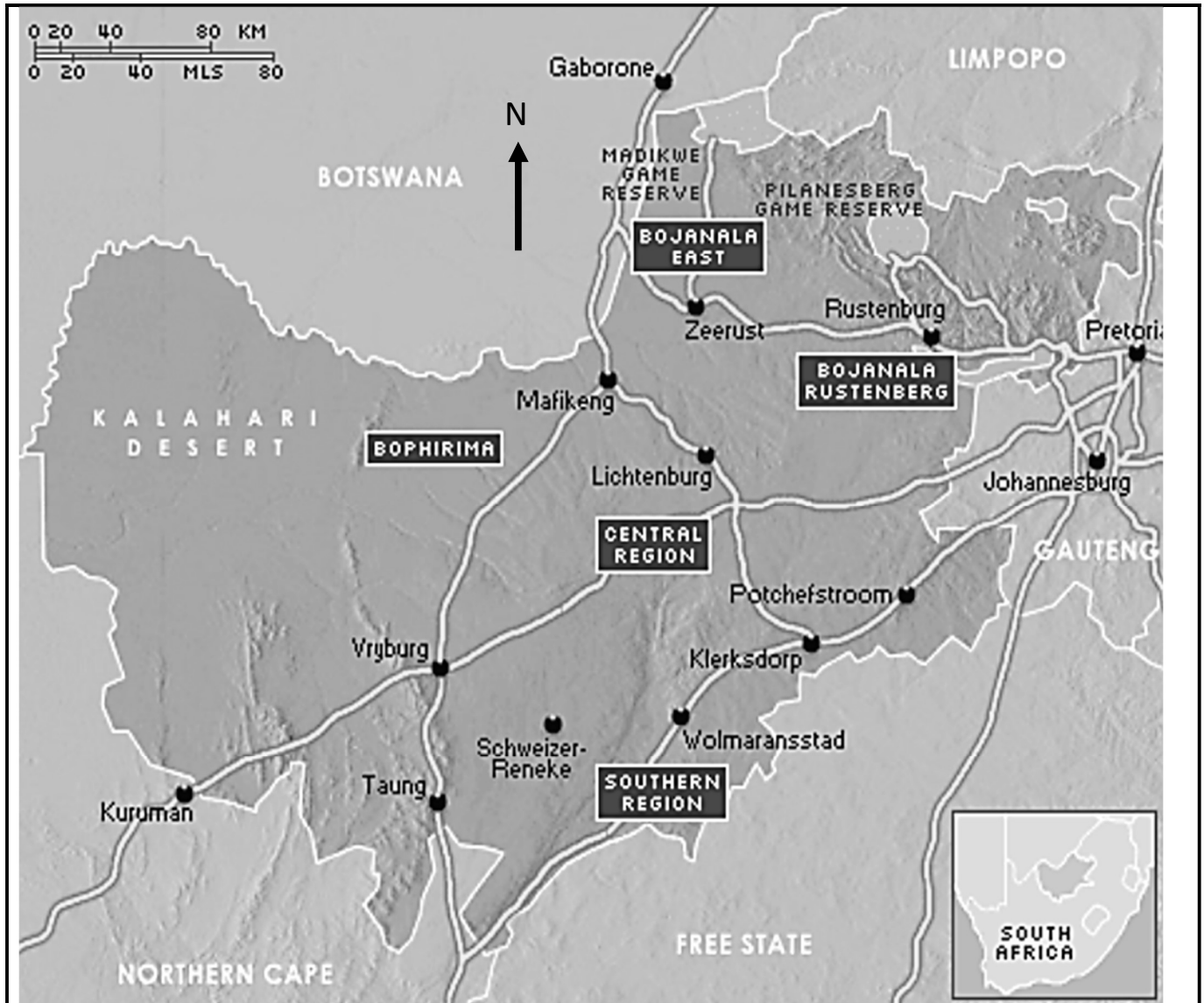
ADDENDUM

(PAPER 2)

5 pages

ANNEXURE A

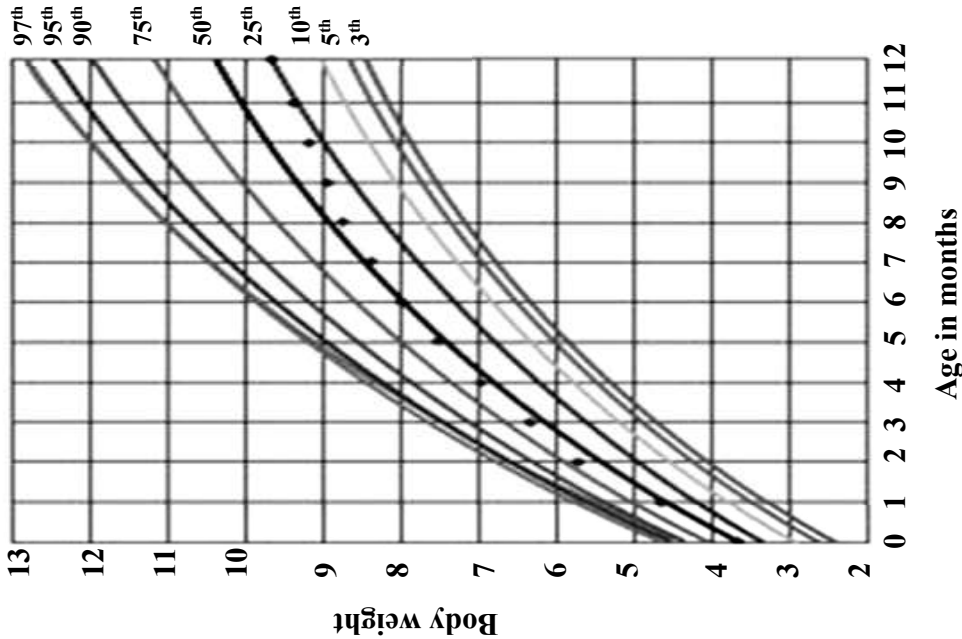
QUESTION 2.1



ANNEXURE B

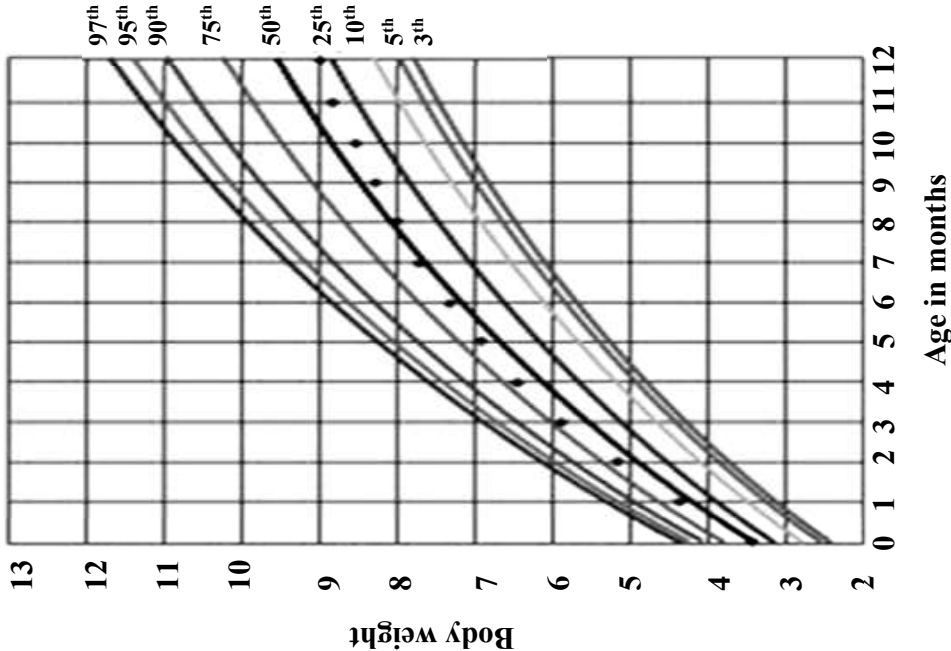
QUESTION 3.1

Male infant



NOTE: The dots represent an average growth rate.

Female infant



ANNEXURE C

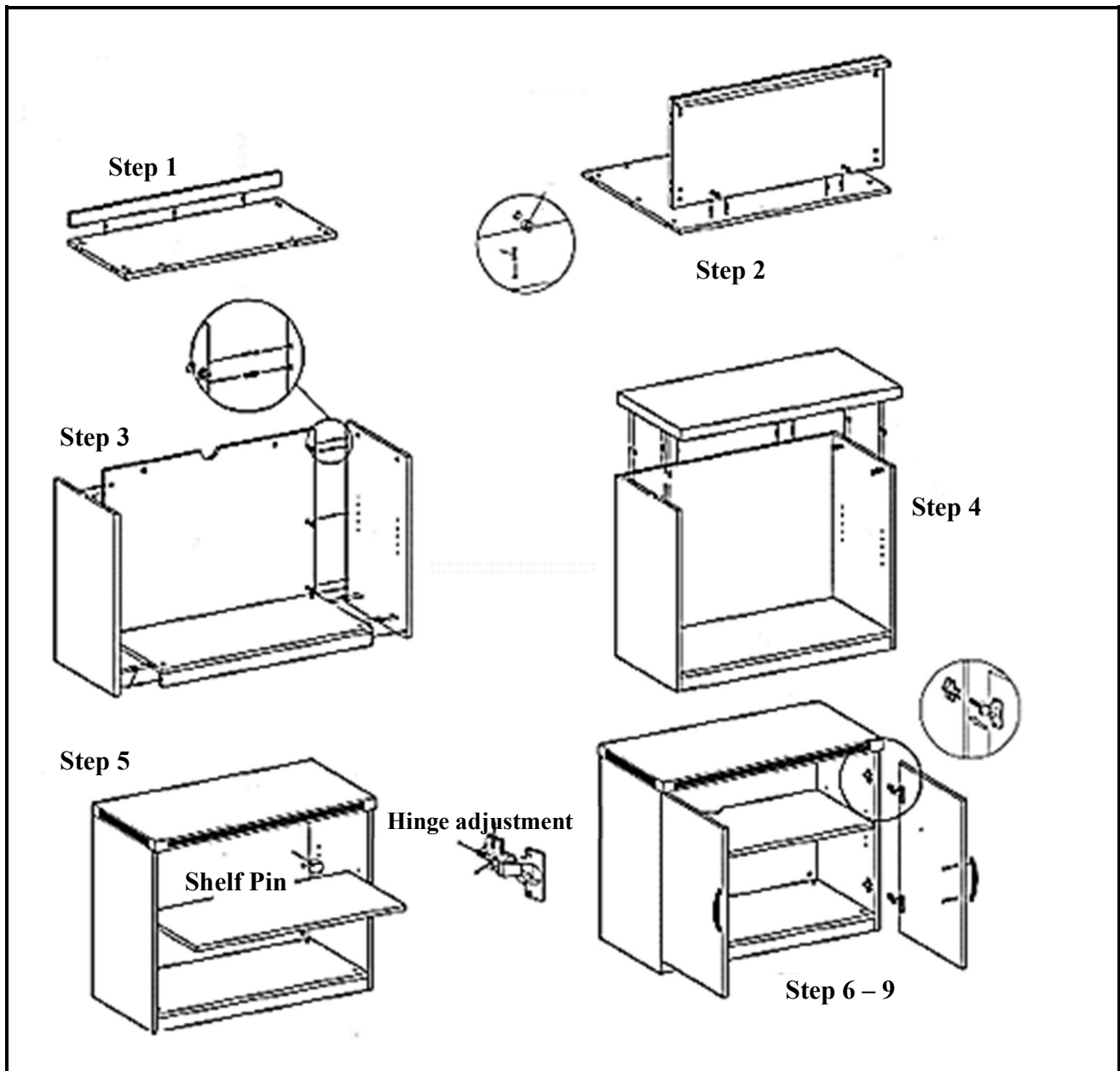
QUESTION 5.1



ANNEXURE D

QUESTION 5.2

Special note: Location number of cam pin, cam lock and dowel holes may vary.



[Source: file:///C:/Users/Henry/Downloads/10871Cherry-Modular-Wall-UnitAI.pdf]

Tools needed:

- A Phillips screwdriver
- A helper

END

END

- 3.2 Due to the increase in the size of his family, Mr Masenya decided to purchase a bigger geyser. The family purchased a 200-litre geyser, twice the size of their old geyser. A table showing the dimensions of standard horizontal round geysers is shown below.

Table 2: Standard Horizontal Round Geysers

CAPACITY	DIAMETER x LENGTH
50-litre	450 mm x 610 mm
100-litre	550 mm x 840 mm
150-litre	550 mm x 1 150 mm
200-litre	550 mm x 1 470 mm
250-litre	550 mm x 1 875 mm

Study the information given in Table 2 above and use it to answer the questions that follow.

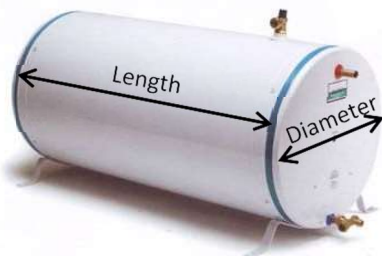
- 3.2.1 Write down the dimensions of the old geyser. (2)

- 3.2.2 Calculate the circumference of the base of the new geyser.

You may use the following formula:

Circumference of a circle = $\pi \times \text{diameter}$, where $\pi = 3,142$ (2)

- 3.2.3 Mr Masenya claims that because the new geyser has twice the volume of the old geyser, the surface area of the new geyser will also be twice that of the old geyser. Verify whether his claim is correct.



You may use the following formula:

Surface area of a closed geyser = $(2 \times \pi \times \text{radius}^2) + (2 \times \pi \times \text{radius} \times \text{length})$

where $\pi = 3,142$ (8)

- 3.2.4 Mr Masenya wanted to be sure that the stated capacity of the geysers is correct, so he performed the following calculations:

OLD 100 ℓ GEYSER

$$\begin{aligned}
 \text{Volume} &= \pi \times \text{radius}^2 \times \text{length} \\
 &= \pi \times (550 \text{ mm})^2 \times 840 \text{ mm} \\
 &= 798\,278\,69,33 \text{ mm}^3 \\
 &= 79\,827\,869,33 \text{ cm}^3 \\
 &\approx 79\,828 \text{ ℓ}
 \end{aligned}$$

NOTE: $1\,000 \text{ cm}^3 = 1 \text{ litre}$

Identify TWO possible errors that were made in the calculation above.

(4)

- 3.2.5 Calculate the capacity of the new 200 ℓ geyser. Round-off your answer to the nearest litre.

You may use the formula:

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

where: $\pi = 3,142$

NOTE: 1 000 cm³ = 1 litre

(4)

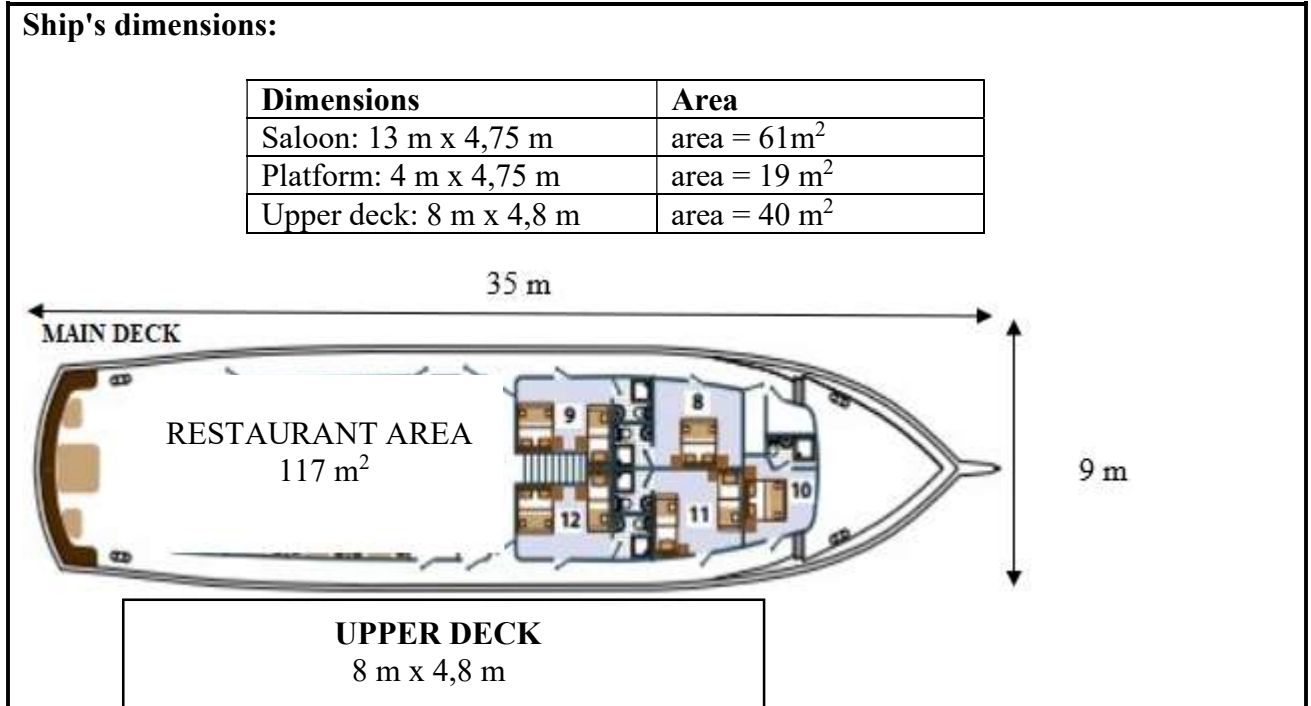
- 3.2.6 Should Mr Masenya be happy with the new geyser based on the capacity? Provide a reason to support your answer.

(2)

[32]

QUESTION 4

- 4.1 The diagram below shows the deck plan of the MS Eden sailing ship. The MS Eden is a 35-metre-long sailing ship. Refer to the deck plan and answer the questions that follow.



[Adapted from <https://www.small-cruise-ships.com/ship/ms-eden/>]

Use the information given above to answer the questions that follow.

- 4.1.1 The width of the restaurant area is 5,5 m. Determine the approximate length of the restaurant area.

You may use the following formula:

$$\text{Area of a rectangle} = \text{Length} \times \text{Width} \quad (3)$$

- 4.1.2 A stronger railing needs to be installed around the perimeter of the upper deck. 36 metres of railing was purchased. Determine, showing all calculations, whether the 36 metres of railing is enough.

You may use the following formula:

$$\text{Perimeter} = 2 (\text{Length} + \text{Width}) \quad (3)$$

4.1.3 Study the deck plan and the ship's dimensions as provided in the diagram.

Identify TWO calculation errors made in the ship's dimensions and correct them. (3)

4.2 The upper deck needs to be packed with boxes of the following dimensions:

Length = 0,65 m

Width = 0,42 m

Height = 39,5 cm

The height of the upper deck is 0,9 m.

4.2.1 Determine the number of boxes that can be packed on the upper deck if the boxes are packed facing up, with length across the length and width across the width. (9)

4.2.2 One of the passengers on the sailing ship stated that more than 300 boxes can be packed on the upper deck if the boxes are packed facing up, with length across the width and width across the length.

Verify this claim using appropriate calculations. (6)

4.3 The total number of people on the sailing ship includes the following:

- 12 crew members made up of 5 males and 7 females
- 23 male passengers
- 31 female passengers

4.3.1 Write down the probability, as a percentage, that the passenger who commented in QUESTION 4.2.2, is a female. (3)

4.3.2 Determine the probability of randomly selecting a person on the sailing ship who is NOT a crew member. (3)

4.3.3 Explain the term *probability* in this context. (2)

[32]

QUESTION 5

5.1 Jongi travelled from Gqeberha to Polokwane on a vacation. ANNEXURE C shows the direct route from Gqeberha to Polokwane. Study the information given in ANNEXURE C and use it to answer the following questions.

5.1.1 The direct flight distance from Gqeberha to Polokwane is given as 1 186 km. Determine the scale, to the nearest million, of the map in the form of 1 : ... (5)

5.1.2 It takes about 13,5 hours of driving time to cover the road distance of 1 405 km from Gqeberha to Polokwane.

Determine the average speed for the trip. Round-off your answer to the nearest whole number.

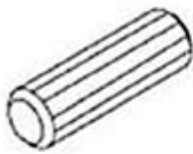
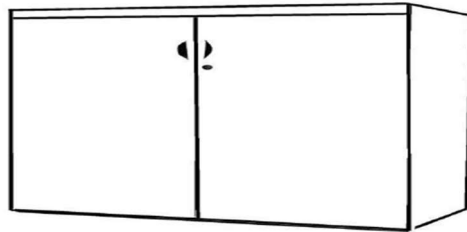
You may use the following formula: **Distance = Speed $\times$ Time** (4)

5.1.3 According to road safety regulations, a driver needs to rest for 15 minutes for every two hours of driving.

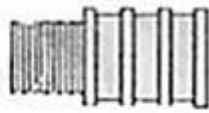
If Jongi rests as suggested, determine how long the journey will take him if the original estimated time of 13,5 hours did not include the resting time. (6)

- 5.2 The diagrams below show a 2-door book cabinet and a list of the hardware needed for its assembly. The steps for assembling the book cabinet are provided in ANNEXURE D.

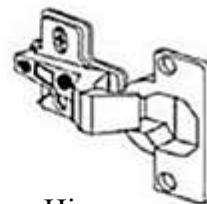
2-door Book Cabinet Assembly Instructions



Wood dowel



Shelf Pin



Hinge



Cam pin



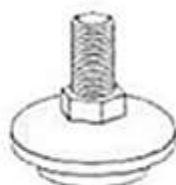
Plunger lock



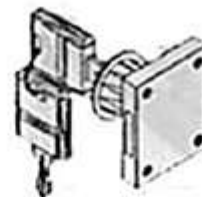
Hinge plate



Cam lock



Leveling glide



Lock/key



Door pull



Shallow cover



Deep cover

Study the steps given in ANNEXURE D carefully as well as the diagrams above and use them to answer the questions that follow:

5.2.1 Instructions for steps 1 and 2 are as follows:

Step 1: Fasten the front and bottom panels with the cam pins and cam locks. Assemble it upside down.

Step 2: Fasten the back panel to the bottom panel with the cam pins and cam locks.

Write down a set of instructions to complete steps 3 to 5. (6)

5.2.2 Give ONE reason why a 'helper' is listed under 'Tools needed'. (2)

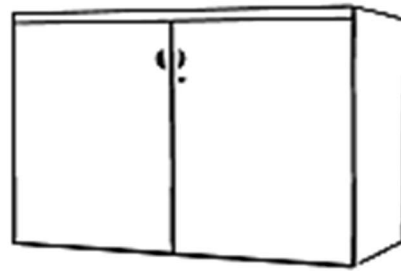
5.2.3 Identify a tool that can be used to turn the cam pins and cam locks. (2)

5.2.4 The diagram below shows a 3-D view of the cabinet.

Length = 700 mm

Width = 350 mm

Height = 690 mm



Use the information given above to calculate the total surface area (in cm^2) of the outside of the bookcase, including the bottom part.

You may use the following formula:

Total Surface Area

$$= 2(\text{length} \times \text{width}) + 2(\text{length} \times \text{height}) + 2(\text{width} \times \text{height})$$

(4)

[29]

TOTAL: 150

END

PREPARATORY EXAMINATION

2024

MARKING GUIDELINES

MATHEMATICAL LITERACY (PAPER 2) (10602)

9 pages

CODES	EXPLANATION
M	Method
MA	Method with accuracy
CA	Consistent accuracy
A	Accuracy
C	Conversion
D	Define
J	Justification/Reason/Explain
S	Simplification
RT/RD/RG	Reading from a table/graph/diagram/map/plan
F	Choosing the correct formula
SF	Correct substitution in a formula
O	Opinion
P	Penalty, e.g. for no units, incorrect rounding-off, etc.
R	Rounding-off
NP	No penalty for rounding-off/omitting units

KEY TO TOPIC SYMBOLS:

M = Measurement; MP = Maps, Plans and other representations; P = Probability

QUESTION 1		ANSWER ONLY FULL MARKS		(30 marks)	
Q	Answer		Explanation	Topic Level	Mark
1.1	1.1.1	R60 ✓✓ RG	2RG reading from the map	MP1	2
	1.1.2	West OR Westerly OR W ✓✓ RG	2RG reading from the map Accept SW	MP1	2
	1.1.3	Checkers Robertson ✓ RG Superspar Robertson ✓ RG	2RG reading from the map	MP1	2
	1.1.4	Robertson High School ✓✓ RG	2RG reading from the map	MP1	2
	1.1.5	Three minutes past/after eleven ✓✓ A	2A correct full answer	M1	2
	1.1.6	Street map /Road map ✓✓ RG	2RG reading from the map	MP1	2
1.2	1.2.1	4 ✓✓ RD OR four	2RD reading from the diagram	MP1	2
	1.2.2	2 OR Two ✓✓ RD	2RD reading from the diagram	MP1	2
	1.2.3	Doors (Including sliding doors) : Windows 10 : 10 ✓ A 1 : 1 ✓ A	1A ratio in the correct order 1A simplifying Accept Doors (excluding sliding doors) : Windows 8 : 10 4 : 5	MP1	2
	1.2.4	Perimeter is the total length/distance around Mr Soetmelk's house/floorplan. ✓✓ A	2A explanation according to context	M1	2
	1.2.5	B ✓✓ A	2A correct option Accept m²	M1	2
	1.3.1	240 g ✓✓ A	2A answer	M1	2
	1.3.2	55 ÷ 60 ✓ MA = 0,92 hours ✓ A	1MA dividing by 60 1A simplification NPR	M1	2

	1.3.3	Analogue ✓✓ A	2A correct type	M1	2
	1.3.4	16:30 ✓✓ A OR 04:30	2A correct time	M1	2
					[30]
QUESTION 2 (27 marks)					
Q	Answer		Explanation	Topic Level	Mark
2.1	2.1.1	Kuruman ✓✓ RD	2RD correct town	MP1	2
	2.1.2	66 mm ✓✓ A	2A measurement Accept 64 mm – 66 mm	MP1	2
	2.1.3	Bar scale 80 km = 26 mm ✓ A Actual distance = $\frac{66 \text{ mm}}{26 \text{ mm}} \times 80 \text{ km}$ ✓ M = 203,08 km ✓ CA	CA from 2.1.2 1A bar measurements 1M divide by 26 1M multiply by 80 1CA actual distance Accept 26 mm – 27 mm NPR	MP3	4
	2.1.4	Rural areas = 100% - 3,6% = 96,4% ✓ MA $\frac{96,4}{100} \times 4\,100\,000$ ✓ S = 3 952 400 people ✓ A OR $\frac{96,4}{100} \times 4,1 \text{ million}$ ✓✓ S A = 3,9524 ✓ million people	1MA subtracting % 1S Simplification 1A number of people 2S Simplification 1A number of people	MP3	3
	2.1.5	$(1 \text{ km})^2 = (0,62137119 \text{ miles})^2$ $1 \text{ km}^2 = 0,38610216 \text{ miles}^2$ ✓ C Area of North-West in km^2 = $40\,495 \text{ miles}^2$ ✓ MCA $0,38610216 \text{ miles}^2$ = 104 881,5681 = 104 882 km^2 ✓ CA	1C to squares 1MCA dividing by conversion factor 1CA rounded area	M3	3

	2.1.6	Population of North-West = 4 100 000 Population density = $\frac{4\,100\,000}{104\,882}$ people/km ² ✓ SF = 39,091 people/km ² ✓ CA ≈ 39 people/km ² ✓ R	CA from 2.1.5 1SF substituting values 1CA population density 1 Rounding	MP2	3
--	-------	---	---	-----	---

2.2	2.2.1	Number of trips = $30 \div 6$ ✓M = 5 in the row ✓S Every 7 minutes = 5×7 minutes ✓M = 35 minutes ✓S Time to reach the top = 9:43 + 35 minutes ✓MA 10:18 am ✓CA	1M dividing values 1S simplifying 1M multiply 1S time 1MA adding 1CA arrival time	M3	6
	2.2.2	Time = 5 min $\times 60$ = 3 00 sec ✓ C Distance = speed $\times$ time ✓ A = 5 m/s $\times$ 300 sec ✓ SF = 1 500 meters ✓ CA	1C conversion 1A changing the subject of the formula 1SF substituting values 1CA answer	M2	4
					[27]

QUESTION 3**(32 marks)**

Q	Answer	Explanation	Topic Level	Mark
3.1	3.1.1	FALSE ✓ A, she lay on the 50 th percentile. ✓ J	M4	2
	3.1.2	FALSE ✓ A, just about 50% were heavier than him. ✓ J	M4	2
	3.1.3	TRUE ✓✓ A	M4	2
	3.1.4	TRUE ✓✓ A OR FALSE ✓ A , the girl was closer to the 75 th percentile curve while the boy was just above the 50 th percentile curve. ✓ J	M4	2
	3.1.5	FALSE ✓ A, the baby boy's mass increased just a little more than 122%. ✓ J	M4	2
3.2	3.2.1	550 mm $\times$ 840 mm ✓✓ A	M1	2
	3.2.2	Circumference = $3,142 \times 550$ mm ✓ SF = 1 728,10 mm ✓ A NPR	M2	2

3.2.3	<u>100 ℓ OLD GEYSER:</u> Surface area $r = 550 \text{ mm} \div 2$ $= 275 \checkmark \text{ M}$ $= (2 \times 3,142 \times 275^2) + (2 \times 3,142 \times 275 \times 840) \checkmark \text{ M}$ $= 475\,227,5 + 1\,451\,604$ $= 1\,926\,831,5 \text{ mm}^2 \checkmark \text{ CA}$ <u>200 ℓ NEW GEYSER:</u> Surface area $= 2 \times \pi \times r^2 + 2 \times \pi \times r \times \ell$ $= (2 \times 3,142 \times 275^2) + (2 \times 3,142 \times 275 \times 1470) \checkmark \text{ M}$ $= 475\,227,5 + 2\,540\,307$ $= 3\,015\,534,5 \text{ mm}^2 \checkmark \text{ CA}$ $= \frac{3\,015\,534,5 \text{ mm}^2}{2} \checkmark \text{ MCA}$ $= 1\,507\,767,25 \text{ mm}^2 \checkmark \text{ CA}$ Therefore, Mr Masenya's claim is not correct $\checkmark \text{ O}$	1M for radius 1M substitution of values 1CA answer 1M substitution of values 1CA answer 1MCA dividing by 2 1CA correct answer 1O conclusion	M4	8
3.2.4	First error: the diameter was used instead of dividing by 2 to get the radius. $\checkmark \checkmark \text{ O}$ Second error: the conversion from mm^3 to cm^3 was done incorrectly. Thus, it was divided by 10 instead of 10^3 or 1 000. $\checkmark \checkmark \text{ O}$ OR Did not use 3,142 value of pi in the calculation.	2O first error 2O second error	M4	4
3.2.5	$3,142 \times 275^2 \times 1\,470 \text{ mm} \checkmark \text{ SF}$ $= 349\,292\,212,5 \text{ mm}^3 \div 1\,000 \checkmark \text{ C}$ $= 349\,292,2125 \text{ cm}^3 \div 1\,000 \checkmark \text{ C}$ $= 349,292 \text{ ℓ} \checkmark \text{ CA}$	1SF substituting values 1C converting to cm^3 1C converting to litres 1CA correct answer	M3	4
3.2.6	Yes. $\checkmark \text{ O}$ because he is getting more than 200 litres. $\checkmark \text{ J}$. OR No, because he is getting more than 200 litres which would potentially increase his electricity bill.	1O Yes or No 1J reasoning	M4	2
				[32]

QUESTION 4					(32 marks)
Q	Answer		Explanation	Topic Level	Mark
4.1	4.1.1	$117 \text{ m}^2 = \ell \times 5,5 \text{ m} \checkmark \text{ SF}$ $\ell = \frac{117 \text{ m}^2}{5,5 \text{ m}} \checkmark \text{ M}$ $\ell = 21,27 \text{ m} \checkmark \text{ A}$	1SF correct substitution 1M changing the subject of the formula 1A correct answer	M2	3
	4.1.2	$8 + 4,8 + 8 + 4,8 \checkmark \text{ MA}$ $= 25,6 \text{ m} \checkmark \text{ CA}$ OR $P = 2(8 + 4,8)$ $= 25,6 \text{ m}$ $\therefore 36 \text{ m of railing will be enough} \checkmark \text{ O}$	1MA adding all four values 1CA correct length 1O conclusion	M4	3
	4.1.3	The areas are not all calculated correctly. $\checkmark \text{ J}$ Saloon: $13 \text{ m} \times 4,75 \text{ m}$ area = $61,75 \text{ m}^2 \checkmark \text{ A}$ Upper deck: $8 \text{ m} \times 4,8 \text{ m}$ area = $38,4 \text{ m}^2 \checkmark \text{ A}$	1J identifying errors 2A fixing errors	M4	3
4.2	4.2.1	Height B = $39,5 \text{ cm}/100 = 0,395 \text{ m} \checkmark \text{ C}$ Along the length of the deck Lengthwise = $\frac{8 \text{ m}}{0,65 \text{ m}} \checkmark \text{ M}$ $= 12,3076 \checkmark \text{ CA}$ $= 12 \text{ boxes} \checkmark \text{ R}$ Widthwise = $\frac{4,8 \text{ m}}{0,42 \text{ m}} \checkmark \text{ M}$ $= 11,4285$ $= 11 \text{ boxes} \checkmark \text{ CA}$ Height = $\frac{0,9 \text{ m}}{0,395}$ $= 2,278$ $= 2 \text{ boxes} \checkmark \text{ CA}$ Total boxes to be packed $= 12 \times 11 \times 2 \checkmark \text{ MCA}$ $= 264 \text{ boxes} \checkmark \text{ CA}$	1C converting height 1M dividing lengths 1CA correct answer 1R rounding down 1M dividing width 1CA whole boxes 1CA whole boxes 1MCA multiplying values 1CA total number of boxes	MP3	9

	4.2.2	Length/widthwise = $\frac{8 \text{ m}}{0,42 \text{ m}}$ = 19,0476 = 19 boxes ✓ M Width/Lenghtwise = $\frac{4,8 \text{ m}}{0,65 \text{ m}}$ = 7,384615 = 7 boxes ✓ M Height = $\frac{0,9 \text{ m}}{0,395}$ = 2,278 boxes = 2 boxes ✓ M Total boxes = 19 x 7 x 2 ✓ MCA = 266 boxes ✓ CA Therefore, the claim is invalid ✓ O	1M number of boxes 1M number of boxes 1M number of boxes 1MCA multiplying all three values 1CA answer 1O conclusion	MP3	6
4.3	4.3.1	Number of people on the cruise ship = 66 Probability of female passenger = $\frac{31}{66} \times 100$ ✓ A = 46,97% ✓ CA	1A numerator 1A denominator 1CA answer NPR	P2	3
	4.3.2	Probability (not a crew member) = 66 – 12 = 54 ✓ M $\frac{54}{66}$ ✓ A $\frac{54}{66}$ ✓ A	1M total number of people 1A numerator 1A denominator AO	P2	3
	4.3.3	Probability is the chance of picking a particular person out of all the people on the sailing ship. ✓✓ J	2D explanation of probability	P1	2
					[32]

QUESTION 5 (26 marks)				
Q	Answer	Explanation	Topic Level	Mark
5.1	5.1.1 NOTE: use measurements from the printed copy. $15 \text{ cm} : 1\,186 \text{ km} \checkmark \text{ M}$ $15 \text{ cm} : 118\,600\,000 \checkmark \text{ C}$ $\frac{15 \text{ cm}}{15 \text{ cm}} : \frac{118\,600\,000 \text{ cm}}{15 \text{ cm}} \checkmark \text{ M}$ $1 : 7\,906\,666,667 \checkmark \text{ CA}$ $\cong 1 : 8\,000\,000 \checkmark \text{ R}$	 1M ratio format 1C converting to cm 1M simplifying 1CA scale in unit form 1R scale in rounded form	MP3	5
	5.1.2 Speed = $\frac{1\,405 \text{ km}}{13,5 \text{ h}} \checkmark \checkmark \text{ M}$ $= 104,074 \text{ km/h} \checkmark \text{ A}$ $= 104 \text{ km/h} \checkmark \text{ R}$	2M substitution 1A answer 1R rounded answer	MP3	4
	5.1.3 $13,5 \div 2 \checkmark \text{ M} = 6,75$ $= 6 \text{ rests} \checkmark \text{ A}$ (not 7, because Jongi would have arrived at destination during the last rest). $\checkmark \text{ MCA}$ $\therefore 6 \times 15 \text{ minutes}$ $= 90 \text{ minutes}$ $= 1 \text{ hour } 30 \text{ minutes} \checkmark \text{ CA}$ $\checkmark \text{ MCA}$ $\therefore \text{Journey} = 13 \text{ hours } 30 \text{ minutes} + 1 \text{ hour } 30 \text{ minutes}$ $= 15 \text{ hours} \checkmark \text{ CA}$	1M dividing driving time 1A number of rests 1MCA calculating rest time 1CA total rest time 1MCA addition of time 1CA total travelling time	MP3	6
5.2	5.2.1 Step 3: Attach left and right side panels $\checkmark \checkmark \text{ A}$ Step 4: Attach the top surface with cam locks, cam pins, and dowels. Then insert the four leveling glides $\checkmark \checkmark \text{ A}$ Step 5: Insert shelf pins into holes along the interior sides. Place the shelf on top of the pins. $\checkmark \checkmark \text{ A}$ NOTE: Read what the candidate has written and award marks if it makes sense	2A step 3 instructions 2A step 4 instructions 2A step 5 instructions	MP2	6

	5.2.2	To assist with the assembling and lifting of parts. ✓✓ O	2A reasoning	MP4	2
	5.2.3	Screwdriver ✓✓ A	2A tool	MP1	2
	5.2.4	✓ M ✓ M Total surface area = $2(700 \times 350)$ $+ 2(700 \times 690) + 2(350 \times 690)$ $= 490\,000 + 966\,000 + 483\,000$ ✓ M $= 19\,390$ $1\,939\,000\text{ mm}^2 \div 10^2 = 19\,390$ cm^2 ✓ CA	2M substitution 1M simplification 1CA answer in cm^2	M3	4
					[29]
		TOTAL:			150



LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF
EDUCATION

**NATIONAL
SENIOR CERTIFICATE**

GRADE 12

MATHEMATICAL LITERACY P2

SEPTEMBER 2024

**MARKS: 150
TIME: 3 hours**



EMLTP2

This question paper consists of 15 pages and an addendum with 5 annexures.

INSTRUCTIONS AND INFORMATION

Read the following instructions carefully before answering the questions.

1. This question paper consists of FIVE questions. Answer ALL the questions.
2. Use the ADDENDUM with ANNEXURES for the following questions:

ANNEXURE A for QUESTION 1.2
ANNEXURE B for QUESTION 1.3

ANNEXURE C for QUESTION 2.1

ANNEXURE D for QUESTION 2.2

ANNEXURE E for QUESTION 4.1
3. Number the questions correctly according to the numbering system used in this question paper.
4. You may use an approved calculator (non-programmable and non-graphical), unless stated otherwise.
5. Show ALL calculations clearly.
6. Maps and diagrams are NOT drawn to scale, unless otherwise stated.
7. Indicate units of measurement, where applicable.
8. Round off ALL final answers appropriately accordingly to the given context, unless stated otherwise.
9. Start EACH question on a NEW page.
10. Write neatly and legibly.

QUESTION 1

1.1 Below is a recipe Rebotile uses to make a stuffed eggplant boat with ground beef

Stuffed eggplant boats with ground beef	Ingredients	Instructions
	3 Eggplants $\frac{1}{4}$ cup (60 ml) olive oil $\frac{1}{2}$ pound extra lean ground beef 1 Tablespoon (15 ml) onion powder $\frac{1}{2}$ tsp salt	Preparation time: 10 min Cooking time: 55 min Serves:  • Preheat oven to 370F • Cut eggplants in half length wise • Sprinkle with salt and massage with olive oil • Bake for 45 minutes, placing cut side up. • Make a filling by mixing onion powder with beef and brown for few minutes. • Spoon the mixture into each eggplant and pop back in the oven for 10 minutes.

Adapted from www.hungrypaprikas.com

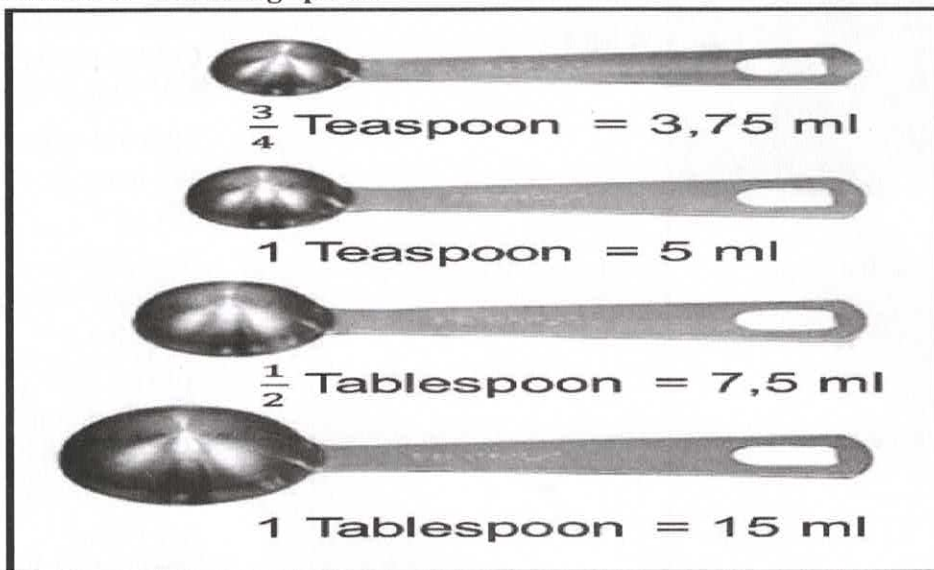
1.1.1 Write down the maximum number of people this recipe will cater for. (2)

1.1.2 If $\frac{1}{4}$ cup of oil is equivalent to 60 ml, determine how many millilitres there are in one cup. (2)

1.1.3 State the total recommended time it will take Rebotile to prepare and cook this dish. (2)

- 1.1.4 If Rebotile starts preparing this dish at 3:37 pm and finished cooking at 4:42 pm. Write the time she will be ready to serve the dish in 24-hour clock format. (2)
- 1.1.5 Determine the ratio of onion powder (ml) to olive oil (ml) in simplified form. (3)
- 1.1.6 Rebotile does not have a measuring jug, but she has measuring spoons.

Picture of measuring spoons



Adapted from bing.com

- (a) If Rebotile were to misplace her tablespoon determine the number of teaspoons she will use for the onion powder. (2)
- (b) Determine what percentage a $\frac{3}{4}$ teaspoon (3,75 ml) is of one tablespoon (2)
- 1.2 Use Annexure A to answer the questions that follow:
When Welner was born, he had a mass of 2 890g
- 1.2.1 What was Welner's mass in kg? (2)
- 1.2.2 If Welner was in the 10th percentile when he was six months old, what was his mass in pounds? (2)
- 1.3 Francois wants to travel from Springbok to Cape Town for the Easter holidays. Use Annexure B to answer the questions that follows
- 1.3.1 Name the type of the map. (2)

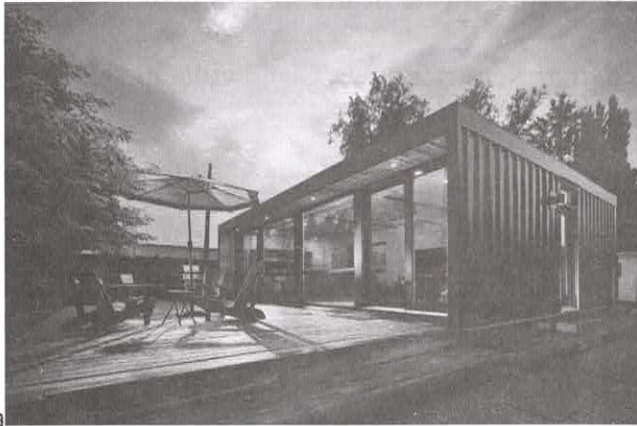
- 1.3.2 Mention the types of roads found on this map. (2)
- 1.3.3 Determine the Distance from Springbok to Cape Town. (2)
- 1.3.4 What is the name of the National Park nearer to Springbok? (2)
- 1.3.5 Calculate the distance from Kamierskron to Clamiwilliam (2)

[29]

QUESTION 2

- 2.1 Khanyi, a Radiologist and a Marathon runner bought a storage container to convert to a house after moving out of her parents' house.

Picture of the container house



Source: Nextluxury.com

On ANNEXURE C is the floor plan of Khanyi's shipping container house.

Use ANNEXURE C to answer the questions that follow.

- 2.1.1 Define floor plan according to context. (2)
- 2.1.2 Determine the number of windows for this plan (2)
- 2.1.3 Calculate the scale of this plan using the length of the bigger bedroom, in the form of 1: ----- (6)
- Note: 1m = 3.28 feet**
- 2.1.4 Explain what is meant by half a bathroom. (2)
- 2.1.5 What is the general direction of the kitchen from the front door? (2)
- 2.1.6 Khanyi is opening one of the doors of the container house. (3)
Determine the probability that it will be an outside door. Write your answer in decimal form.

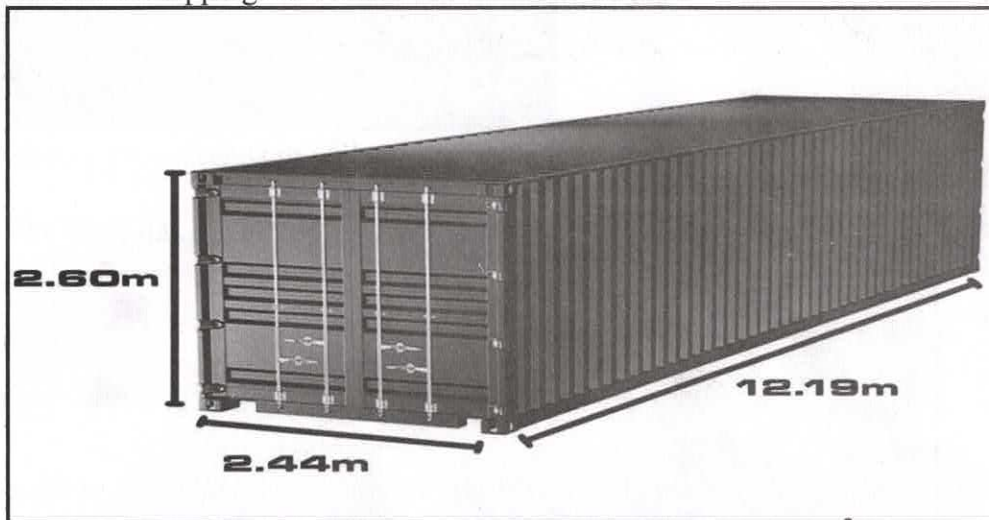
2.2

In 2023 Khanyi took part in the Comrades Marathon. The race started at the Pietermaritzburg City Hall and concluded at the Hollywood bets Kingsmead Cricket Stadium in Durban. The total distance covered was **87.7 kilometers**.

Use **Annexure D** to answer the following questions.

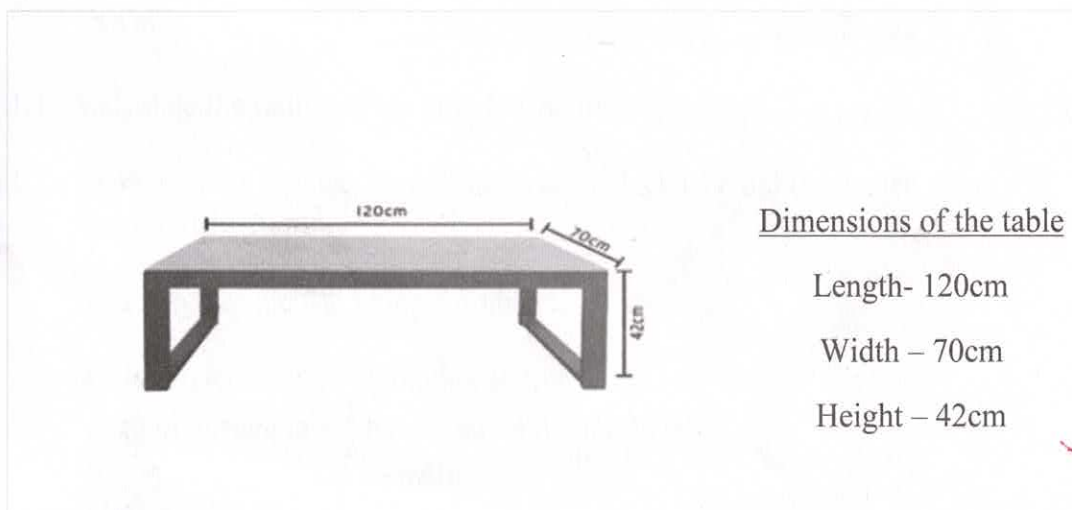
- 2.2.1 What is the highest point on this profile map? (2)
- 2.2.2. a Indicate the CUT OFF time at Drummond. (2)
b. Explain the importance of cut-off in a marathon. (2)
- 2.2.3 What is the distance from the starting point to Cowie's hill? (2)
- 2.3 Khanyi also has a company which manufactures coffee tables. The coffee tables are boxed and packed into shipping containers before they are exported. The dimensions of the boxes used to package the coffee tables are 130cm x 80cm x 50cm. The shipping container have the dimensions of 12.19 m x 2.44 m x 2.60 m

Picture of shipping container



Source: www.containfy.com.au

Picture of coffee table



Dimensions of the table

Length- 120cm

Width – 70cm

Height – 42cm

Source: www.bing.com

NSC

- 2.3.1 Show with calculations which way of packaging the coffee table boxes inside the container will be cost effective. (9)
- 2.3.2 For quality purposes containers A and B are randomly checked for defective coffee tables. If one in every 60 coffee tables is defective and the probability of finding a defective coffee table in any of the containers is equally likely, determine the probability of picking a defective coffee table from container B. (3)

(37)

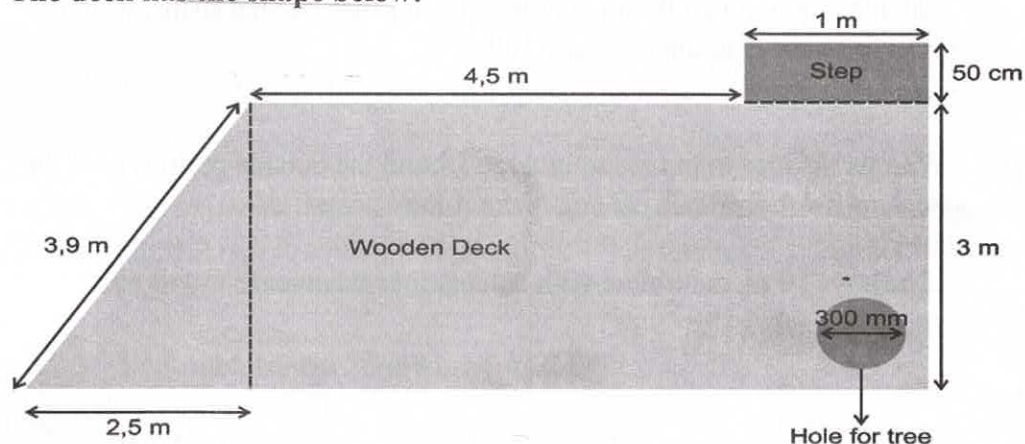
QUESTION 3

- 3.1 Warona has decided to build a wooden deck in his garden. The wooden deck will have a step to make it easier to get onto the deck. There is a tree in one of the corners of the deck which Warona wants to keep so he will have to cut a circular hole out of the deck to accommodate it.

PICTURE OF THE DECK

Source: www.deck.com/gallery

The deck has the shape below:



- 3.1.1 Calculate the radius of the hole for the tree in metres. (2)
- 3.1.2 Show that the surface area of the wooden deck (the lightly shaded area) is more than 20 m^2 . (6)

You may use the following formulae:

Area of a Rectangle = Length $\times$ Breadth

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

Area of a circle = $\pi \times \text{radius}^2$

Use $\pi = 3.142$

- 3.1.3 The circular hole Warona wants to cut out of the deck has a diameter of 300 mm. The circumference of the tree is 0,99m. Determine with the use of calculations whether the hole will be big enough to accommodate the tree. (3)

You may use the following formulae:

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

OR

$$\text{Circumference} = 2 \times \pi \times \text{radius}$$

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

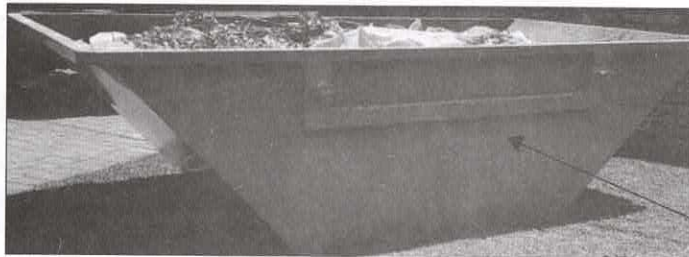
- 3.1.4 The wood for the deck that Warona wants to use is sold in strips of 18 cm $\times$ 1,2m. Warona wants to play it safe and buy enough wood for 21m². He claims that 100 strips will be more than enough. Prove with calculations if his statement is VALID. (5)
- 3.1.5 The strips come in packs of 10 and are sold for R149,90 per pack. Calculate how much it will cost Warona for the wooden strips. Round your answer off to the nearest R100. (5)
- 3.1.6 Warona decides to put a corner edge around the outside perimeter of the deck to finish the deck off and make it look beautiful. (3)

If he buys 20 m, determine with calculations whether that will be enough.

3.2

During these constructions Warona hired a skip bin from the Municipality to use for the rubble. Side **a** and side **b** are parallel to each other. The bin has the following dimensions:
 $L = 1.8\text{m}$, side $a = 1500\text{mm}$, side $b = 1300\text{mm}$ and the height $= 0.8\text{m}$. It weighs 160 kg

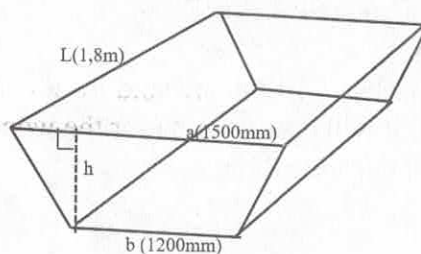
PICTURE OF A SKIP BIN



A

Adapted from bing.com images

Illustration of the dimensions



- 3.2.1 The municipal manager indicated to Warona that the volume of the skip bin is 2 m^3 . Prove with calculations if his statement is correct. Round your answer to nearest whole number. (4)

You may use the following formula:

$$V = \text{Volume} = \frac{1}{2} (a + b) \times h \times L$$

- 3.2.2 Calculate the surface area of the part marked A and its opposite side. (4)

You may use the following formula:

$$SA = \frac{1}{2} \times (\text{sum of parallel sides}) \times \text{height}$$

[32]

QUESTION 4

4.1

The 2023 Rugby world cup was played in France, South Africa defended their title and won the trophy for the fourth time. The Finals were played in Paris at Stade de France stadium which has the capacity of 81 338. The dimensions of the rugby field is 119m x 75m.

Picture of South African Rugby team (affectionately known as the Springboks)



(Source: www.bing.com)

Use the picture above and annexure E to answer the questions that follow:

- 4.1.1 Define the word capacity according to context. (2)
- 4.1.2 Write 81 338 in words. (2)
- 4.1.3 Siya the captain of the Springboks has a BMI of 29.8 kg/m^2 and weighs 103000g. Calculate his height in cm. (4)

You may use the formula: $\text{BMI} = \frac{W \text{ in kg}}{(H \text{ in m})^2}$

- 4.1.4 The pitch was fitted with Desso grass master in 2022. The fitting of the grass on the rugby field costs $\text{€}40/\text{m}^2$. Calculate how much it cost to fit the whole field in rands. (5)

Note: €1 = R20.36

Desso grass master is a sports playing field surface made of natural grass that has artificial fibres added to it.



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MATHEMATICAL LITERACY P2

ADDENDUM

SEPTEMBER 2024



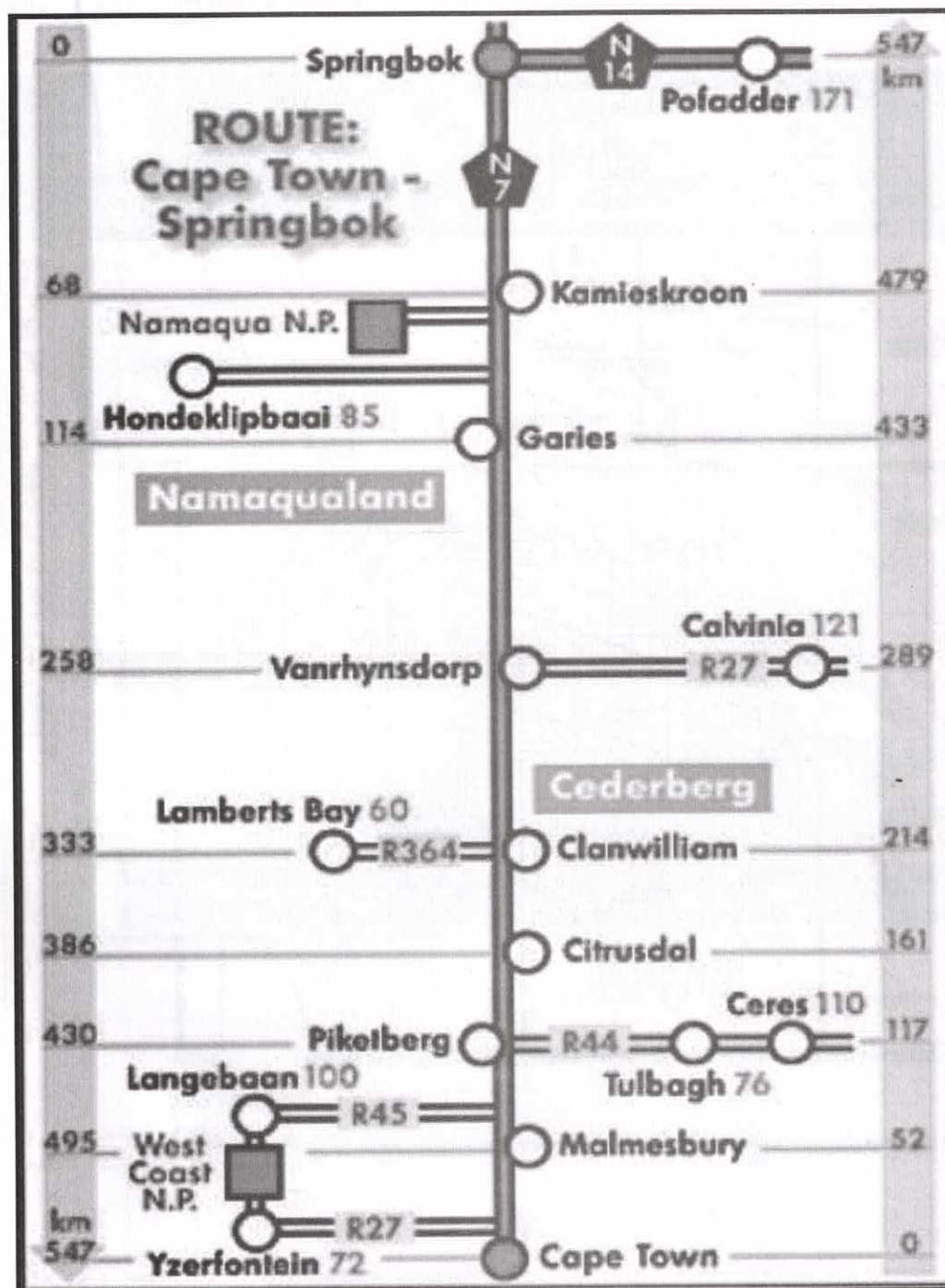
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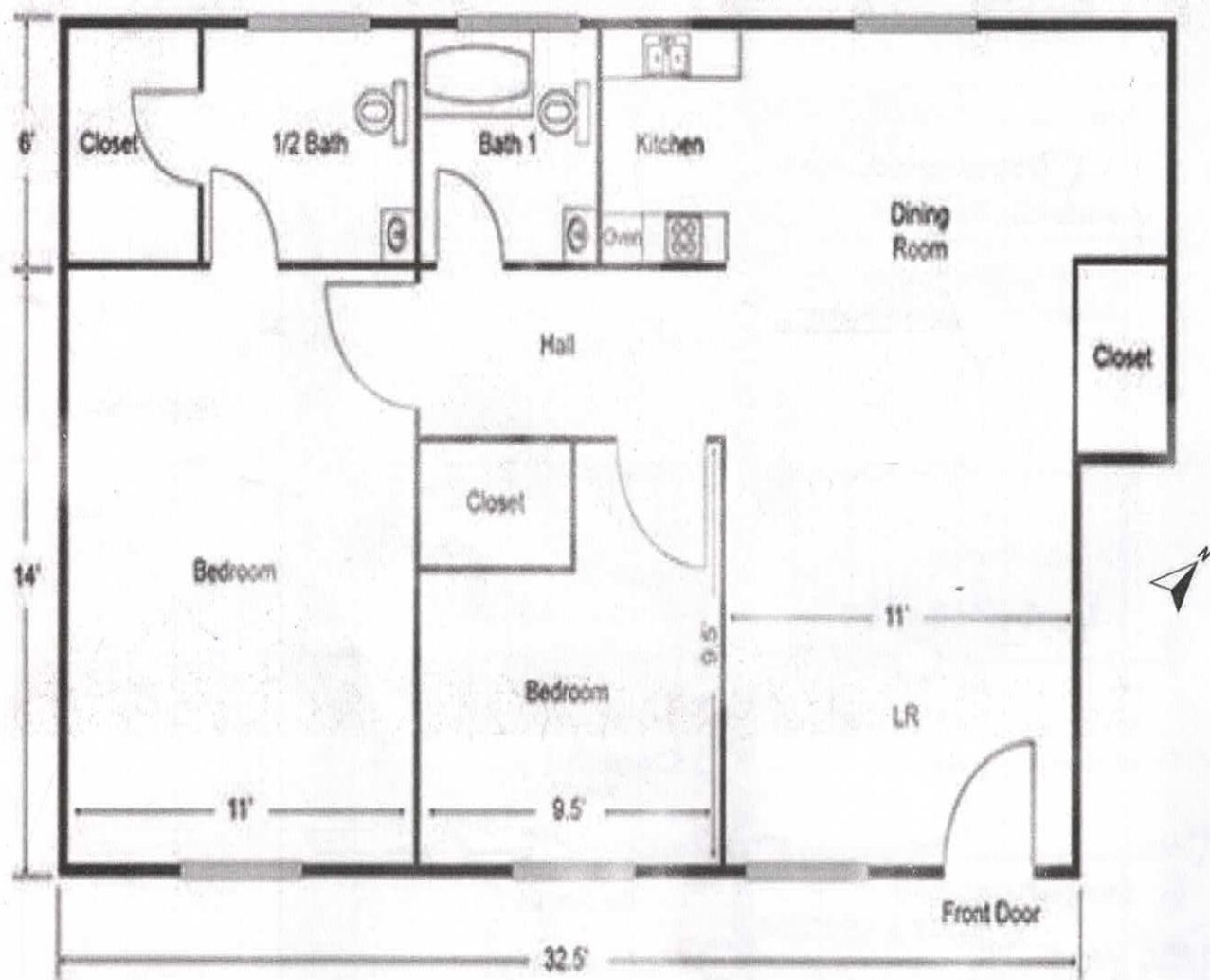
This addendum consists of 6 pages with 5 annexures .

ANNEXURE B

QUESTION 1.3

Springbok to Cape Town Map

Adapted from www.bing.com

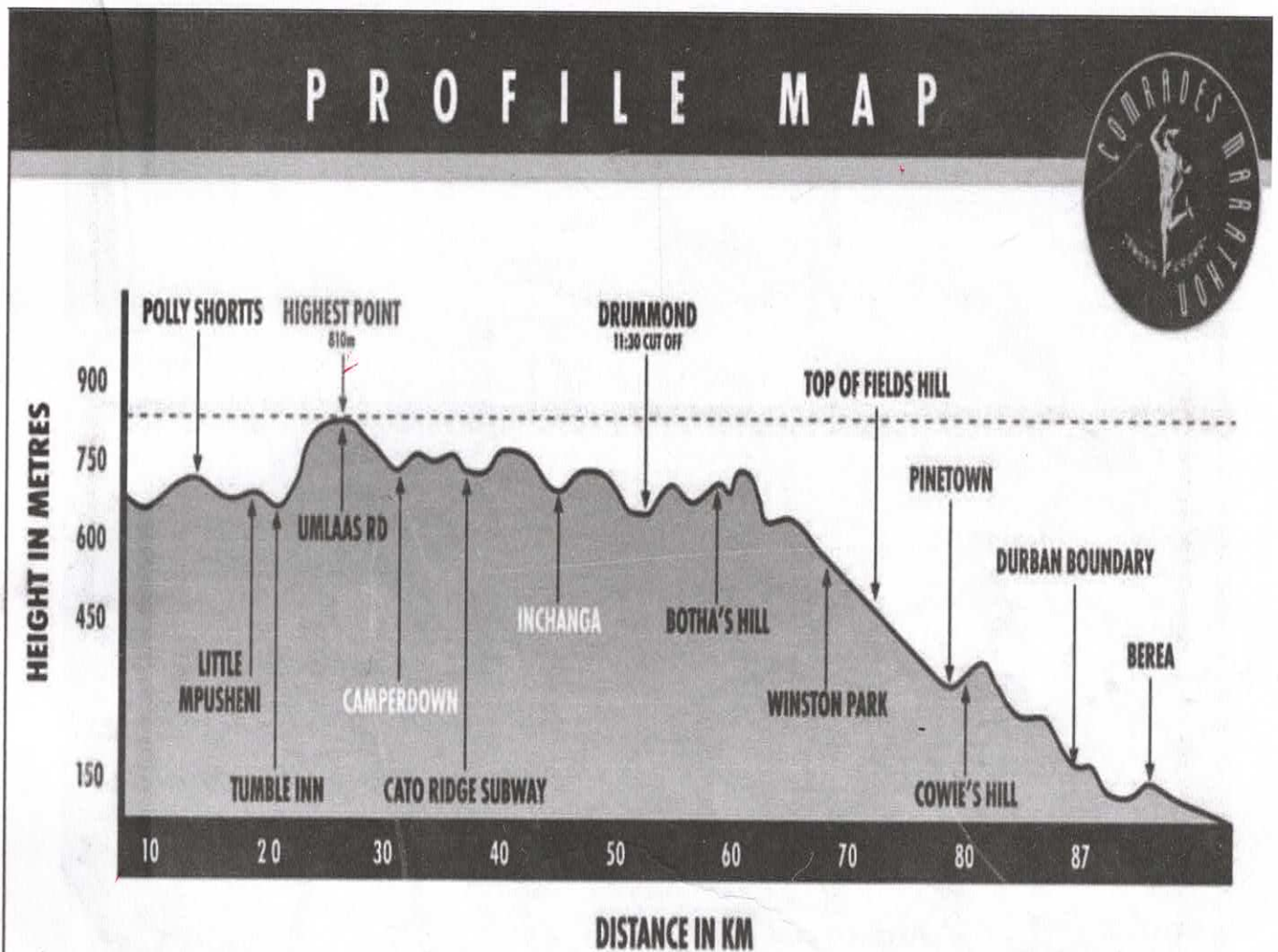
Annexure C**QUESTION 2.1****Floor plan of Khanyi 's container house**

Adapted from pinimg.com

Annexure D

QUESTION 2.2

!2023 Comrades Marathon Route Map



QUESTION 4.1

Adapted from www.bing.com/maps

NSC

4.2 The South African team spent their 28 days in France at the hotel The Domaine des Vannecula in L'isle – Adam 35 km from Paris where the stadium in which they played their finals is situated. (Use Annexure D to answer the questions that follow)

4.2.1 If the team drove from their hotel to the stadium at an average speed of 80km/h, calculate the time it took them to arrive at the stadium in hours, minutes and seconds. (4)

You may use the following formula: $D = S \times T$

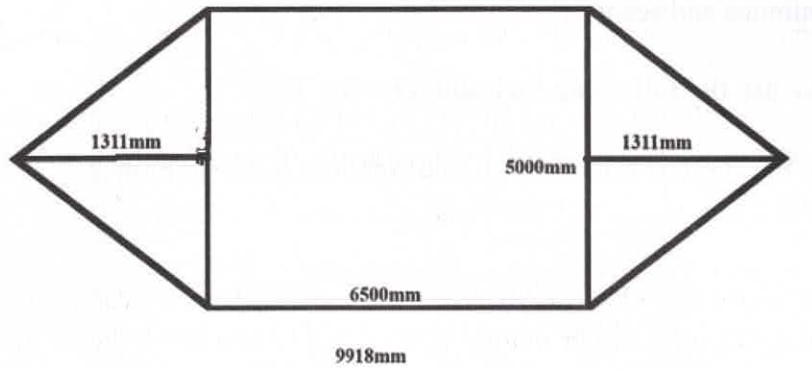
4.2.2 Describe the shortest route from L'isle Adam to Stade de France stadium. (5)

[22]

QUESTION 5

- 5.1. Basil builds a carport in front of his house. The drawing illustrating the inner dimensions are given below.

DRAWING ILLUSTRATING THE INNER DIMENSIONS



- 5.1.1 Calculate the length of the carport in metres. (2)

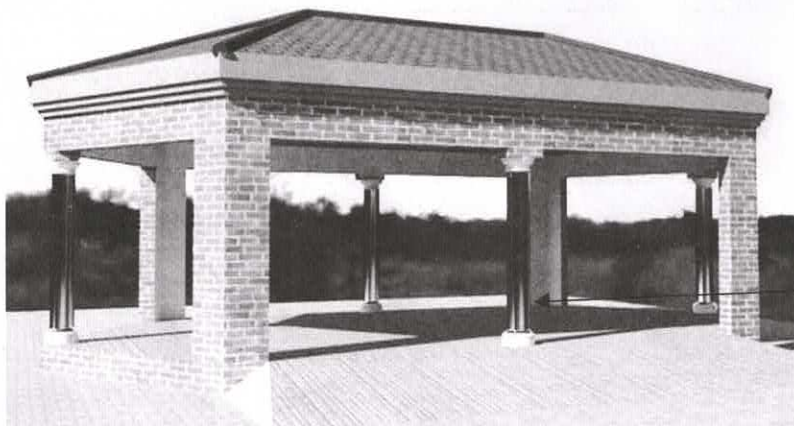
- 5.1.2 Determine the area covered by the carport in metres squared. (4)

You may use the following formula:

Area of the car port = $2(\frac{1}{2} \times \text{base} \times \text{height}) + (\text{length} \times \text{breadth})$

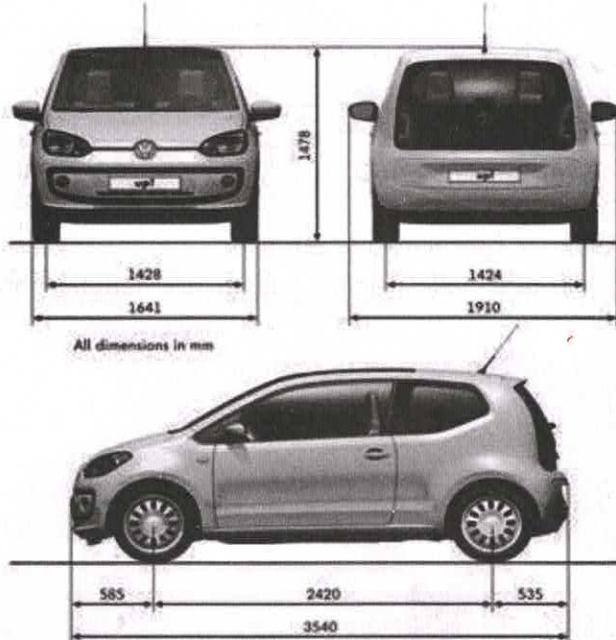
- 5.1.3 Show that Basil requires a minimum of 245 tiles to tile the inside of the carport. The dimension of the tile to be used is 400mm by 400mm. (5)

- 5.2 Basil will like to cover the four pillar posts with a stainless-steel column cladding to decorate the car port, The height of each pillar post is 180cm and the diameter is 27cm.



Cladded pillar post

[source: Khayahouseplans]

	5.2.1	Calculate the total area of the Metal Basil should buy in square meters. You may use the following formula: Surface area of a cylinder = $2\pi rh$	(6)
	5.2.2	The metal is sold at R584.95 per sheet with the 0,5mm×300mm×500mm	
	(a)	Determine how many sheets will be required to cover the four pillars	(4)
	(b)	Hence calculate how much money Basil will need for the four pillar posts.	(2)
5.3	Basil bought two 2014 Polo Vivo cars. The dimensions of the car are given below. Basil argues that there will be enough space for the third car in the carport.  [SOURCE: Carbodydesign.com/gallery/2009/05/14-volkswagen-polo/11]		
	5.3.1	Verify showing calculations whether his statement is valid or not.	(7)
			[30]
		TOTAL:	150



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MATHEMATICAL LITERACY P2
SEPTEMBER EXAMINATION 2024
MARKING GUIDELINE

MARKS/PUNTE: 150

Symbol/	Explanation
M	Method
MA	Method with accuracy
CA	Consistent accuracy
A	Accuracy
C	Conversion
S	Simplification
RT	Reading from a table/graph/document/diagram
SF	Correct substitution in a formula
O	Opinion/Explanation
P	Penalty, e.g. for no units, incorrect rounding off, etc..
R	Rounding off
NPR	No penalty for rounding
AO	Answer only
MCA	Method with consistent accuracy
RCA	Rounding consistent with accuracy

This marking guideline consists of 15 pages

NSC

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

NSC

QUESTION 1 [29 MARKS] Answer only AO- full marks			
Q	Solution	Explanation	T & L
1.1.1	6 ✓✓ RT	2 RT correct number (2)	M L1
1.1.2	Cup= 60ml + 60 ml +60ml + 60 ml ✓ MA = 240ml ✓ A OR CUP = 60x 4 ✓ MA = 240ml ✓ A OR Cup = 60/0,25 ✓ MA = 240ml ✓ A	1MA addition 1A correct answer AO MA Multiplying by 4 A correct answer MA dividing by 0,25 1A correct answer (2)	M L1
1.1.3	10min + 55 min ✓ MA = 1h 05 min ✓ A	1 MA adding correct values 1A correct answer (2)	M L1
1.1.4	16:42 ✓✓ A	1A correct answer (2)	M L1
1.1.5	✓ RT 15ml: 60 ml ✓ A 1 : 4 ✓ CA	1RT Correct values 1A correct order 1CA correct answer (3)	M L1
1.1.6. a	15 ÷ 5 ✓ MA 3 teaspoons ✓ A	1MA division 1A answer (2)	M L1
1.1.6. b	$\frac{3.75}{15} \times 100$ ✓ M 25% ✓ CA	1M multiplying by 100 1A correct answer (2)	M L1
1.2 1	2 829 ÷ 1 000 = 2.89 kg ✓✓ C	2C Conversion (2)	M L1
1.2.2	15 lb ✓✓ A	2A correct weight (2)	M L1
1.3.1	Strip map ✓✓ A	2A correct answer (2)	MP L1
1.3.2	✓ ✓ A National roads and Regional / provincial roads	2A correct names (2)	MP L1
1.3.3	547 km ✓✓ A	2A correct distance (2)	MP L1

NSC

1.3.4	Namaqua national park ✓✓ A	2A correct answer (2)	MP L1
1.3.5	479 – 214 ✓ MA 265 km ✓ A	1MA subtraction 1A correct answer (2)	MP L1
		[29]	

NSC

QUESTION 2 (37 MARKS)			
Q	Solution	Explanation	T & L
2.1.1	Floor plan is the top view of the design and dimensions of the inside of Khanyi's container house. ✓✓ A OR Floor plan is the Aerial view of the design and arrangements of the inside of Khanyi's container house. ✓✓ A	2A explanation (2)	MP L1
2.1.2	6 ✓✓ RT	2RT correct number (2)	MP L1
2.1.3	Length = $(14 + 6) \div 3.28$ ✓ C $= 6.097$ $= 6.1 \text{ m}$ ✓ A ✓ A 11.2 cm: $6.1 \text{ m} \times 100$ ✓ CA 11.2: 610 ✓ C 1: 54.46... 1: 55 ✓ CA OR Length = $(14 + 6) \div 3.28$ ✓ C $= 6.097$ $= 6.1 \text{ m}$ ✓ A ✓ A ✓ CA 112 mm : $6.1 \text{ m} \times 1000$ ✓ C 112: 6 100 1: 54,46... 1: 55 ✓ CA	1 A dividing length by 3.28 1 CA correct answer 1A measured value 1CA correct order 1C conversion 1CA simplification Accept: 11,1 – 11,3 cm 1 A dividing length by 3.28 1 CA correct answer 1A measured value 1CA correct order 1C conversion 1CA simplification Accept: 11.1 – 11.3 mm NPR (6)	MP L2

NSC

2.1.4	Half a bath also known as a powder room contains a toilet and a basin, there is no bath tub or shower. ✓✓ A	2A Explanation (2)	MP L1
2.1.5	West ✓✓ A	2A direction (2)	MP L2
2.1.6	$\frac{1}{6}$ ✓ A ✓ A 0,17 ✓ A	1A numerator 1A denominator 1 A correct answer (3)	P L2
2.2.1	Umlaas Road, 810m ✓✓ RT	2 RT correct answer (2)	MP L2
2.2.2. a	11;30 ✓✓ RT	2RT correct answer (2)	MP L2
b	CUT OFF times are crucial to complete the race within a specific limit. ✓✓ A	2A explanation (2)	MP L4
2.2.3	80km ✓✓ RT	2RT correct distance (2)	MP L1
2.3.1	Option 1 $L = \frac{12.19}{1.3}$ ✓ MA = 9.376... = 9 ✓ RT $W = \frac{2.44}{0.8}$ = 3.05 = 3 ✓ A $H = \frac{2.60}{0.5}$ = 5.2 = 5 ✓ A Total = 9 x 3 x 5 = 135 coffee tables ✓ A	1MA dividing 1R rounding down 1A simplification 1A simplification 1CA correct number of tables 1 A simplification	MP L4

NSC

	Option 2 L/W $\frac{12.19}{0.8}$ $= 15.2375$ $= 15 \quad \checkmark \quad A$ W/L = $\frac{2.44}{1.3}$ $= 1.876...$ $= 1 \quad \checkmark \quad A$ Total = $15 \times 1 \times 5$ $= 75$ coffee tables $\checkmark \quad CA$ Option 1 will be cost effective $\checkmark \quad O$	1A simplification 1 CA correct number of tables 1O Conclusion (9)	
2.3.2	$\checkmark A$ $\frac{1}{2} \times \frac{1}{60} \checkmark A$ $\frac{1}{120} \quad \checkmark \quad CA$	1A for correct value $\frac{1}{2}$ 1A for correct value $\frac{1}{60}$ 1CA correct answer (3)	P L2
		[37]	

NSC

QUESTION 3 [32 MARKS]			
Q	Solution	Explanation	T & L
3.1.1	$\text{Radius} = \frac{300}{2} \quad \checkmark \text{ A}$ $= \frac{150}{1000}$ $= 0.15 \text{ m} \quad \checkmark \text{ C}$	1 A calculating radius 1C conversion (2)	M L 2
3.1.2	$\text{Area of a triangle} = \frac{1}{2} \times b \times h$ $= \frac{1}{2} \times 2.5 \times 3 \quad \checkmark \text{ SF}$ $= 3.75 \text{ m}^2 \quad \checkmark \text{ CA}$ $\text{Area of a Rectangle} = 5.5 \times 3$ $= 16.5 \text{ m}^2 \quad \checkmark \text{ CA}$ $\text{Area of a circle} = 3.142 \times (0.15)^2$ $= 0.070695 \text{ m}^2 \quad \checkmark \text{ CA}$ $\text{Total area} = 3.75 + 16.5 - 0.070695 \quad \checkmark \text{ MCA}$ $= 20.179305 \quad \checkmark \text{ CA}$ $\approx 20 \text{ m}^2$	1SF substitution 1 CA area of triangular part 1CA area of rectangular part 1CA area of circular part 1MCA adding 3 areas 1CA correct answer (6)	M L3
3.1.3	$\text{Circumference of hole} = 2 \times 3.142 \times 0.15 \quad \checkmark \text{ SF}$ $= 0.9426 \text{ m} \quad \checkmark \text{ CA}$ $\text{Circumference of tree} = 0.99 \text{ m}$ $\text{The hole will be small} \quad \checkmark \text{ O}$ OR	1SF substitution 1CA circumference of hole 1O Verification 1M dividing by 3,142	M L4

NSC

	Diameter of tree = $\frac{0.99}{3.142}$ ✓ M = 0.31508... = 315 mm ✓ CA The hole will be small ✓ O	1CA circumference 1O verification (3)	
3.1.4	Area of a strip = $1.2 \times \frac{18}{100}$ ✓ C = 1.2×0.18 = 0.216 m^2 ✓ CA Total number of strips = $\frac{21}{0.216}$ ✓ CA = 97.222... = 98 strips ✓ CA Statement is valid ✓ O OR ✓ A ✓ M Total no. of strips = $\frac{7}{0.18} \times \frac{3}{1.2}$ ✓ CA = 97.222... = 98 strips ✓ CA The statement is valid. ✓ O	1 C conversion of width of strip 1CA area of strips 1CA dividing by area of strips 1CA number of strips 1O Justification 1A area of the deck 1M multiplication 1CA for dividing by area of strips 1CA number of strips 1O Justification (5)	M L4
3.1.5	Number of packs = $98 \div 10$ ✓ MCA = 9,8 = 10 ✓ CA Total cost = $10 \times \text{R}149,90$ ✓ MA = R1499 ✓ CA ≈ R1500 ✓ R	1MCA dividing by 10 1CA correct answer 1MA multiplying with rate 1CA simplification 1R correct rounding (5)	M/F L3

NSC

3.1.6	$\begin{aligned} & \checkmark A \\ & P \text{ of edge of deck} = 5.5\text{m} + 3\text{m} + 5.5\text{m} + 2.5\text{m} + 3.9\text{m} \\ & = 20.4\text{ m} \quad \checkmark CA \\ & \text{No, it will not be enough} \quad \checkmark O \end{aligned}$	1A adding all values 1 CA correct answer 1O verification (3)	M L4
3.2.1	$\begin{aligned} & L = 1.8\text{m}, \quad a = 1,500\text{mm} \div 1000 = 1,5\text{m} \\ & b = 1300\text{mm} \div 1000 = 1,3\text{m} \quad h = 0,8\text{m} \quad \checkmark C \\ & \text{Volume} = \frac{1}{2} (a + b) \times h \times L \\ & = \frac{1}{2} (1,5\text{m} + 1,3\text{m}) \times 0.8\text{m} \times 1,8\text{m} \quad \checkmark SF \\ & = 2.016\text{m}^3 \\ & = 2\text{ m}^3 \quad \checkmark CA \\ & \text{He is correct.} \quad \checkmark \end{aligned}$	1C correct conversion 1SF substitution 1CA simplification NPR (4)	M L4
3.2.2	$\begin{aligned} & \text{Area of} = \frac{1}{2} \times (\text{sum of parallel sides}) \times \text{height} \\ & = \frac{1}{2} \times (1.5\text{m} + 1.3\text{m}) \times 0.8\text{m} \quad \checkmark SF \\ & \quad \checkmark S \\ & = 1,12\text{m}^2 \times 2 \quad \checkmark A \\ & = 2.24\text{m}^2 \quad \checkmark CA \end{aligned}$	1 SF simplification 1S simplification 1A multiplying by 2 1 CA correct answer (4)	M L3
		[32]	

NSC

QUESTION 4 [22 MARKS]			
Q	Solution	Explanation	T & L
4.1.1	Capacity is the maximum amount of people that can be accommodated inside Stade de France ✓✓A	2A correct definition (2)	MP L 1
4.1.2	Eighty-one thousand three hundred and thirty-eight people ✓✓A	2A writing in words (2)	MP L1
4.1.3	✓A $H^2 = \frac{103}{29.8}$ ✓SF $H = \sqrt{\frac{103}{29.8}}$ $H = 1.8591\dots\text{m}$ S $H = 1.86\text{ m}$ $H = 186\text{ cm}$ ✓ CA	1A changing the subject of the formula 1 SF substitution 1A simplification 1CA correct answer (4)	M L2
4.1.4	Area of the field = 119×75 ✓ SF $= 8\,925\text{m}^2$ ✓ CA Cost = $40 \times 8\,925\text{m}^2$ ✓ A $= €\,357\,000 \times 20.36$ ✓ A $= R\,7\,268\,520$ ✓ CA	1 SF substitution 1CA Area of the field 1A multiplying by 40 1A multiplying by 20,36 1CA correct answer (5)	M/F L2
4.2.1	$D = s \times t$ A✓ $\text{time} = \frac{35\text{km}}{80\text{km/h}}$ ✓ SF $= 0.4375\text{ hrs}$ ✓ S $= 0\text{hrs } 26\text{ min } 15\text{ sec}$ ✓ C	1A changing the subject 1SF substitution 1S simplification 1C conversion of time (4)	MP L2

NSC

4.2.2	1. Start from L'Isle-Adam and head south west on D64. ✓ A 2. Merge onto A16 and turn right toward Paris. ✓ A 3. Continue on A16, passing through N104. ✓ A 4. Take the right exit onto N1 after passing Garges – Les - Gonesse. ✓ A 5. Continue on N1 turn left into Stade de France. A	1A head south west on D64 1A turn into A16 and turn right 1A passing D104 Take right exit from N1 1A turn left (5)	MP L4
		[22]	

NSC

QUESTION 5 [30 MARKS]			
Q	Solution	Explanation	T&L
5.1.1	$9918\text{mm to m} = \frac{9918}{1000} \checkmark \text{M}$ $= 9.918\text{m} \checkmark \text{A}$	1M Method of dividing 1A Answer (2)	M L1
5.1.2	$\text{Area of the car port} = 2\left(\frac{1}{2} \times 5000\text{mm} \times 1311\text{mm}\right) + (6500\text{mm} \times 5000\text{mm}) \checkmark \text{SF}$ $= 39\,055\,000\text{mm}^2 \checkmark \text{S}$ $\text{Area in m} = \frac{39\,055\,000}{1\,000\,000} \checkmark \text{C}$ $= 39.055\text{m}^2 \checkmark \text{CA}$ OR $\checkmark \text{C}$ $\text{Area of the car port} = 2\left(\frac{1}{2} \times 5\text{m} \times 1.311\text{m}\right) + (6.5\text{m} \times 5\text{m}) \checkmark \text{SF}$ $= 6,555\text{m}^2 + 32,5\text{m}^2 \checkmark \text{S}$ $= 39.055\text{m}^2 \checkmark \text{CA}$	1SF Correct Substitution 1S Simplification 1C Conversion 1 CA Simplification (4)	M L2
5.1.3	$\text{Area of a Tile} = 400\text{mm} \times 400\text{mm}$ $= 160\,000\text{mm}^2 \checkmark \text{A}$ $\text{Area of a tile in m}^2 = \frac{160\,000\text{mm}^2}{1\,000\,000} \checkmark \text{C}$ $= 0.16\text{m}^2 \checkmark \text{A}$	1A Simplification 1C Conversion 1A Simplification	M L3

NSC

	$\text{No. Of tiles required} = \frac{39.055m^2}{0.16m^2} \checkmark \text{MA}$ $= 244.0937 \text{ tiles}$ $\approx 245 \text{ tiles} \checkmark \text{A}$	1MA Dividing area of carport by area of tile 1A Simplification (5)	
5.2.1.	$\text{Surface Area of a Cylinder} = 2\pi rh$ $= 2 \times 3.142 \times 0,135m \times 1.8m \checkmark \text{C} \checkmark \text{SF}$ $= 1,527012 m^2 \checkmark \text{CA}$ $= 1.53m^2 \checkmark \text{R}$ $\text{For 4 pillars} = 1.53m^2 \times 4 \checkmark \text{M}$ $= 6.12m^2 \checkmark \text{CA}$	1SF Substituting correct values 1C Conversion 1CA Simplification 1 R Rounding 1M Multiplying by 4 1CA Simplification (6)	M L3
5.2.2.a	$\text{Area of a sheet} = 0.3 m \times 0.5m \checkmark \text{M}$ $= 0.15m^2 \checkmark \text{A}$ $\text{No of Sheets} = \frac{6.12m^2}{0.15m^2} \checkmark \text{MA}$ $= 40.8 \text{ sheets}$ $= 41 \text{ sheets} \checkmark \text{A}$	1M Calculating area 1A Simplification 1MA dividing correct values 1A Rounded Answer (4)	M L3
5.2.2. b	$\text{Total cost} = 41 \times R584.95 \checkmark \text{M}$ $= R23982.95 \checkmark \text{A}$	1M Multiplying correct values 1A Answer (2)	M L2

NSC

5.3.1	Area occupied by two cars = $1910\text{ mm} \times 3540\text{ mm} \times 2 \checkmark \text{MA}$ = $13522800\text{ mm}^2 \checkmark \text{A}$ Area of the rectangular part of the carport = $6500\text{ mm} \times 5000\text{ mm}$ = $32\,500\,000\text{ mm}^2 \checkmark$ Area remaining = $32\,500\,000\text{ mm}^2 - 13\,522\,800\text{ mm}^2 \checkmark \text{M}$ = $18\,977\,200\text{ mm}^2 \checkmark \text{CA}$ Area for one car = $\frac{13\,522\,800\text{ mm}^2}{2}$ = $6\,761\,400\text{ mm}^2 \checkmark \text{A}$ Basil is correct, the remaining area is enough to fit the third car $\checkmark \text{A}$	1MA Multiplying correct values 1A Simplification 1CA Simplification 1M Subtracting 1CA Simplification 1A Correct area for one car 1O Opinion (7)	MP L4
		[30]	
		TOTAL: 150	



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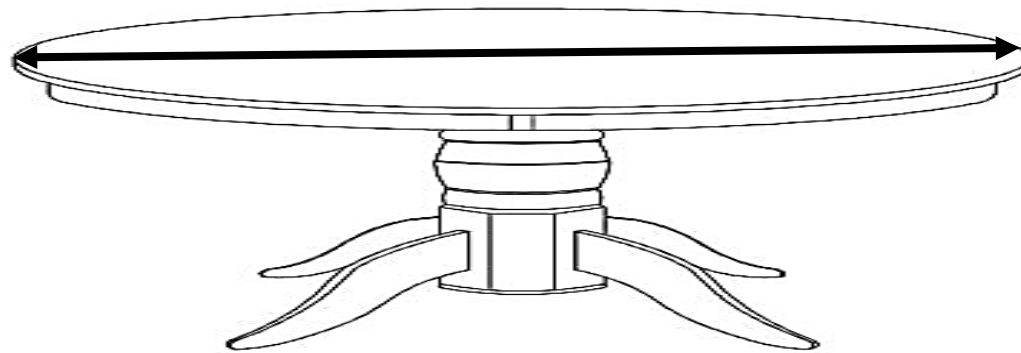
GRADE 12

MATHEMATICAL LITERACY P2

SEPTEMBER 2024

ADDENDUM

This addendum consists of 6 pages with 5 annexures.

ANNEXURE A: ASSEMBLY INSTRUCTIONS.**QUESTION 1.2****PADSTOW CIRCULAR DINING TABLE : Assembly Instructions****c****COMPONENT CHECKLIST****1 PEDESTAL CENTRE**

1 piece

2 PEDESTAL FOOT

4 pieces

3 MOUNTING BOARD

1 piece

4 TABLE TOP

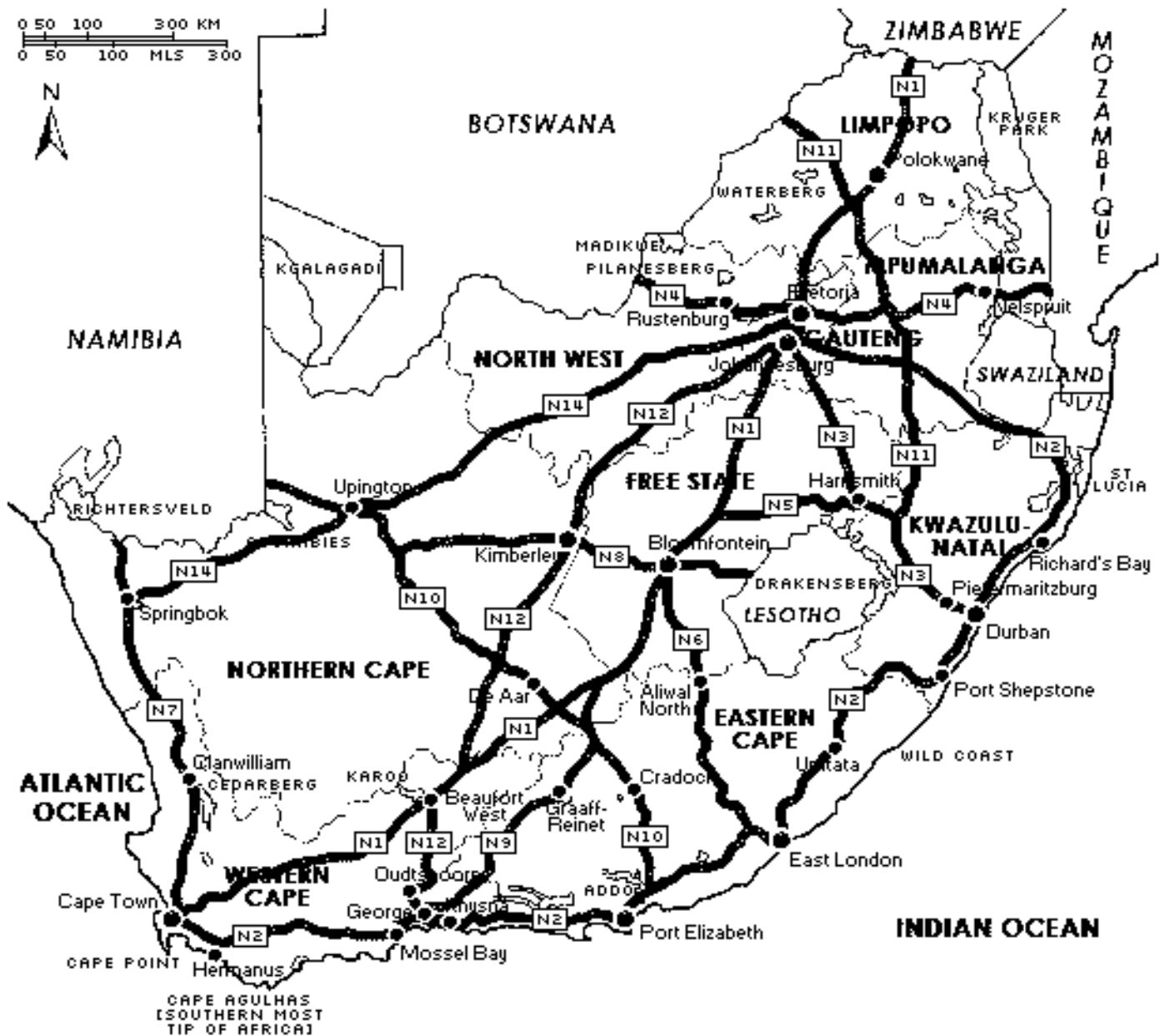
1 piece

Page 1/3**Product Assistance Line:** if you require any advice about this product or require any missing fixings, Please call 0800 083 35 73 between 9.00am and 5.30pm, Monday to Friday. If you are missing any of the components from the components list please contact JD Williams directly on 0871 231 2000.

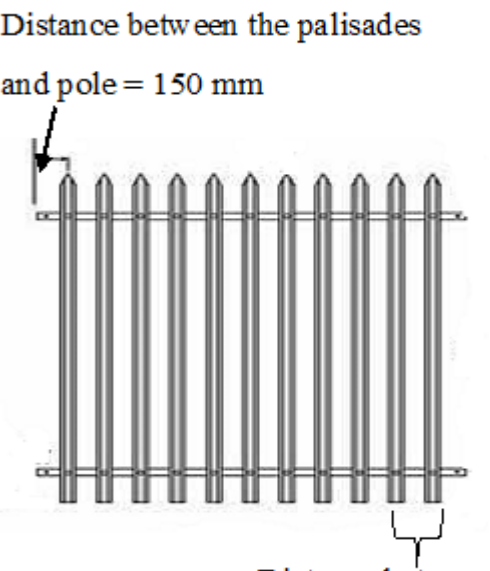
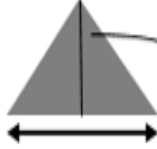
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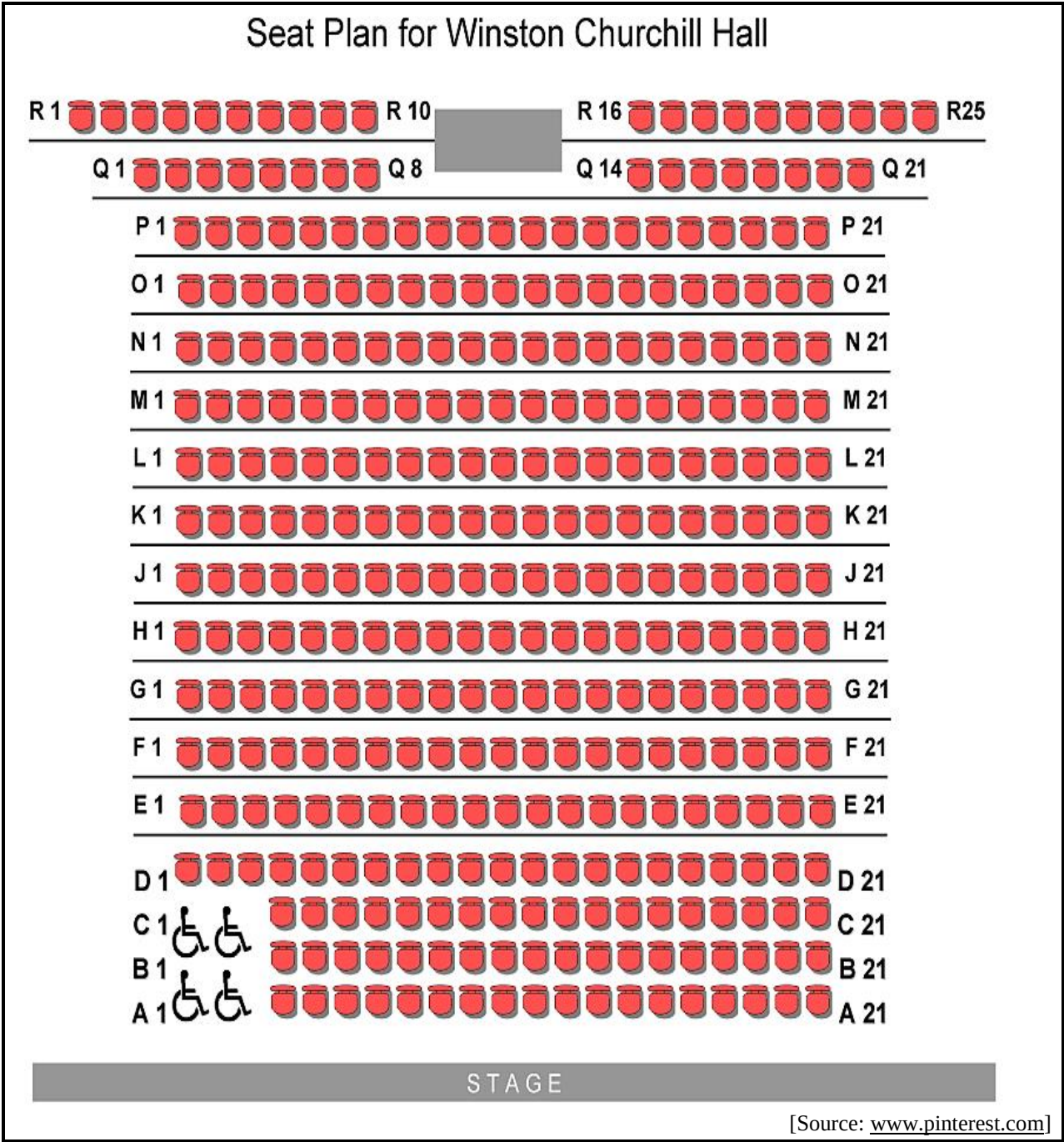
[Source:ManualsLib.com]

ANNEXURE B: MAP OF SOUTH AFRICA.**QUESTION 2**[Source: www.sa-venues.com]

ANNEXURE C: PICTURES AND DIAGRAMS WITH DIMENSIONS OF PALISADE FENCING.**QUESTION 3**

PART OF THE PALISADE FENCE WITH A POLE.	PALISADE WITHOUTH POLES
FIGURE 1.	FIGURE 2.
 Width of pole = 150 mm	 Distance between the palisades and pole = 150 mm Distance between palisades = 180 mm
PART OF PALISADE FENCE WITH GALVANIZED STEEL POLES.	SIDE VIEW OF POLE CAP
FIGURE 3.	FIGURE 4.
	 Perpendicular height = 11 cm 160 mm
[Source: Adapted from www.palisadefence.net]	

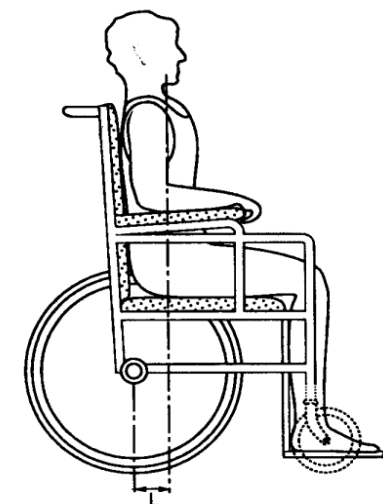
**ANNEXURE D:
SEATING PLAN FOR WINSTON CHURCHILL HALL WITH 346 SEATS.**



ANNEXURE E : PICTURES OF A WHEELCHAIR

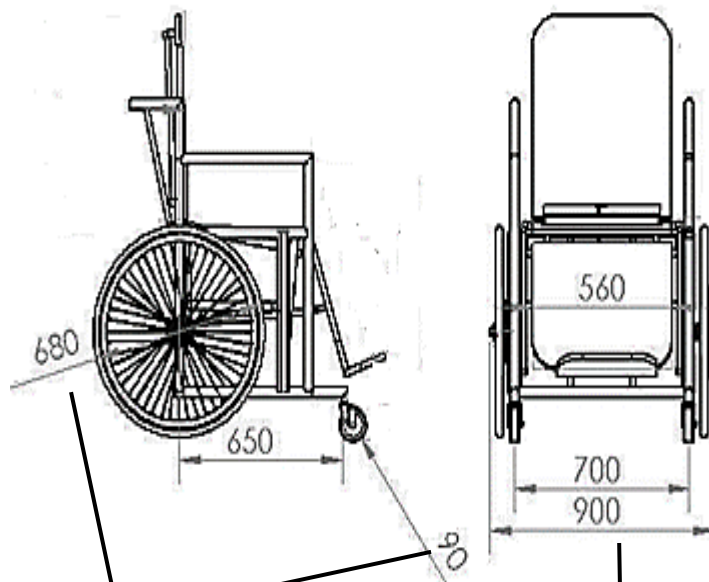
QUESTION 4.2

SIDE VIEW OF A WHEELCHAIR.



Length

PICTURE OF A WHEELCHAIR WITH DIMENSIONS.



Diameter of wheels

Width

PICTURE OF A WHEELCHAIR BOX WITH DIMENSIONS.



Length = 110 cm

Width = 33 cm

Height = 70 cm

NOTE: All dimensions of the wheelchair are in millimeters

[Source: Reasearchgate]



education

**MPUMALANGA PROVINCE
REPUBLIC OF SOUTH AFRICA**

**NATIONAL
SENIOR CERTIFICATE**

GRADE 12

**MATHEMATICAL LITERACY P2
SEPTEMBER 2024**

MARKS: 150

TIME: 3 hours

This question paper consists of 14 pages and an addendum with 5 annexures.

INSTRUCTIONS AND INFORMATION

1. This question paper consists of **FIVE** questions. Answer **ALL** the questions.
2. Use the ANNEXURES in the ADDENDUM for the following questions:

ANNEXURE A for QUESTION 1.3
ANNEXURE B for QUESTION 2.1
ANNEXURE C for QUESTION 3.1
ANNEXURE D for QUESTION 4.1
ANNEXURE E for QUESTION 4.2
3. Number the answers 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, non-graphical), unless stated otherwise.
6. Show ALL calculations clearly.
7. Round off ALL final answers appropriately according to the given context, unless stated otherwise.
8. Indicate units of measurement, where applicable.
9. Maps and diagrams may not be drawn to scale, unless stated otherwise.
10. Write neatly and legibly.

QUESTION 1

1.1 The scale used on a wall map in a Museum is 1: 300 000

1.1.1 Identify the type of scale given above. (2)

1.1.2 Explain the meaning of the scale that was given in the Museum. (2)

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

TABLE 1: EXPLANATIONS AND DEFINITIONS OF CONCEPTS

A	The total area of all the faces of a 3D-shaped object.
B	Total distance around the boundary of a shape.
C	Inside of a building from a top view.
D	The rate of covering a certain distance over time.
E	Space occupied by a 2D-shaped object.
F	Outside of a building as seen from a side view.
G	Distance from the centre of a circle to the outer part of the circle.
H	Straight line that passes through the centre of a circle whose endpoints lie on the circle.

Use the information above to write down the letter of the explanation or definition (A to H) of each of the following concepts:

1.2.1 Speed (2)

1.2.2 Radius (2)

1.2.3 Surface area (2)

1.2.4 Floor Plan (2)

1.2.5 Perimeter (2)

1.3 ANNEXURE A shows the diagram of an item to be assembled.

Use ANNEXURE A to answer the questions that follow.

1.3.1 Identify the name of part 4. (2)

1.3.2 Determine the number of the pedestal foot pieces needed to complete the item. (2)

1.3.3 Give the name the item to be assembled. (2)

1.3.4 Measure in millimetres, the diameter of the table. (2)

1.3.5 Write down the unit of measurement that will be used when determining the area of the top of the table in the diagram. (2)

1.4 The picture below shows a pack of 4 tins of baked beans.



[Source: <https://www.koo.co.za>]

Use the information above to answer the questions that follow.

1.4.1 Convert the mass of a tin to kilograms. (2)

1.4.2 Determine the number of packs of KOO beans to make a dozen. (2)

1.4.3 Calculate the total weight in grams, of one dozen tins of KOO beans. (2)

[30]

QUESTION 2

2.1

The Chauke family, consisting of the wife, husband and daughter plan to spend the Easter holiday with friends in Rustenburg.

- The family will be travelling by car from Polokwane to Rustenburg.
- The family intends to take a 1 hour 30 minutes break in Pretoria.
- They will be departing from Polokwane on Thursday at 07:00 and plan to arrive in Rustenburg at 12:50
- They are driving a Audi Q5,
- The fuel consumption of the car is 6,8litres / 100 km.

A map of South Africa and all the national routes shown on ANNEXURE B.

Study the map on ANNEXURE B to answer the questions that follow.

2.1.1 Write down the name/s of the roads they will be travelling along to Rustenburg. (2)

2.1.2 Identify the general direction of Rustenburg from Polokwane. (2)

2.1.3 Explain the purpose of taking a break when travelling long distances. (2)

2.1.4 Use the scale to determine the actual distance between Polokwane and Rustenburg. Show ALL calculations. Give your answer to the nearest km. (6)

2.1.5 The Chauke family claimed that they will be travelling at an average speed of 110 km/hr.

Show by means of calculations if their claim is VALID.

The following formula may be used: $\text{Speed} = \frac{\text{Distance}}{\text{Time}}$

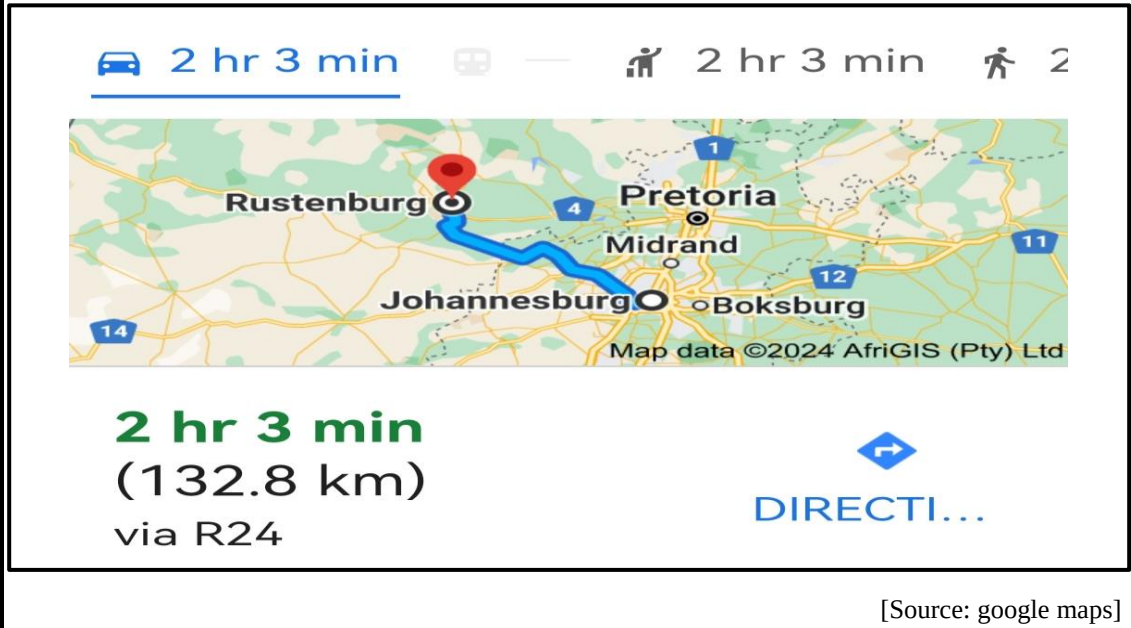
(5)

2.1.6 Calculate the amount of petrol that will be used for a return trip from Polokwane to Rustenburg by road. (4)

2.2

Mr Chauke and the family have an option of travelling by air from Polokwane International Airport to OR Tambo International Airport in Johannesburg.

- The duration of the flight is 55 minutes.
- They will spend 1 hour at the OR Tambo International Airport for disembarking (getting off the plane) and picking up their hired car.
- The distance from OR Tambo International Airport to Rustenburg is 132,8 km as shown on the map below.



Use the map and the information above to answer the following questions.

2.2.1 The Chauke family claimed that they will save 1,87 hours of their time if they use the flight.

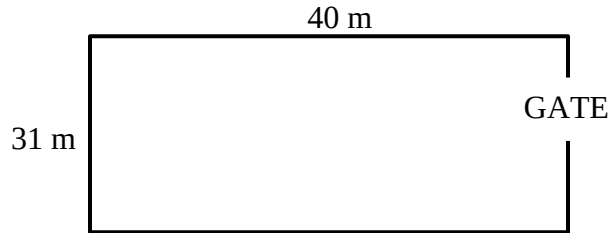
Use calculations to verify if the time is CORRECT.

(6)

[27]

QUESTION 3

- 3.1 Timothy has a 40 m by 31 m property and wants to erect a palisade fencing on the boundary of his property. The palisade fence will be erected on two adjacent sides of the property.



The palisade fencing consists of 1, 75-metre-long square galvanised steel pole with palisade fence in between. Each galvanised steel pole is 150 mm wide and is covered with a cap on top. The cap sides has a base of 16 cm and a perpendicular height of 11 cm.

ANNEXURE C shows pictures and diagrams with dimensions of palisade fencing.

Use information above to answer the questions that follow.

- 3.1.1 Use FIGURE 3 to show that the length of each palisade fencing with two galvanised poles on either side is 2 760 mm. (3)
- 3.1.2 Calculate, in m^2 the area of a palisade fencing with two galvanised poles on either side. (3)
- 3.1.3 The contractor claimed that the total surface area of one galvanised steel pole needed to erect the palisade fence is less than $1,2 \text{ m}^2$

Verify Using calculations if the claim is VALID.

You may use the formulae:

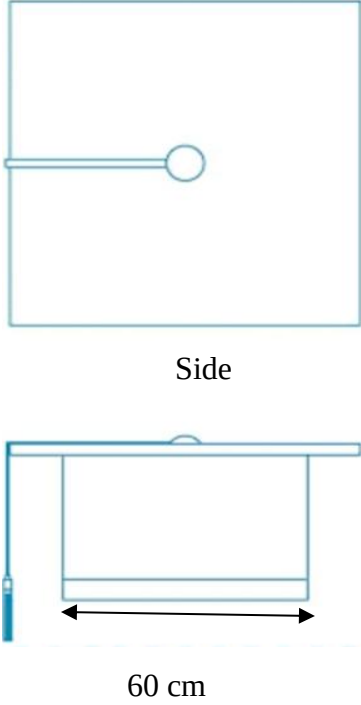
$$\text{Area of a triangle} = \frac{1}{2} \times \text{base} \times \text{perpendicular height}$$

$$\text{Area of a square} = \text{side} \times \text{side}$$

(9)

- 3.2 Timothy has a daughter who is graduating with the University of Stellenbosch. Graduands are obligated to wear a formal academic attire during the graduation ceremony. A mortarboard or academic cap is part of the academic attire.

The diagrams and dimensions of a mortarboard are given below.

PICTURE OF A MORTARBOARD	DIMENSIONS OF MORTARBOARD
 Mortarboard Area of mortarboard = 900 cm^2	 Side 60 cm

Area of a square = side $\times$ side

Circumference = $3,142 \times$ Diameter

- Graduands are graduating students
- Mortarboard is a graduate cap/ academic cap

[Source: Asuringknowhow.com]

Use the information above to answer the questions that follow.

- 3.2.1 Determine the side length of the square mortarboard if the area is 900 cm^2 (2)
- 3.2.2 Calculate the circumference of the mortarboard to the nearest cm. (2)

3.3 Certificates are handed out to graduating students in certificate holders.

The picture and dimensions of a certificate holder are given below.

PICTURE OF A CERTIFICATE HOLDER WITH DIMENSIONS	
	Length = 30,48 cm Outside diameter = 1,8 inches
	NOTE: 1 inch = 2,54 cm

[Source:Amazon.com]

Use the information above to answer the questions that follow.

3.3.1 Convert the diameter of the certificate holder to cm. (2)

3.3.2 Calculate, in cm^3 , the volume of the certificate holder.

You may use the formula:

Volume of a cylinder = $\pi \times \text{radius}^2 \times \text{height}$, where $\pi = 3,142$ (3)

3.3.3 The temperature on the day of the graduation is 38°C . Convert the temperature to the nearest degree Fahrenheit.

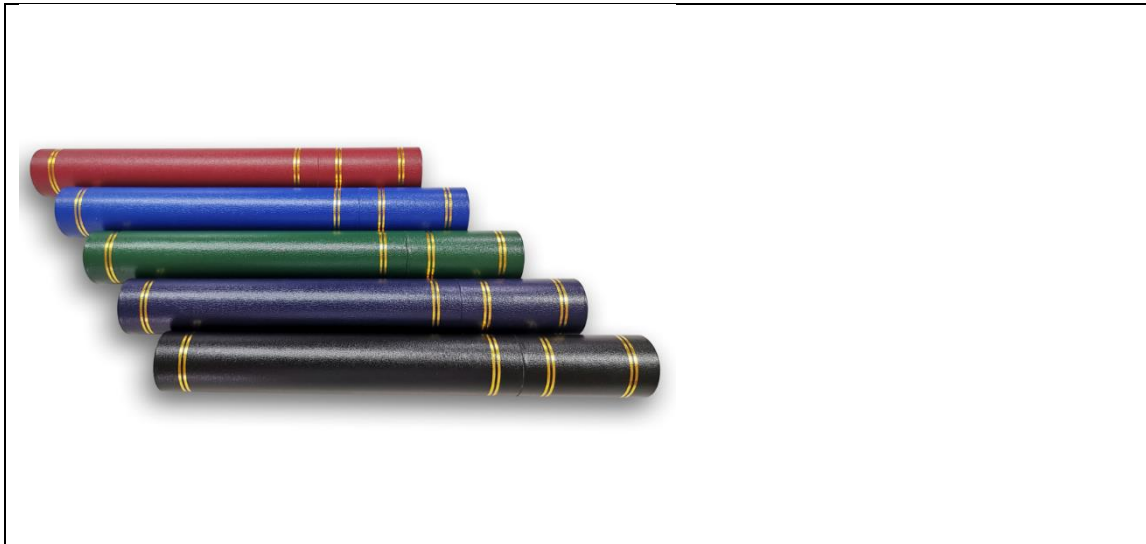
You may use the formula: $^\circ\text{C} = (^\circ\text{F} - 32) \times \frac{5}{9}$ (3)

3.4 The certificate holders come in five different colours.

The colours are maroon, sky blue, green, navy blue and black.

The pictures of the certificate holders are shown below.

PICTURES OF CERTIFICATE HOLDERS



[Source:graduation.co.uk]

Use information above to answer the questions that follow.

3.4.1 Determine the probability as a decimal of the university administrator randomly choosing a black coloured certificate holder. (3)

3.4.2 Choose the correct word to best describe the probability given in 3.4.1.

- (i) MOST LIKELY
- (ii) LESS LIKELY
- (iii) IMPOSSIBLE (2)

[32]

QUESTION 4

- 4.1 Maria intends taking two of her friends out for a music concert at Winston Churchill Hall.
ANNEXURE D shows a seating plan of a hall from a top view.

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

4.1.1 Determine the number of seats on Row D (2)

4.1.2 Maria and her friends will be seated in the middle seats on the fourth row from row D.
Name the three middle seats numbers. (3)

4.1.3 The hall main entrance is on the front right side when facing the stage.
A person on a wheelchair rolls from the front of the hall to the back of the hall in $1\frac{1}{2}$ minute. The average speed of the wheelchair is 2,5 miles /hour.

Determine the distance, in meters, covered by the wheel chair.

You may use the following formula: **Time** = $\frac{\text{Distance}}{\text{Speed}}$

NOTE: 1 mile = 1,609 km (7)

4.1.4 (a) Give a reason why there is a table in the middle at the back of the hall. (2)

(b) Determine the probability of randomly selecting a seat suitable for a person living with a disability. (2)

- 4.2 Some members of the audience have disabilities, a picture of the wheelchairs used by the members is shown on ANNEXURE E.

Use ANNEXURE E to answer the questions that follow.

4.2.1 Determine, (in cm) the total length of the wheelchair. (3)

4.2.2 Determine in m^2 , the total area that may be covered by ALL the wheel chairs in the hall.

You may use the formula: **Area** = **length** $\times$ **width** (6)

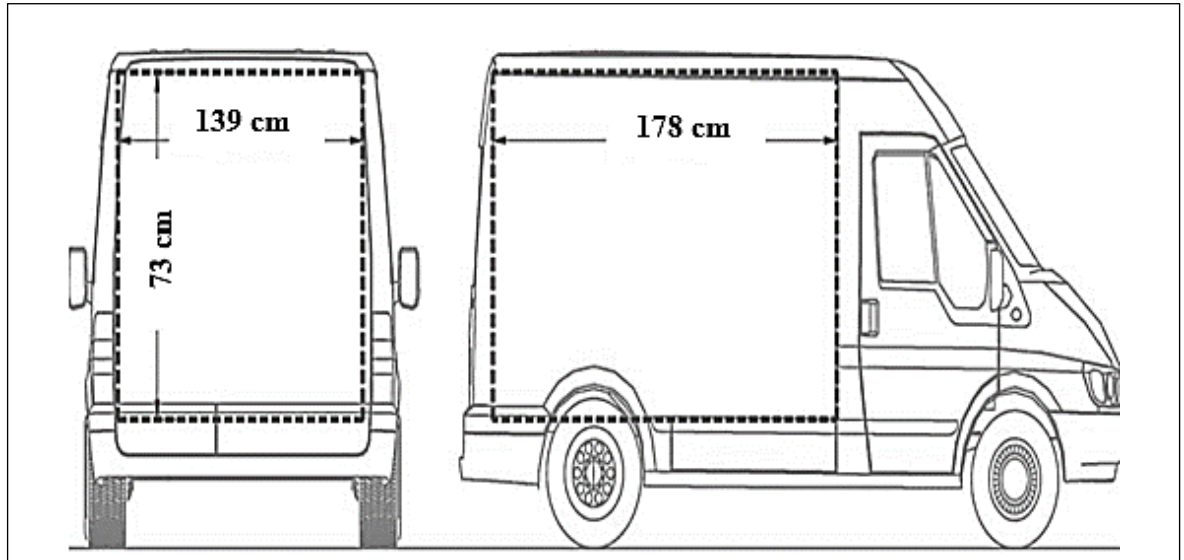
4.2.3 Calculate the width of each of the big wheel.

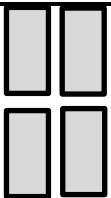
(3)

4.3 The supplier of the wheel chairs uses a panel van to deliver the wheelchairs. The dimensions of the panel van are **178 cm × 139 cm × 73 cm**.

The wheelchairs come in boxes. The dimensions of each box are **110 cm / 33 cm / 70 cm**

PICTURE OF A PANEL VAN WITH DIMENSIONS.



DIMENSIONS OF PANEL VAN			PACKING ARRANGEMENT OF BOXES IN THE VAN	
LENGHT	WIDTH	HEIGHT		
178 cm	139 cm	73 cm		

[Source: Adapted from asuringknowhow.com]

4.3 Calculate the maximum number of wheelchair boxes that can be transported by the panel van.

(5)

[33]

QUESTION 5

- 5.1 Maria and her friends run a catering company. They are scheduled to cater for a group of South African volleyball coaches who are running coaching sessions from the 2nd to the 10th of September 2024.
The starting time for the first session is 07:30, each session runs for two hours forty-five minutes. There are three sessions per day.
There is a 15 minutes tea break in-between the first and the second session thereafter is lunch.

Use the information above to answer the questions that follow.

- 5.1.1 Determine the total number of days for the training session (2)
- 5.1.2 Calculate, in hours, the total duration of all the training sessions for the workshop. (4)
- 5.1.3 Maria stated that according to the programme, lunch will be served at 13:15.
Use calculations to verify if the claim is CORRECT. (3)

- 5.2 Maria decides to buy 20 rectangular chafing dishes for serving the food. The dimensions of a closed chafing dish are:

- Length 53 cm
- Width 33 cm
- Height 32 cm



NOTE: 1 gallon = 3,785 litres

[Source:boss catering equipment.co.za]

Use the information above to answer the questions that follow.

- 5.2.1 Calculate, (to the nearest gallon), the volume of all the rectangular chafing dishes.

You may use the formula: **Volume = length × width × height.** (6)

5.2.2 Maria buys the chafing dishes from a supplier in Rands (R). The price of each chaffing dish is R350,00.

Maria's sister who lives in the United Kingdom promised to give her money to buy the chafing dishes.

Determine to the nearest hundred pounds, the total amount for the 20 chafing dishes.

Use the exchange rate: £1: R23,90.

(4)

5.2.3 The chafing dish can be used without the lid. Calculate the surface area of the open chafing dish if it has half the height of the closed chafing dish.

You may use the formula:

Surface area= length $\times$ width + 2 (length $\times$ height) + 2 (width $\times$ height) (4)

5.3

Maria uses a scale of 1: 6 to make models of chafing dishes. These models are given to customers.

The diagram of the model chafing dish is shown below.

MODEL OF A CHAFING DISH



[Source:www.harryspartyrental.com]

Use the model and the information on the actual chafing dish above to answer the questions that follow.

5.3.1 What do you think the model chafing dish was used for? (2)

5.3.2 Use the above information to show that the model is not drawn to scale. (3)

[28]

TOTAL: 150



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**NATIONAL SENIOR CERTIFICATE/
NASIONALE SENIOR SERTIFIKAAT**

GRADE 12

**MATHEMATICAL LITERACY P2/
WISKUNDIGE GELETTERDHEID V2
SEPTEMBER 2024
MARKING GUIDELINES/NASIENRIGLYNE**

MARKS: 150

Symbol/Simbool	E×planation/Verduideliking
M	Method/ <i>Metode</i>
MA	Method with accuracy/ <i>Metode met akkuraatheid</i>
CA	Consistent accuracy/ <i>Volgehoue akkuraatheid</i>
A	Accuracy/ <i>Akkuraatheid</i>
C	Conversion/ <i>Herleiding</i>
S	Simplification/ <i>Vereenvoudiging</i>
RT	Reading from a table/graph/document/diagram / <i>Lees vanaf tabel/grafiek/dokument/diagram</i>
SF	Correct substitution in a formula/ <i>Korrekte vervanging in formule</i>
O	Opinion/Explanation/ <i>Mening/Verduideliking</i>
P	Penalty, e.g. for no units, incorrect rounding off, etc. / <i>Straf, bv. Geen eenhede/verkeerde afronding, ens.</i>
R	Rounding off/ <i>Afronding</i>
NPR	No penalty for rounding/units/ <i>Geen straf vir afronding/eenhede</i>
AO	Answer only/ <i>Slegs antwoord</i>
MCA	Method with consistent accuracy/ <i>Metode met volgehoue akkuraatheid</i>

These marking guidelines consists of 14 pages and a 2 - page analysis grid.

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.
- The general principle of marking is that if a candidate makes one mistake and there is sound mathematics thereafter, the candidate loses one mark.

LET WEL:

- *As 'n kandidaat 'n vraag TWEE KEER beantwoord, sien slegs die EERSTE 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 nasienriglyne toegepas, dit hou egter by die tweede berekeningsfout op.*
- *Wanneer 'n kandidaat aflesings vanaf 'n grafiek, tabel, uitlegplan en kaart geneem het en ekstra antwoorde gee, straf vir elke ekstra item.*
- *Die algemene beginsel van merk is dat as 'n leerder een fout maak en dis daarna wiskundig korrek, verloor die leerder een punt.*

QUESTION/VRAAG 1 [30 MARKS/PUNTE] ANSWER ONLY–FULL MARKS/SLEGS ANTWOORD - VOLPUNTE			
Q/V	Solution/Oplossing	Explanation/Verduideliking	T/L
1.1.1	Number / Ratio scale ✓✓A <i>Syferskaal / Numeriese skaal/Verhoudingskaal</i>	2A correct answer (2)	MP L1
1.1.2	1 unit on the drawing represents three hundred thousand units on the actual ground. ✓✓A <i>1 eenheid op die skaal verteenwoordig 300 000 eenhede in die werklikheid</i>	2A explanation (2)	MP L1
1.2.1	D ✓✓A	2A correct answer (2)	M L1
1.2.2	G ✓✓A	2A correct answer (2)	M L1
1.2.3	A ✓✓A	2A correct answer (2)	M L1
1.2.4	C ✓✓A	2A correct answer (2)	MP L1
1.2.5	B ✓✓A	2A correct answer (2)	M L1
1.3.1	Table top/Tafelblad ✓✓RT	2RT correct speed (2)	MP L1
1.3.2	4 pieces/Stukke ✓✓RT	2RT correct unit (2)	MP L1
1.3.3	Padstow Circular Dining Table ✓✓RT <i>Padstow sirkelvormige eetkamertafel</i>	2RT correct distance (2)	MP L1
1.3.4	128 mm ✓✓A	2A correct measurement Accept: 126 mm – 130 mm (2)	M L1
1.3.5	mm ² ✓✓A	2A correct unit Accept: cm², m² (2)	M L1
1.4.1	✓C 410 ÷ 1000 = 0,41 kg ✓S	1 C dividing by 1000 1S simplification (2)	M L1

Q/V	Solution/Oplossing	Explanation/Verduideliking	T/L
1.4.2	3 packs/ <i>pakke</i> ✓✓A	2A correct types of chairs (2)	M L1
1.4.3	✓MA $410 \times 12 = 4\,920$ grams ✓S	1MA multiply by 12 1S simplification (2)	M L1

QUESTION/VRAAG 2 [27 MARKS/PUNTE]			
Q/V	Solution/Oplissing	Explanation/Verduideliking	T/L
2.1.1	N1 , N4 ✓✓ A	1A correct road 1A correct road (2)	MP L1
2.1.2	SW or South West ✓✓ RT SW of Suid-Wes	2RT correct number of points (2)	MP L2
2.1.3	✓✓ O Rest , Get food , Refresh , Comfort breaks, etc Rus, Kos kry, Verfris, Gemaklik te raak ens.	2O correct reason (2)	MP L4
2.1.4	2,3 cm: 300 km ✓ A 2,5 cm: x ✓ MA $\frac{2,5 \times 300}{2,3} = 326,09 \text{ km} \quad \checkmark A$ 1,2 × 300 2,3 = 156,52 km ✓ A ✓ MA 326,09 km + 156,52 km = 482,61 km ≈ 483 km ✓ R OR ✓ MA ✓ A 1.2 cm + 2,5 cm = 3,7 cm 2,3 cm : 300 km ✓ A 3,7 cm : x ✓ MA $\frac{3,7 \times 300}{2,3} = 482,609 \text{ km} \quad \checkmark CA$ ≈ 483 km ✓ R	1A correct bar scale measurement 1MA multiply and divide with correct values 1A correct distance 1A distance 1MA adding correct values 1R correct rounding 1MA adding map measurements 1A correct map measurement 1A correct bar scale measurement 1MA multiply and divide with correct values 1CA distance 1R correct rounding (6)	MP L3

2.1.5	$12\text{h } 50\text{ minutes} - 7\text{h}00 = 5\text{h } 50\text{ minutes} \quad \checkmark \text{ MA}$ $5\text{h } 50\text{ minutes} - 1\text{h } 30\text{ minutes} = 4\text{h } 20$ $4\text{h} + (20 \div 60) = 4,3333\text{ hours} \quad \checkmark \text{ C}$ $\text{Speed} = \frac{483}{4,3333} = 111,46\text{ km/hr} \quad \checkmark \text{ CA}$ $\text{NOT VALID/NIE GELDIG NIE} \quad \checkmark \text{ O}$	Ca from 2.1.4 1MA correct duration 1C conversion of time to hours 1SF substitution to the correct formula 1CA correct speed 1O Opinion (5)	MP L4
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Q/V	Solution/Oplossing	Explanation/Verduideliking	T/L
2.1.6	$\begin{array}{l} \checkmark \text{MA} \\ 483 \times 2 = 966 \text{ km} \quad \checkmark \text{A} \\ \\ \checkmark \text{MA} \\ \frac{966}{100} \times 6,8 = 65,688 \text{ litres} \quad \checkmark \text{CA} \\ \\ \text{OR} \\ \\ \checkmark \text{MA} \quad \checkmark \text{A} \\ \frac{483}{100} \times 6,8 = 32,844 \text{ litres} \\ \text{Return trip} \\ \checkmark \text{MA} \\ 32,844 \text{ litres} \times 2 = 65,688 \text{ litres} \quad \checkmark \text{CA} \end{array}$	Ca from 2.1.4 1MA multiply by 2 1A return distance 1MA divide and multiply with correct values 1CA amount for return trip 1MA divide and multiply with correct values 1A amount for single trip 1MA multiply by 2 1CA amount for return trip (4)	MP L3
2.2.1	$\begin{array}{l} \checkmark \text{M} \\ 55 \text{ minutes} + 2 \text{ h } 3 \text{ minutes} + 1 \text{ hour} = \\ 3 \text{ hours } 58 \text{ minutes} \quad \checkmark \text{CA} \\ \\ \checkmark \text{MA} \\ 5\text{h}50 \text{ mins} - 3\text{h } 58 \text{ mins} = 1 \text{ hr } 52 \text{ minutes} \\ 1 \text{ hr} + \frac{52 \text{ min}}{60} = 1,87 \text{ hours} \quad \checkmark \text{CA} \\ \checkmark \text{C} \\ \text{VALID/GELDIG} \quad \checkmark \text{O} \\ \\ \text{OR} \\ 1,87 \text{ hours} \times 60 = 112,2 \text{ minutes} \quad \checkmark \text{C} \\ 112,2 \text{ minutes} - 60 \text{ minutes} = 52,2 \text{ minutes} \\ 112,2 \text{ minutes} = 1 \text{ hour } 52 \text{ minutes} \\ \\ 55 \text{ minutes} + 2 \text{ h } 3 \text{ minutes} + 1 \text{ hour} = \quad \checkmark \text{M} \\ 3 \text{ hours } 58 \text{ minutes} \quad \checkmark \text{A} \\ \\ 5\text{h } 50 \text{ minutes} - (3\text{h } 58 \text{ mins}) \quad \checkmark \text{MA} \\ = 1 \text{ h } 52 \text{ minutes} \quad \checkmark \text{A} \\ \text{VALID} \quad \checkmark \text{O} \end{array}$	1M adding correct values 1CA total duration 1MA subtracting from 5h50 minutes 1C minutes to hours 1CA time in hours 1O Opinion 1C time in hours to minutes 1M adding correct values 1A total duration 1MA subtracting from 5h50 minutes 1A total time 1O Opinion (6)	MP L4

QUESTION/VRAAG 3 [32 MARKS/PUNTE]			
Q/V	Solution/Oplossing	Explanation/Verduideliking	T/L
3.1.1	$150 \text{ mm} + 150 \text{ mm} + 150 \text{ mm} + 150 \text{ mm} + 180 \text{ mm} \times 12$ ✓A ✓MA $= 2\,760 \text{ mm}$ ✓S OR ✓A ✓A $(150 \text{ mm} \times 4) + (180 \text{ mm} \times 12)$ $= 2\,760 \text{ mm}$ ✓S	1MA adding correct values 1A multiply 180 mm by 12 1S simplification 1MA adding correct values 1A multiply 180 mm by 12 1S simplification (3)	M L2
3.1.2	✓SF Area/Oppervlakte = $2,76 \text{ m} \times 1,75 \text{ m}$ $= 4,83 \text{ m}^2$ ✓A ✓A	1SF substituting to correct formula 1A simplification 1A correct unit (3)	M L2
3.1.3	$\frac{15 \text{ cm}}{100 \text{ cm} / \text{m}} = 0,15 \text{ m}$ ✓C Area of 1 side of rectangular pole Oppv van 1sy van reghoekige paal $= 0,165 \text{ m} \times 1,75 \text{ m} = 0,2625 \text{ m}^2$ ✓SF Total area of rectangular pole Totale oppv van reghoekige paal $= 0,2625 \text{ m}^2 \times 4$ ✓MCA $= 1,05 \text{ m}^2$ ✓CA Area of triangle /Oppv van driehoek $= \frac{1}{2} \times 0,16 \text{ m} \times 0,11 \text{ m}$ ✓SF $0,0088 \text{ m}^2 \times 4$ ✓CA $= 0,0352 \text{ m}^2$ Total surface area of one pole Totale BO van een paal ✓MCA $= 1,05 \text{ m}^2 + 0,0352 \text{ m}^2 = 1,0852 \text{ m}^2$ VALID/GELDIG ✓O	1C conversion to metres 1SF substitute to correct formula 1MCA multiply both area by 4 1CA total area of the rectangular pole 1SF substitute to correct formula 1CA total area of triangles MCA adding both areas 1CA answer area in m^2 1O conclusion	M L4

	OR $\frac{15 \text{ cm}}{100 \text{ cm / m}} = 0,15 \text{ m} \quad \checkmark C$ Area of rectangle/<i>Oppervlakte van reghoek</i> $0,15 \text{ m} \times 1,75 \text{ m} = 0,2625 \text{ m}^2 \quad \checkmark SF \quad \checkmark CA$ Area of triangle/<i>Oppervlakte van driehoek</i> $= \frac{1}{2} \times 0,16 \text{ m} \times 0,11 \text{ m} \quad \checkmark SF$ $= 0,0088 \text{ m}^2 \quad \checkmark CA$ Total surface area of one pole <i>BO van een paal</i> $\checkmark MCA$ $= 4(0,2625 \text{ m}^2 + 0,0088 \text{ m}^2) \quad \checkmark MCA$ $= 1,0852 \text{ m}^2 \quad \checkmark CA$ VALID /<i>GELDIG</i> $\checkmark O$	1C conversion to metres 1SF substitute to correct formula 1CA total area of the rectangular pole 1SF substitute to correct formula 1CA total area of triangles 1MCA multiply both area by 4 MCA adding both areas 1CA answer area in m^2 1O conclusion (9)	
3.2.1	$\checkmark SF$ $900 \text{ cm}^2 = \text{side} \times \text{side}$ Side/Sy = 30 cm $\checkmark A$	1SF substitute to correct formula 1A simplification (2)	M L2
3.2.2	Circumference of the motorboard $= 3,142 \times 60 \text{ cm} \quad \checkmark SF$ $= 189,52 \text{ cm}$ $= 189 \text{ cm} \quad \checkmark A$	1SF substitute to correct formula 1A simplification (2)	M L2
3.3.1	$\checkmark C$ $1,8 \times 2,54 = 4,52 \text{ cm} \quad \checkmark A$	1C multiply by 2,54 1A simplification (2)	M L1
3.3.2	Radius $\frac{4,572 \text{ cm}}{2} = 2,286 \text{ cm} \quad \checkmark A$ $\text{Volume} = 3,142 \times 2,286^2 \times 30,48 \quad \checkmark SF$ $\text{Volume} = 500,4648675 \text{ cm}^3 \quad \checkmark A$	1A radius 1SF substitute to the correct formula 1A simplification (3)	M L2

Q/V	Solution/Oplossing	Explanation/Verduideliking	T/L
3.3.3	$38^{\circ}\text{C} = ({}^{\circ}\text{F} - 32) \times \frac{5}{9} \quad \checkmark\text{SF}$ $38 \times \frac{9}{5} = F - 32 \quad \checkmark\text{S}$ $= 100,4^{\circ}\text{F}$ $\approx 100^{\circ}\text{F} \quad \checkmark\text{R}$ OR $38 = \frac{5}{9} \times {}^{\circ}\text{F} - 17,7777\dots \checkmark\text{SF}$ $55,7777\dots \times \frac{5}{9} = {}^{\circ}\text{F} \checkmark\text{S}$ $100,04 = {}^{\circ}\text{F}$ $100 \approx {}^{\circ}\text{F} \checkmark\text{R}$	1 SF substitute to correct formula 1S changing subject of formula 1R rounding (3)	M L2
3.4.1	$\frac{1}{5} \checkmark\text{A}$ $= 0,2 \quad \checkmark\text{A}$ $= 0,2 \quad \checkmark\text{CA}$	1A numerator 1A denominator 1CA simplification (3)	P L2
3.4.2	Less likely / <i>Minder Waarskynlik</i> $\checkmark\checkmark\text{A}$	2A correct probability (2)	P L2

QUESTION/VRAAG 4 [33 MARKS/PUNTE]			
Q/V	Solution/Oplissing	Explanation/Verduideliking	T/L
4.1.1	$\checkmark\checkmark$ RT 21 seats/ <i>sitplekke</i>	2RT correct number of seats (2)	Maps L2
4.1.2	$\checkmark$ RT $\checkmark$ RT H 10 , H 11, H 12 $\checkmark$ RT	3RT all three seats (3)	Maps L2
4.1.3	$\checkmark$ MA $2,5 \times 1,609 = 4,0225 \text{ km/h}$ $\text{Time/Tyd} = \frac{1,5}{60}$ $= 0,025 \text{ hrs } \checkmark\text{A}$ $\checkmark\text{S} \quad \checkmark\text{SF}$ $\text{Distance/Afstand} = 4,0225 \times 0,025$ $\checkmark\text{A}$ $= 0,1005625 \text{ km}$ $0,1005625 \text{ km} \times 1\,000 \quad \checkmark\text{C}$ $= 100,56 \text{ metres } \checkmark\text{CA}$	1MA multiply by 1, 609 1A correct time in hours 1SF substitute to correct formula 1S changing subject of formula 1A correct distance in km 1C conversion to metres 1CA Simplification (7)	Maps L3
4.1.4 (a)	Media , sound controller $\checkmark\checkmark$ O <i>Media tafel, Klank beheer</i>	2O Opinion (2)	M L4
4.1.4 (b)	$\frac{\checkmark\text{A}}{4}$ $346\checkmark\text{A}$	1A numerator 1A Denominator (2)	P L2
4.2.1.	$\frac{680 \text{ mm}}{2} = 340 \text{ mm}$ $\checkmark\text{RT} \quad \checkmark\text{MA}$ $340 \text{ mm} + 650 \text{ mm} + 90 \text{ mm} = \frac{1080 \text{ mm}}{10}$ $= 108 \text{ cm} \quad \checkmark\text{A}$	1RT all values 1MA adding correct values 1A correct length (3)	M L2

Q/V	Solution/Opplossing	Explanation/Verduideliking	T/L
4.2.2	$\frac{900 \text{ mm}}{10} = 90 \text{ cm} \quad \checkmark A$ Area/Oppervlakte $108 \text{ cm} \times 90 \text{ cm} = 9720 \text{ cm}^2 \quad \checkmark A$ $9720 \text{ cm}^2 \times 4 = 38\,880 \text{ cm}^2 \quad \checkmark MA$ $\frac{38\,880}{100 \times 100} = 3,888 \text{ m}^2 \quad \checkmark CA$ $\checkmark C$ OR $\frac{900 \text{ mm}}{1\,000} = 0,9 \text{ m} \quad \checkmark A$ $\frac{108 \text{ cm}}{100} = 1,08 \text{ m} \quad \checkmark C$ Area/Oppervlakte $= 1,08 \text{ m} \times 0,9 \text{ m} = 0,972 \text{ m}^2 \quad \checkmark A$ $\checkmark MA$ $0,972 \text{ m}^2 \times 4 = 3,888 \text{ m}^2 \quad \checkmark CA$	CA from 4.2.1 1A correct width 1SF substitute to correct formula 1A correct area 1MA multiply by 4 1C divide by 100 ² 1CA Simplification 1A correct width 1C cm to m 1SF substitute to correct formula 1A correct area 1MA multiply by 4 1CA Simplification (6)	M L3
4.2.3	$900 \text{ mm} - 700 \text{ mm} = 200 \text{ mm} \quad \checkmark MA$ $\frac{200 \text{ mm}}{2} = 100 \text{ mm} \quad \checkmark A$ mx	1MA subtracting correct values 1M dividing by 2 1A simplification (3)	M L2
4.3	$\frac{178 \text{ cm}}{33 \text{ cm}} = 5 \quad \checkmark A$ $\frac{139 \text{ cm}}{110 \text{ cm}} = 1 \quad \checkmark A$ $\frac{73 \text{ cm}}{70 \text{ cm}} = 1 \quad \checkmark A$ $5 \times 1 \times 1 = 5 \text{ boxes} \quad \checkmark MCA$	1MA dividing with correct values 1A correct number boxes 1A correct number of boxes 1A correct number of boxes 1MCA total number of boxes (5)	Maps L3

QUESTION/VRAAG 5 [28 MARKS/PUNTE]			
Q/V	Solution/Oplossing	Explanation/Verduideliking	T/L
5.1.1	9 days ✓✓A	2A correct number of days (2)	M L1
5.1.2	$\begin{array}{l} \checkmark\text{RT} \quad \checkmark\text{MA} \\ 2\text{h } 45 \text{ minutes} \times 3 \times 9 = 74 \text{ h } 15 \text{ mins } \checkmark\text{A} \\ \\ \frac{74 \text{ h } 15 \text{ mins}}{60} = 74,25 \text{ hours } \checkmark\text{CA} \end{array}$	Ca from 5.1.1 1RT 2h 45 minutes 1MA multiply with correct values 1A correct time 1CA Simplification (4)	M L2
5.1.3	Lunch time/Middagete ✓MA $7:30 + 2\text{h } 45 \text{ min} + 15 \text{ min} + 2 \text{ h } 45 \text{ min}$ $= 13:15 \checkmark\text{CA}$ CORRECT/KORREK ✓O	1MA adding all correct values 1CA lunch time 1O conclusion (3)	M L4
5.2.1	$\begin{array}{l} \checkmark\text{MA} \\ 53 \times 33 \times 32 = 55\,968 \text{ cm}^3 \checkmark\text{A} \\ 55\,968 \text{ cm}^3 = 55\,968 \text{ ml} \\ \\ \frac{55\,968}{1\,000} = 55,968 \text{ litres } \checkmark\text{A} \\ \checkmark\text{C} \\ \\ 55,968 \div 3,785 \text{ liters per gallon } \checkmark\text{M} \\ 14,78 \text{ gallons} \times 20 \\ = 295,6 \text{ gallons} \\ \approx 296 \text{ gallons } \checkmark\text{R} \end{array}$	1MA multiply with correct values 1A correct volume in cubic centimetres 1C divide by 1 000 1A volume to litres 1MA divide by 3,785 1R Rounding (6)	M L2

5.2.2	$\frac{350}{23,90} = 14,64$ ✓MA ✓A $14,64 \times 20 = 293,89$ ✓MA $\pounds 300,00$ ✓R	1MA divide by 23,90 1A amount in pounds 1MA multiply by 20 1R correct rounding (4)	M L2
5.2.3	Height/ <i>Hoogte</i> = $\frac{1}{2} \times 32$ cm ✓A Surface area/ <i>Buite oppervlakte</i> ✓SF $= 53 \times 33 + 2(53 \times 16) + 2(33 \times 16)$ $= 1\,749 \text{ cm}^2 + 1\,696 \text{ cm}^2 + 1\,056 \text{ cm}^2$ ✓MA $= 4\,501 \text{ cm}^2$ ✓CA	1A correct height 1SF substitution to correct formula 1MA adding correct values 1CA simplification (4)	M L2
5.3.1	<i>Decoration/Versiering</i> ✓✓A OR <i>Market the business/Bemarking</i> ✓✓A OR <i>Toy for kids/Speelgoed vir kinders</i> ✓✓A	2A correct reason (2)	M L4
5.3.2	$\frac{53}{10} = 5,3$ ✓MA ✓A $\frac{33}{5} = 6,6$ ✓A OR $10 \times 6 = 60$ cm ✓MA $5 \times 6 = 30$ cm ✓MA $4 \times 6 = 24$ cm ✓MA	1MA calculating correct scale factor lengthwise 1A correct scale factor 1A correct scale factor 1MA multiplying scale factor with model measurement 1MA multiply correct values 1MA multiply correct values (3)	Maps L2

MDE Mathematical Literacy Paper 2 Question Analysis September 2024													
Ques	Measurement	Maps, Plans	Probability	Total	L1	L2	L3	L4	Total				
											Easy	Medium	Hard
1.1.1	2				2				2		2		
1.1.2	2				2				2		2		
1.2.1	2				2				2		2		
1.2.2	2				2				2		2		
1.2.3	2				2				2		2		
1.2.4		2			2				2		2		
1.2.5	2				2				2		2		
1.3.1	2				2				2		2		
1.3.2	2				2				2		2		
1.3.3	2				2				2		2		
1.3.4		2			2				2		2		
1.3.5		2			2				2		2		
1.4.1		2			2				2		2		
1.4.2		2			2				2		2		
1.4.3		2			2				2		2		
				30					30				
2.1.1		2			2				2		2		
2.1.2		2				2			2			2	
2.1.3		2						2	2				2
2.1.4		6					6		6			6	
2.1.5		5						5	5		5		
2.1.6		4				4			4			4	
2.2.		6						6	6			6	
				27					27				
3.1.1	3					3			3			3	
3.1.2	3					3			3			3	
3.1.3	9							9	9				9
3.2.1	2					2			2		2		
3.2.2	2					2			2		2		
3.3.1	2				2				2		2		
3.3.2	3					3			3		3		
3.3.3	3					3			3			3	
3.4.1			3			3			3		3		
3.4.2			2			2			2			2	
				32					32				

4.1.1		2			2				2		2		
4.1.2		3			3				3			3	
4.1.3		7					7		7				7
4.1.4 a		2						2	2				2
4.1.4 b			2			2			2		2		
4.2.1	3					3			3		3		
4.2.2	6						6		6			6	
4.2.3	3					3			3		3		
4.3		5					5		5				5
				33					33				
5.1.1	2				2				2		2		
5.1.2	4					4			4			4	
5.1.3	3							3	3			3	
5.2.1	6						6		6			6	
5.2.2.	4				4				4			4	
5.2.3	4					4			4			4	
5.3.1	2							2	2				2
5.3.2		3				3			3				3
				28					28				
Total	82	61	7	150	45	46	30	29	150	150	61	59	30
Tot.%	55	40	5	100	30	31	20	19	100		40,67	39,33	20
% Target	55	40	5	100	30	30	20	20	100		40	40	20
Target	83	60	7	150	45	45	30	30	150				



DEPARTMENT OF EDUCATION
DEPARTEMENT VAN ONDERWYS
LEFAPHA LA THUTO
ISEBE LEZEMFUNDO

**PROVINSIALE VOORBEREIDENDE EKSAMEN/
PROVINCIAL PREPARATORY EXAMINATION**

GRAAD/GRADE 12

**WISKUNDIGE GELETTERDHEID/
MATHEMATICAL LITERACY**

VRAESTEL/PAPER 2

SEPTEMBER 2024

PUNTE/MARKS: 150

TYD/TIME: 3 uur/hours

**Hierdie vraestel bestaan uit 12 bladsye en 'n addendum van 5 bladsye.
This question paper consists of 12 pages and an addendum of 5 pages.**

INSTRUCTIONS AND INFORMATION

1. This question paper consists of FIVE questions. Answer ALL the questions.
2. Use the ANNEXURES in the ADDENDUM to answer the following questions:

ANNEXURE A for QUESTION 1.2
ANNEXURE B for QUESTION 2.1
ANNEXURE C for QUESTION 2.2
ANNEXURE D for QUESTION 4
3. Number the answers 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 calculations clearly.
7. Round off ALL final answers appropriately according 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 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	The volume is equal to meter times 3.
B	A map of a section of a travelling route showing distances between towns as traight lines
C	A Rectangular prism is a 2-dimensional shape of which 2 lenghts are similar to each other.
D	A unit of volume measurement that's 1 metre wide, 1 metre in height, and 1 metre in depth.
E	A map that is always drawn to scale.
F	A prism that is named after the 3-dimensional shape that has rectangles as its faces or base.

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

- 1.1.1 Strip map (2)
- 1.1.2 Rectangular prism (2)
- 1.1.3 m^3 (2)

- 1.2 James makes small wooden chairs. The chair is made from wooden rails and side supports called props.

ANNEXURE A shows a diagram of the parts, assembled chair and TABLE 2 with cutting list (in mm).

Use ANNEXURE A to answer the questions that follow.

- 1.2.1 Write down the length of the props. (2)
- 1.2.2 Convert the thickness of the wooden material to cm. (2)
- 1.2.3 Calculate the simplified ratio of the length of the rails to the length of the props. (3)
- 1.2.4 Determine the number of rails needed to construct the back piece. (2)
- 1.2.5 Write down the probability, that the length of some of the props might differ. (2)
- 1.2.6 Show that the space between each rail on the top part of the seat is 10 mm. (3)

QUESTION 2

2.1

Sally works at a restaurant near her home. The restaurant can accommodate a maximum of 68 customers. Every Friday night they are normally fully booked. The special on a Friday is sushi.

ANNEXURE B shows the floorplan of a restaurant.

Use ANNEXURE B to answer the questions that follow.

2.1.1 Write down the maximum number of people that can dine outside. (2)

2.1.2 Explain the meaning of the term *floorplan*. (2)

2.1.3 State the general direction from the office to the sushi bar. (2)

2.1.4 Write down the number of exterior doors situated on the southern side of the restaurant. (2)

2.1.5 Calculate (rounded to the nearest 5 meters) the inside length of the outside dining area. (5)

2.1.6 One Friday a tour group consisting of 17 people visited the restaurant. They all ordered pizza.

The manager told the chef that there is a probability that 76% of all their customers will order the special on that Friday.

Verify by means of calculations whether he is correct. (5)

2.2

ANNEXURE C shows the street map location of Sally's home and where the restaurant is located.

Use ANNEXURE C to answer the questions that follow.

2.2.1 Write down the name of the road where the restaurant is situated. (2)

2.2.2 Name the building on the corner of Church Street and Temple Street. (2)

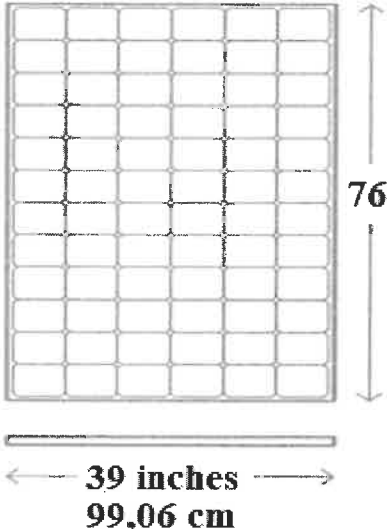
2.2.3 Describe, using compass direction, the shortest driving route from Sally's house to the restaurant. (5)

[27]

QUESTION 3

3.1

Mr Adams installed 72-cell solar panels on the roof of his home. Given below is a sketch of ONE solar panel and some information regarding the solar panel.

SKETCH OF ONE SOLAR PANEL	INFORMATION FOR ONE SOLAR PANEL
72-cell solar panel 	Length = 76,5 inches Width = 39 inches = 99,06 cm Energy output 1,5 kWh per day

The battery connected to the solar panels has a maximum capacity of 24 kWh.

The Adams household daily electricity use is 10 kWh per day.

NOTE: kWh = kilowatt-hours

[Adapted from Mercury inverters.com]

Use the information above to answer the questions that follow.

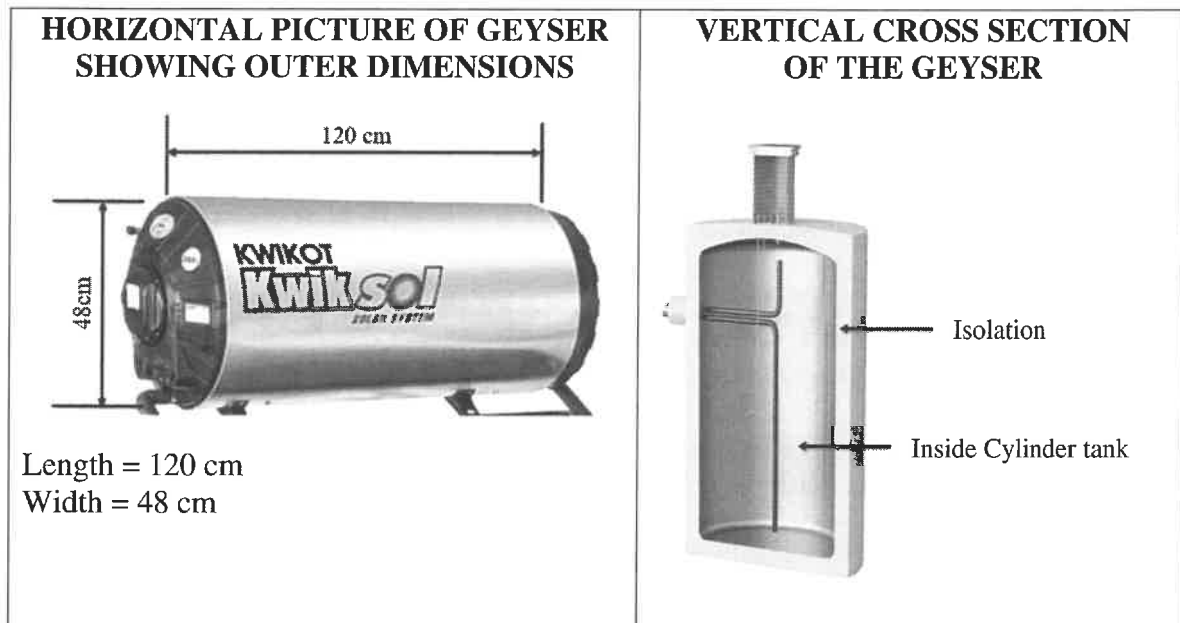
- 3.1.1 Calculate how long it will take 8 solar panels to charge the battery to maximum capacity. (3)
- 3.1.2 The maximum temperature solar panels can be exposed to, is 150 °F. Convert 150 °F to Celsius. (2)
- You may use the formula: $^{\circ}\text{C} = (^{\circ}\text{F} - 32^{\circ}) \div 1,8$
- 3.1.3 Determine (in cm) the perimeter of ONE solar panel. (6)
- You may use the formula:
- Perimeter of a rectangle = $2 \times (\text{length} + \text{width})$**
- 3.1.4 State ONE reason why Mr Adams installed solar panels. (2)

3.2

Kwikot is a geyser company that sell hot water cylinders (geysers). The geyser consists of a cylinder isolated with foam rubber all around to maintain the desired temperature of the water in the cylinder. The inner height and diameter of the inside cylinder tank are 4 cm shorter than the outer height and diameter of the geyser.

The weight of an empty geyser is 14 kg.

Below is a diagram showing the outer dimensions as well as the cross section of the geyser.



[Adapted from Kwikot geysers. www.kwikot.com]

Use the information above to answer the questions that follow.

3.2.1 Determine the outer radius of the geyser. (2)

3.2.2 Calculate the inner height (length) of the inside cylinder tank. (2)

3.2.3 Calculate, rounded to the nearest 10 litres, how much hot water the inner cylinder can accommodate.

You may use the formula: $\text{Volume} = 3,142 \times \text{radius}^2 \times \text{height}$

NOTE: $1 \text{ m}^3 = 1\,000 \text{ litre}$ (6)

3.2.4 Use your answer in QUESTION 3.2.3 and determine what the weight of one water filled geyser is if $1 \text{ litre} = 1 \text{ kg}$. (3)

[26]

QUESTION 4

4.1

Mr Masigo bought a house.

ANNEXURE D shows the floorplan of the house.

Use ANNEXURE D to answer the questions that follow.

4.1.1 Write down the ratio of the toilets to the basins in its simplest form. (3)

4.1.2 Calculate, as a percentage, how much smaller the kitchen is compared to any bedroom. (3)

4.1.3 Write down, the side (north, south, east or west) of the house that has no windows. (2)

4.1.4 State, with a reason, whether the bedrooms of this house receive morning or afternoon sun. (3)

4.1.5 The actual length of the eastern side (veranda excluded) of the house is 12 m.

Determine the scale rounded to a whole number that was used to draw the plan. (5)

4.1.6 The inside length of the dining room is 6,1 m.

The builder stated that the inside width of the dining room will be more than 4 m.

Verify by showing all calculations whether his statement is correct.

You may use the formula:

Area of a rectangle = length $\times$ width (6)

4.2

Mr Masigo intends tiling the living room.
The length of one square tile is 304 mm. The tiles are sold per box. There are six tiles in each box.
Tile cement is sold in 20 kg bags. One bag of tile cement covers an area of 6 m².

Below is the diagram of one tile, picture of one box of tiles, and a picture of one bag of tile cement.

A DIAGRAM OF ONE SQUARE TILE	A BOX OF TILES	A BAG OF TILE CEMENT
 Side length = 304 mm	 A box of 6 tiles	 Cost R89,90 excluding VAT

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

- 4.2.1

Calculate the area of one tile in m² rounded to 4 decimal places.

You may use the following formula:

Area of a square = side²

(3)
- 4.2.2

5% extra tiles must be purchased to cover for cutting and breakages.

Calculate how many boxes of tiles will be needed to cover the area of the living room.

(6)
- 4.2.3

VAT in South Africa is 15%. Tile cement cost R89,90 excluding VAT. The owner of the house budgeted R500,00 for the tile cement.

Verify showing all calculations whether his budget for the tile cement is enough.

(6)

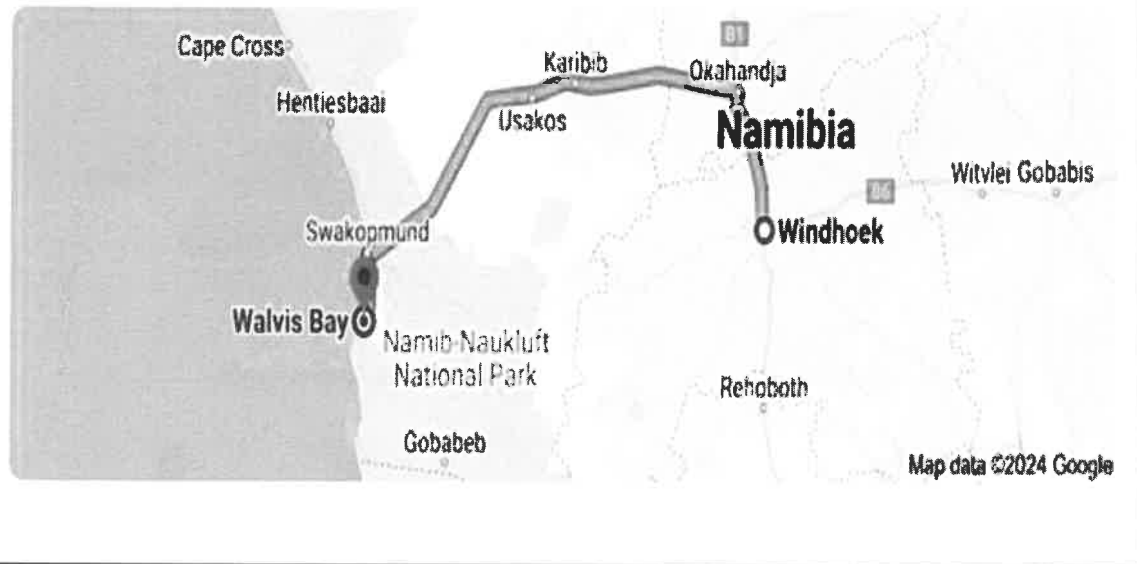
[37]

QUESTION 5

5.1

Sello is a truck driver for a company that transport goods by road from Walvis Bay to Windhoek.

The map below shows the route Sello travels between the Walvis Bay and Windhoek. The one-way distance from Walvis Bay to Windhoek is 396 km.



Use the information above to answer the questions that follow.

5.1.1 State the name of the national park near Walvis Bay. (2)

5.1.2 Sello drove from Walvis Bay to Windhoek.

Write down the last town he passes before he reaches Windhoek. (2)

5.1.3 The average diesel consumption for Sello's truck is 55 ℓ per 100 km.

Calculate how many litres of diesel Sello will need for one journey. (3)

5.1.4 Sello, driving the truck, left the shipping yard in Walvis Bay at 8:30 am. He stopped for 15 minutes at Usakos. He drove at an average speed of 72 km/h.

(a) State ONE valid reason why he stopped at Usakos. (2)

(b) Sello stated that he arrived at his destination in Windhoek at 13:30.

Verify, showing all calculations, whether Sello's statement is valid.

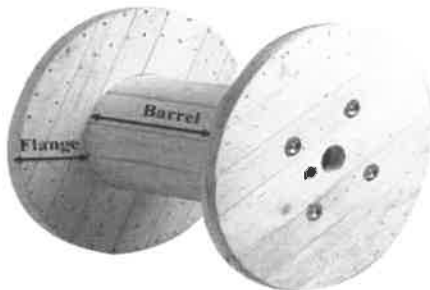
You may use the formula: **Distance = speed × time** (6)

5.2

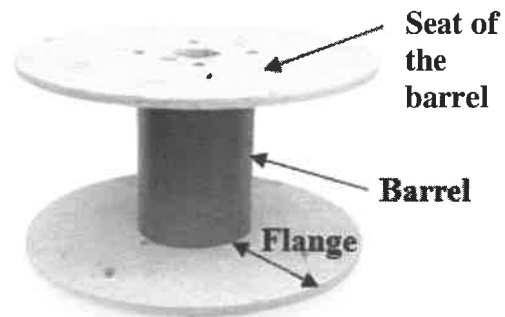
One of the items that Sello transports is copper cables. The copper cable is wound on plywood reels called spools. A spool consists of a barrel between two circular-shaped seats.

The section between the barrel and the end of the seat is called the flange. Reels come in different sizes.

Side view of empty spool



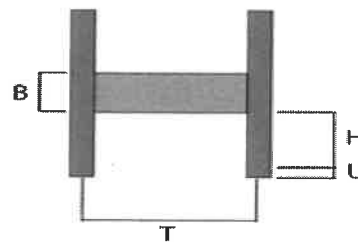
Top view of an empty spool



Picture of spool of wire



Sketch of spool of wire

**Key to diagram.**

U = unused portion of flange

H = used portion of flange

T = equals reels traverse

B = equals barrel diameter

Use the information above to answer the questions that follow.

- 5.2.1 Calculate the circumference, in metres, of the seat of a barrel with a radius of 70 cm.

You may use the formula: **Circumference of a circle = diameter $\times$ 3,142** (3)

- 5.2.2 The diameter of the cable of a plywood 14 reel is 0,6 inches.

Sello stated that the length of the copper cable spooled around this reel is more than 65 metres if the reel factor is 75,60.

Verify showing all calculations if he is correct.

You may use the formula:

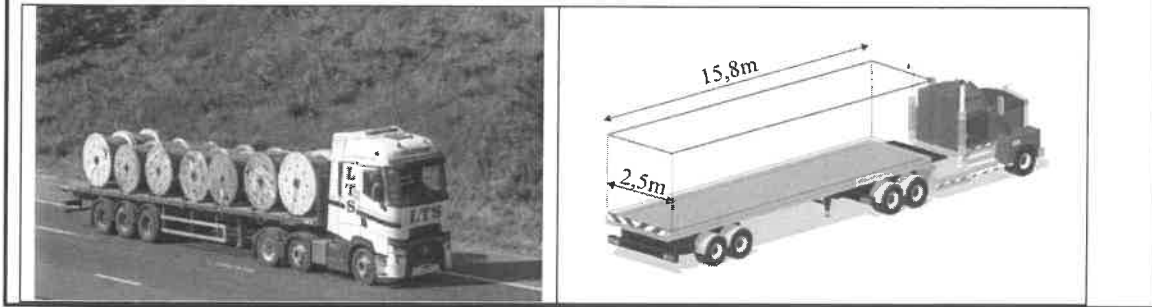
$$\text{Length of cable (in feet)} = \text{reel factor} \div (\text{cable diameter in inch})^2$$

NOTE: 1 foot = 0,3048 metres (5)

- 5.2.3 State ONE reason why cable companies do not wire the whole wooden reel with copper cable, but instead leave a little space (U) on the flange. (2)

5.3

The trailer dimension of Sello's truck is 2,5 m by 15,8 m, as illustrated below.

TRAILER DIMENSIONS OF A TRUCK

Use the information above to answer the questions that follow.

5.3.1 The height of an average cable reel is 1,15 m and the diameter is 1,5 m.

Calculate the maximum number of spools the truck can carry if they are not stacked on top of each other.

(5)

5.3.2 The maximum number of reels, packed next to each other, are loaded on the trailer.

Calculate the space, on the length of the trailer, that is free.

(3)

[33]

TOTAL: 150



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**PROVINSIALE VOORBEREIDENDE EKSAMEN/
PROVINCIAL PREPARATORY EXAMINATION**

GRAAD/GRADE 12

**WISKUNDIGE GELETTERDHEID/
MATHEMATICAL LITERACY**

VRAESTEL/PAPER 2

SEPTEMBER 2024

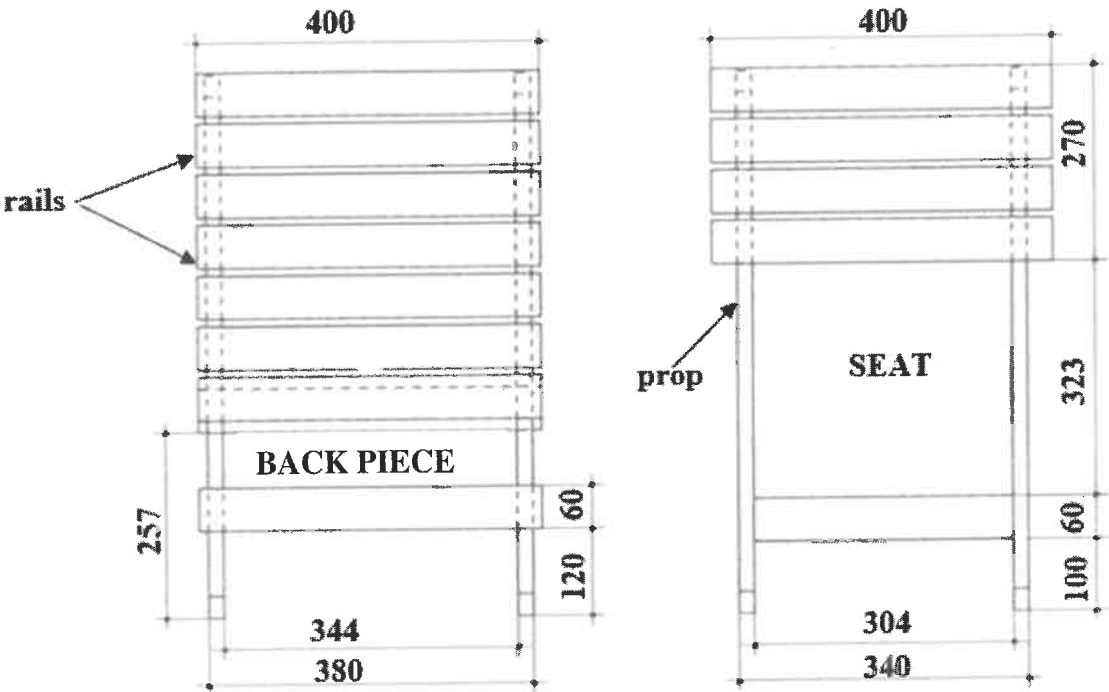
ADDENDUM

**Hierdie addendum bestaan uit 5 bladsye met 4 bylaes.
This addendum consists of 5 pages with 4 annexures.**

ANNEXURE A

QUESTION 1.2

SKETCH OF BACK PIECE AND SEAT OF THE CHAIR (WITH DIMENSIONS IN MM)



PICTURE OF ASSEMBLED CHAIR

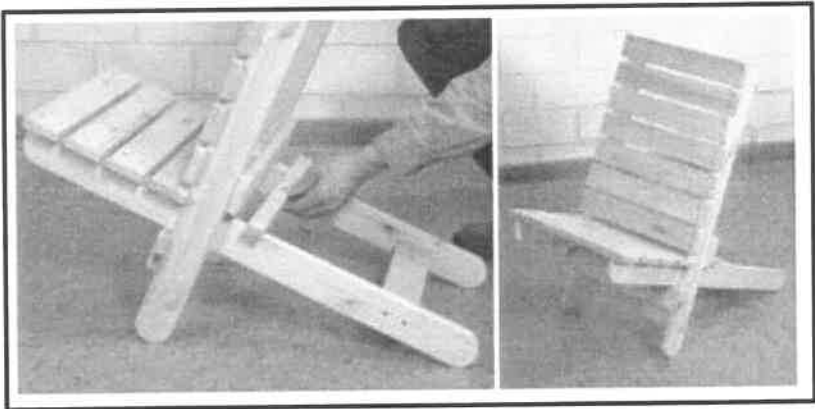


TABLE 2:

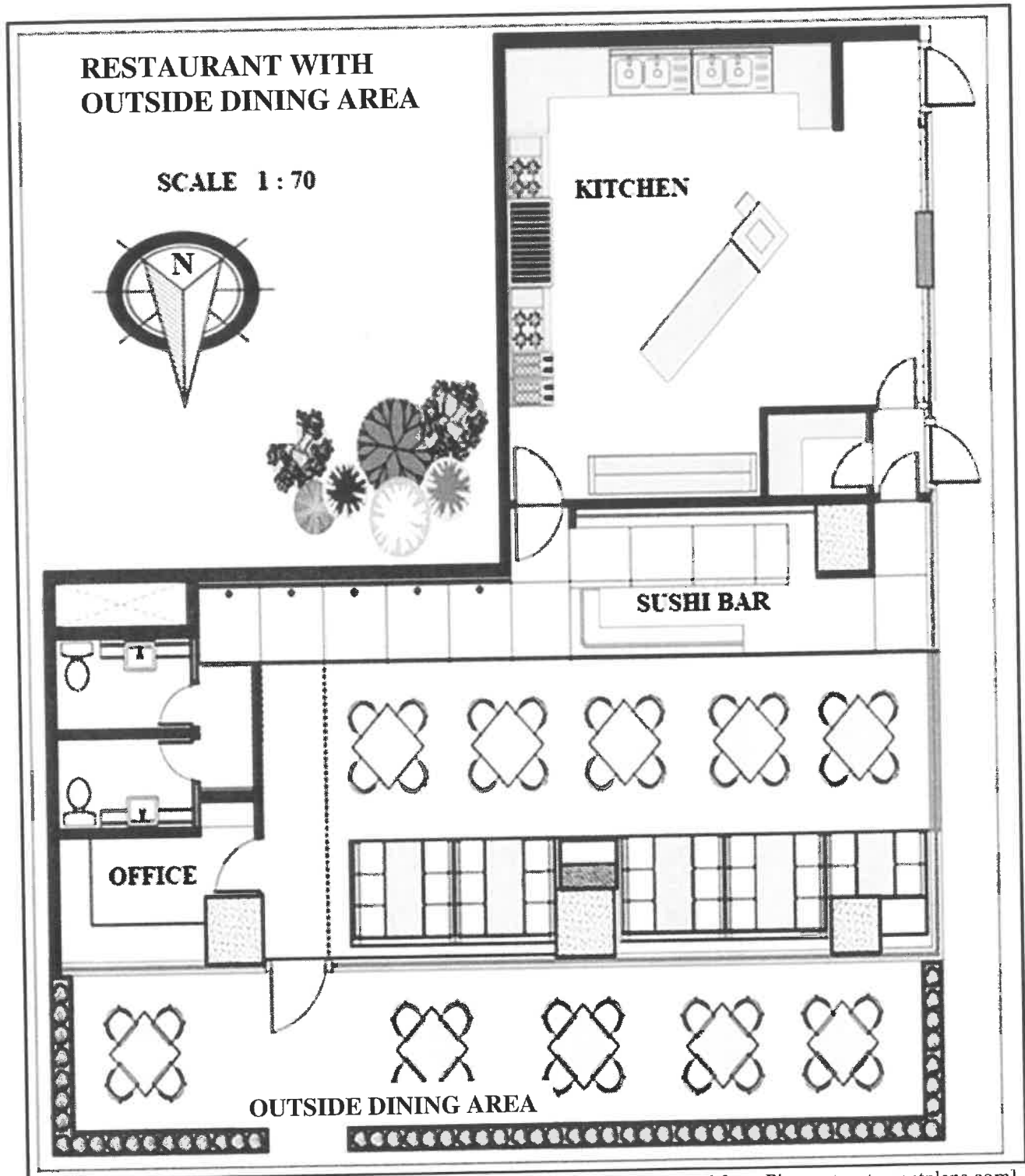
Number of pieces	Description	Size (in mm) length × width × thickness
4	Props	750 x 60 x 18
13	Rails	400 x 60 x 18

[Adapted from Pinterest Holzwerken.com]

ANNEXURE B

QUESTION 2.1

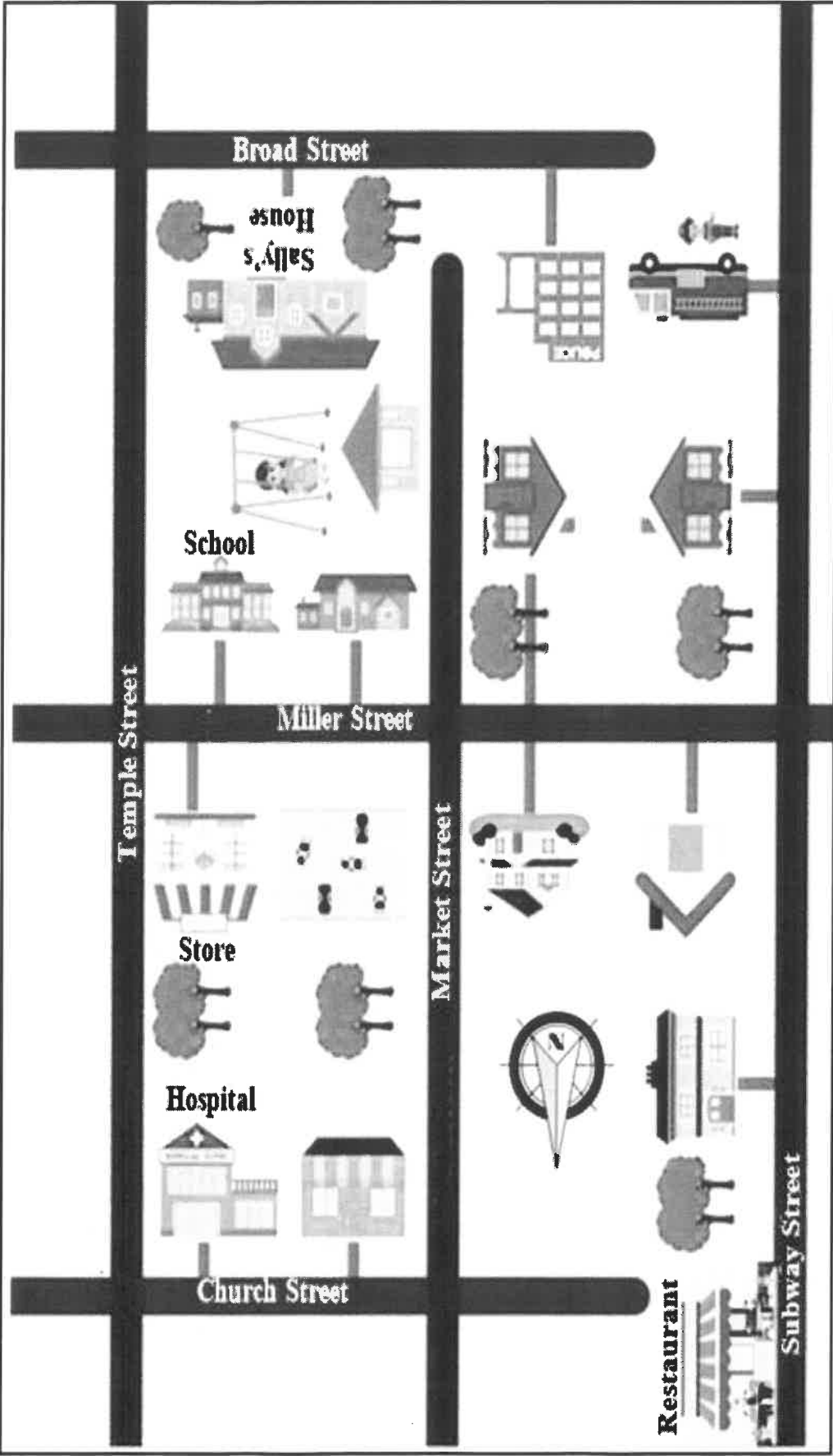
FLOOR PLAN OF A RESTAURANT



ANNEXURE C

QUESTION 2.2

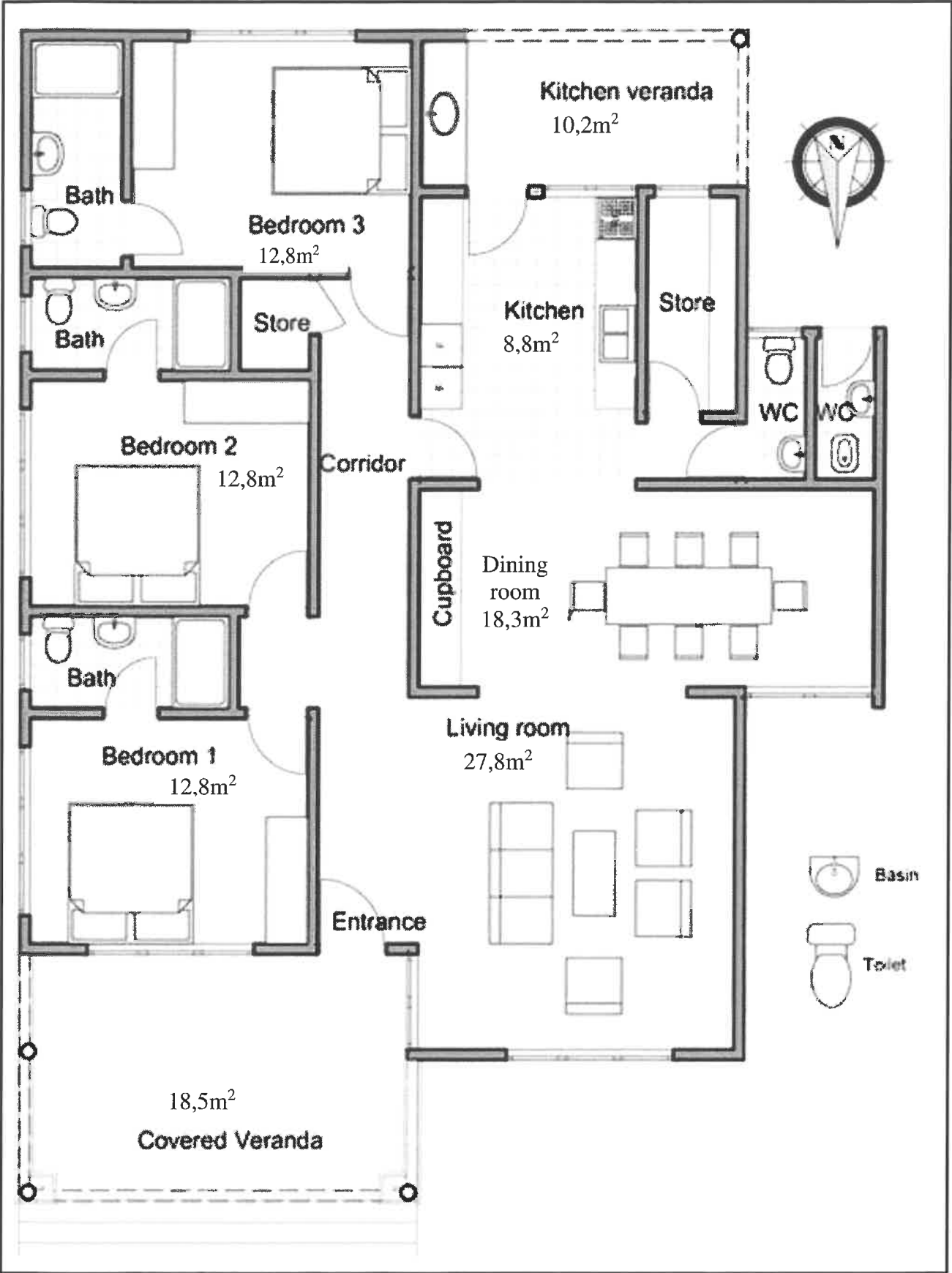
ROAD MAP OF SALLY'S AREA



[Adapted from Pinterest.restaurantplans.com]

ANNEXURE D

QUESTION 4: FLOOR PLAN OF MR MASIGO'S HOUSE



[Adapted from Pinterest.houseplans.com]



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GRADE/GRAAD 12

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PAPER/VRAESTEL 2

SEPTEMBER 2024

NASIENRIGLYNE

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 tabel/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./Penalisasie, bv. vir geen eenhede, verkeerde afronding, ens.
R	Rounding off/Afronding
NPR	No penalty for rounding/Geen penalisasie vir afronding nie
NPU	No penalty for omitting correct unit/ Geen penalisasie vir die uitlos van die korrekte eenheid nie
AO	Answer only/Slegs antwoord
MCA	Method with constant accuracy/Metode met volgehoue akkuraatheid
RCA	Rounding consistent with accuracy/ Afronding met volgehoue akkuraatheid

**These marking guidelines consist of 11 pages./
Hierdie nasienriglyne bestaan uit 11 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 or break down.
- If the candidate presents any extra solution when reading from a graph, table, layout plan and map, then penalise for every extra incorrect item presented.
- As a general marking principle, if a candidate has incurred one mistake and there is evidence of sound mathematics thereafter, then that candidate should lose one mark only.
- A conclusion mark can only be given if relevant calculations precede it (at least 1 mark before conclusion).
- No penalty for rounding (NPR) if the first decimal is correct, except questions involving money

LET WEL:

- As 'n kandidaat 'n vraag TWEE KEER beantwoord, merk slegs die EERSTE poging.
- As 'n kandidaat 'n antwoord van 'n vraag doodtrek (kanselleer) en nie oordoen nie, merk die doodgetrekte (gekanselleerde) poging.
- Volgehoue akkuraatheid (CA) word in ALLE aspekte van die nasienriglyne toegepas, dit hou op by die tweede berekeningsfout of afbreuk "break down" nie.
- Wanneer 'n kandidaat aflesings vanaf 'n grafiek, tabel, uitlegplan en kaart geneem en ekstra antwoorde gee, penaliseer vir elke ekstra verkeerde item.
- 'n Algemene nasienbeginsel is dat indien 'n kandidaat een fout maak en daarna voortgaan met korrekte wiskunde, dat die kandidaat slegs een punt verloor.
- 'n Gevolgtrekkingspunt kan slegs gegee word indien relevante berekening dit voorgaan (ten minste een punt voor die gevolgtrekking)
- Afronding tel as 'n onafhanklike punt.
- Geen penalisering vir ronding (NPR) as die eerste desimaal korrek is nie, behalwe as vrae geld insluit

QUESTION/VRAAG 1 [27 MARKS/PUNTE] Answer Only AO- full marks			
Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
1.1.1 *	B ✓✓A	2 A correct selection/letter (2)	M&P L1
1.1.2 *	F ✓✓A	2A correct selection/letter (2)	M L1
1.1.3 *	D ✓✓A	2A correct selection/letter (2)	M L1
1.2.1 *	750 mm ✓✓RT	2RT correct length NPU (2)	M L1
1.2.2 *	Thickness = $18 \div 10$ ✓C Dikte = 1,8 cm ✓A	1C conversion 1A answer in cm (2)	M L1

Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
1.2.3 *	$\checkmark$ RT Ratio/Verhouding = 400 : 750 $\checkmark$ MA = 8: 15 $\checkmark$ A	1RT values 1MA correct order 1A ratio simplified form (3)	M L1
1.2.4	Rails/Reelings : 8 $\checkmark\checkmark$ RT	2RT correct number of rails Accept 7 (2)	M L1
1.2.5	Probabilty = 0 $\checkmark\checkmark$ A	2A answer Also accept 0% (2)	P L1
1.2.6	Space/Spasie = 270- 240 $\checkmark$ M = 30 $\div$ 3 $\checkmark$ M = 10 $\checkmark$ CA	1M subtracting 1M dividing by 3 1CA space (3)	M L1
1.3.1	Distance/Afstand : 779 km $\checkmark\checkmark$ RT	2RT reading correct distance NPU (2)	M&P L1
1.3.2	Routes/Roete : N2 and N12 $\checkmark$ RT $\checkmark\checkmark$ RT	2RT first correct route 1RT second correct route (3)	M&P L1
1.3.3	Distance/Afstand = 734 – 215 $\checkmark$ MA = 519 km $\checkmark$ A OR/OF = 564 – 45 $\checkmark$ MA = 519 km $\checkmark$ A	1MA subtracting correct values 1A correct distance NPU (2)	M&P L1
			[27]

QUESTION/VRAAG 2 [27 MARKS/PUNTE]			
Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
2.1.1	Amount of people/ <i>Getal mense</i> = 20 ✓✓RT	2RT reading from the plan (2)	M&P L1
2.1.2	A scale drawing of a room viewed from ✓✓A above/Top view of a building/ Top view of a building without the roof/'n <i>Skaaltekening van 'n vertrek van bo gesien./Boaansig van die gebou//Boaansig van die gebou sonder die dak</i>	1A drawing 1A from above (2)	M&P L1
2.1.3	Southwest/Suidwes ✓✓RT	2RT correct direction (2)	M&P L2
2.1.4	No doors/ <i>Geen deure</i> ✓✓RT	2RT reading info from the plan also accept 0 (2)	M&P L2
2.1.5 *	Scale = 1:70 $= 1 : 70$ $= 145 : x$ ✓A $= 70 \times 145$ ✓MA $= 10\,150 \text{ mm} \div 1\,000$ ✓CA $= 10.15 \text{ m}$ $= 10 \text{ m}$ ✓R OR $= 14,5 : x$ ✓A $= 70 \times 14,5$ ✓MA $= 1\,015 \text{ cm} \div 100$ ✓CA $= 10.15 \text{ m}$ $= 10 \text{ m}$ <i>Skaal</i> = $70 \times 150 = 10\,500$ $= 10\,500 \div 1\,000$ $= 10,5$ $= 10 \text{ m}$ (Afrikaans)	1A correct measurement 1MA multiplying by 145 1CA length outdoor dinning 1C converting to metre 1R correct rounded length Accept range: 144 – 146 mm (Eng) Aanvaar omvang: 149-151mm (Afr) (5)	M&P L3

Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
2.1.6	Probability = $\frac{17}{68}$ ✓A✓R Waarskynlikheid = $0,25 \times 100 = 25\%$ ✓MA = $100 - 25 = 75\%$ ✓MCA OR Probability = $\frac{68-17}{68} \times 100 = 75\%$ ✓MA ✓A ✓MCA No, he is not correct./Nee, hy is nie reg nie. ✓O	1A correct nominator 1A correct denominator 1MA percentage calculation 1MCA subtracting 1O correct opinion (5)	P L4
2.2.1 *	✓✓RT Subway Street(ENG) /Metrostraat (AFR)	2RT correct street name (2)	M&P L1
2.2.2	✓✓RT Hospital/Hospitaal	2A correct building name (2)	M&P L1
2.2.3	On Broad Street, turn left and drive in an easterly direction/By Breëstraat, draai links en ry in 'n oostelike rigting. ✓A Turn left on Temple Street and drive in a northerly direction/Draai links by Templestraat en ry in 'n noordelike rigting ✓A Turn left at Miller Street and drive in a westerly direction, passing Market Street./Draai links by Millerstraat en ry in 'n westelike rigting, verby Markerstraat. ✓A Turn right in Subway Road and drive in a northerly direction/Draai regs in Metrostraat en ry in noordelike rigting. ✓A The restaurant will be situated on your right-hand side/Die restaurant sal aan jou regterkant geleë wees. ✓A	1A first correct direction 1A second correct direction 1A third correct direction 1A forth correct direction 1A location of the restaurant (5)	M&P L2
			[27]

QUESTION/VRAAG 3 [26 MARKS/PUNTE]			
Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
3.1.1 *	Charging Time = $8 \times 1,5$ ✓MA <i>Herlaai tyd</i> = 12 ✓CA = $24 \div 12$ = 2 days ✓CA	1MA multiplying correct values 1CA total for 8 panels 1CA number of days (3)	M L1
3.1.2	$^{\circ}\text{C} = (150 - 32) \div 1,8$ ✓SF = $65,6$ ✓CA	1SF substitution correctly done 1CA temperature in Celsius (2)	M L2
3.1.3	Lenght of Panel/ <i>Lengte van Paneel</i> = $99,06 \times \frac{76,5}{39}$ ✓RT ✓MA = $194,31$ cm ✓CA OR <i>Lengte van Paneel</i> = $\frac{99,06}{39} \times 76,5$ ✓RT ✓MA = $194,31$ cm ✓CA Perimeter/Omtrek = $2 \times (194,31 + 99,06)$ ✓SF = $2 \times (292,37)$ ✓S = $586,74$ cm ✓CA	1RT values 39 and 99,06 1MA conversion 1CA length in cm 1SF correct substitution 1S simplification 1CA perimeter of the panel (6)	M L3
3.1.4	It is cheaper in the long run/ <i>Goedkoper op die langer duur</i> ✓O Uninterrupted supply of energy/ <i>Ononderbroke voorsiening van krag</i> No more load shedding/ <i>Geen beurtkrag</i>	2O Any correct answer (2)	M L4
3.2.1	Raduis = $48 \div 2$ ✓MA = 24 cm ✓A	1MA dividing correct values 1A radius (2)	M L2
3.2.2	Inner Height/Binne hoogte = $120 - 4$ ✓MA = 116 cm ✓A	1MA subtracting 4 1A correct inner height AO full marks (2)	M L2

Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
3.2.3	Inner Length/Lengte = $120 - 4 = 116$ Inner Radius/ = $24 - 2 = 22$ ✓MA Volume = $3,142 \times 0,22^2 \times 1,16$ ✓SF = $0,1764\text{m}^3$ ✓CA = $0,1764 \times 1\,000$ ✓C = $176,40$ = 180 liters ✓R	CA from 3.2.2 1MA subtracting the foam rubber 1C converting cm to m 1SF substitution into formula 1CA volume in m^3 1C converting m^3 to litre 1R volume of the geyser (6)	M L3
3.2.4	Weight/Gewig = $180\text{ kg} + 14\text{ kg}$ ✓RT = 194 kg ✓CA	CA from 3.2.3 1C converting litre to kilograms 1RT adding empty geyser weight 1CA weight of the filled geyser (3)	M L2
			[26]

QUESTION/VRAAG 4 [37 MARKS/PUNTE]			
Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
4.1.1 *	Ratio/Verhouding = $4 : 6$ ✓RT ✓S = $2 : 3$ ✓CA	1RT in correct order 1S dividing both sides by 2 1CA simplest form (3)	M&P L1
4.1.2	Difference/Verskil = $12,8 - 8,8$ = 4 ✓MA = $\frac{4}{12,8} \times 100$ ✓MA = $31,25\%$ ✓CA OR = $\frac{8,8}{12,8} \times 100$ ✓MA = $68,75$ = $100 - 68,75$ ✓MA = $31,25\%$ ✓CA	1MA calculating the difference 1MA percentage calculation 1CA percentage answer NPR (3)	M&P L2
4.1.3	Western side/ Westelike kant ✓✓RT	2RT reading from plan (2)	M&P L2
4.1.4	Morning sun/Oggendson ✓RT The bedrooms are situated on the east side where the sun rises. Die slaapkamers is aan die oostelike kant geleë waar die son opkom ✓✓O	1RT conclude from plan 2O correct direction and sunrise (3)	M&P L4

Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
4.1.5	$\text{Measure/Meet} = 168 \text{ mm} \checkmark \text{MA}$ $\text{Scale/Skaal} = 168 : 12\,000 \checkmark \text{MA}$ $= 1:71.428 \checkmark \text{MA}$ $= 1 : 71 \checkmark \text{R}$	1MA correct length 1MA correct order 1C converting m to mm 1MA method with accuracy 1R scale of the plan Range 167-169 (5)	M&P L3
4.1.6 *	$18,3 \text{ m}^2 = 6,1 \times \text{width/breedte} \checkmark \text{SF} \checkmark \text{RT} \checkmark \text{MA}$ $\text{Width} = 18,3 \div 6,1 \checkmark \text{MA}$ $= 3 \checkmark \text{CA}$ OR $\text{Area/oppervlakte} = 6,1 \times 4 \checkmark \text{SF} \checkmark \text{RT}$ $= 24,4 \text{ m}^2 \checkmark \text{MA}$ $= 24,4 > 18,3 \checkmark \text{MA} \checkmark \text{CA}$ No, he is not correct/Nee, hy is nie korrek nie $\checkmark \text{O}$	1SF substitution 1RT correct area of the dining room 1MA correct method 1MA changing the subject 1CA length 1O correct conclusion (6)	M L4
4.2.1	$\text{Tile length/Teëllengte} : 304 \div 1000 = 0,304 \text{ m} \checkmark \text{C}$ $\text{Area/Oppervlak} = 0,304 \text{ m}^2 \checkmark \text{MA}$ $= 0,0924 \text{ m}^2 \checkmark \text{R}$	1C converting mm to m 1MA calculating area 1R rounded value (3)	M L2
4.2.2	$\text{Area/Oppervlakte} = 27,8$ $\text{Tiles/Teëls} = 27,8 \div 0,0924 \checkmark \text{MA}$ $= 300,87 \checkmark \text{CA}$ $= 300,87 \times 1,05 \checkmark \text{MA}$ $= 316 \checkmark \text{CA}$ $= 316 \div 6 \text{ tiles/box teëls/bokes} \checkmark \text{M}$ $= 53 \checkmark \text{CA}$ OR $= 300,87 \times 1,05$ $= 315$ $= 315 \div 6 \text{ tiles/box teëls/boks}$ $= 52,5$ $= 53$	CA from 4.2.1 1MA dividing by 0,0924 1CA amount of tiles 1MA percentage increase 1CA amount of increased tiles 1M dividing by 6 1CA total boxes Also Accept (6)	M L3

Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
4.2.3	Adhesive/Teëlsement = $27,8 \div 6\text{m}^2$ ✓MA = 4,6 bags/sakke ✓CA = 5 ✓CA Cost/Koste = $R89,90 \times 5 = R449,50$ ✓CA = $R449,50 \times 1,15$ ✓MA = R516,93 No his budget is not enough/Nee sy begroting is nie genoeg nie. ✓O	1MA dividing by 6 1CA number of bags needed 1CA cost of 5 bags 1MA VAT inclusive calculation 1CA cost 1O opinion Also accept R516,90 (6)	M F L4
			[37]

QUESTION/VRAAG 5 [33 MARKS/PUNTE]			
Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
5.1.1	Namib-Naukluft ✓✓RT	2RT reading from maps (2)	M&P L1
5.1.2	Okahandja ✓✓RT	2RT reading from map (2)	M&P L1
5.1.3	✓RT Litres/Liters = $55 \times \frac{396}{100}$ ✓MA = 217,8 ✓CA	1RT values 55 and 396 1MA multiply by 396 1CA number of litres (3)	M L2
5.1.4 (a)	To refuel / brandstof ingooi To check the cargo/Vrag inspeksie To refresh/Om te verfris ✓✓O Traffic Roadblock/Verkeersstop To use the toilet/Tiolett te gebruik Tyre burst/Wiel bars He drove almost half of the total distance so he needs a rest/Hy het amper die helfte van die totale afstand gery so hy het rus nodig.	2O any correct opinion (2)	M&P L4
5.1.4 (b)	Time/tyd = $\frac{396\text{km}}{72\text{km/h}}$ ✓MA = 5,5 hours/uur ✓SF = 5 hours 30 min ✓CA Arrival Time/Aankomstyd: H = $5,5 + 0,25$ (15 min) ✓MA = 5,75 (5 hours 45 min) = 8 hours 30 min + 5 hours 45 min = 14:15 min. ✓CA No, he is wrong./Nee, hy is verkeerd. ✓O	1MA changing subject of formula 1SF correct substitution 1CA speed calculated 1MA adding 15 min 1CA arrival time 1O correct opinion (6)	M L4

Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
5.2.1 *	Circumference of a circle/ $= \frac{70 \times 2}{100} \times 3,142$ ✓C ✓SF <i>Omtrek van sirkel</i> = 4,3988 m ✓CA OR = $2 \times 3,142 \times 70$ ✓SF = 439,88 cm = $439,88 \div 100$ ✓C = 4,3988 m ✓CA	1C converting diameter 1SF correct substitution 1CA circumference (3)	M L2
5.2.2	Lenght/Lengte = $75,60 \div 0,6^2$ ✓SF = 210 feet/voet ✓CA = $0,3048 \times 210$ ✓C = 64,008m ✓CA No, he is not correct/Nee, hy is nie korrek nie ✓O	1SF correct substitution 1CA answer in feet 1C converting feet to metre 1CA length in m 1O opinion (5)	M L4
5.2.3	It is easier to roll To protect the copper cable In order to cover the reel with wood or plastic Loading and off loading ✓✓O	2O marks for any correct opinion (2)	M L4
5.3.1	Lenght/Lengte = $15,8 \div 1,5 = 10,5$ ✓RT Widht/Breedte = $2,5 \div 1,15 = 2,17$ ✓MA ✓R ✓M Total reels/Totaal tolle = $10 \times 2 = 20$ ✓CA	1RT Values 15,8 and 2,5 1MA dividing by 1,15 1R rounded values 1M multiplying 1CA number of reels (5)	MP L2
5.3.2	✓MA Length/Lengte : $1,5m \times 10 = 15m$ ✓MA : $(15,8 - 15) m = 0,8 m$ ✓CA	CA from 5.3.1 1MA multiply length by 10 1MA subtracting the reel length 1CA remaining length (3)	M L2
			[33]
		TOTAL/TOTAAL:	[150]

NOTE/LET WEL:

1.1.1	A map of a section of a travelling route showing distances between towns as Straight lines/'n Kaart van 'n gedeelte van 'n reisroete wat afstande tussen dorpe as requit lyne aandui.	Full marks for the written explanation
1.1.2	A prism that is named after the 3-dimensional shape that has rectangles as its faces or base / 'n Prisma wat genoem word na die 3-dimensionele vorm wat reghoeke as sy vlakke of basis het.	
1.1.3	A unit of volume measurement that's 1 metre wide, 1 metre in height, and 1 metre in depth / 'n Eenheid van volumemeting wat 1 meter breed, 1 meter hoog en 1 meter diep is.	
1.2.1	Accept 753 calculated	1 out of 3
1.2.2	Accept 750 / 60 and 400 divided by 10 (Conversion mark)	1 out 2
1.2.3	$\frac{8}{15}$ in fraction form	full marks
1.2.5	Impossible	full marks
2.2.1	If the candidates used the different names irrespective of the language paper. e.g If the afrikaans learners wrote Subway street OR the English learners wrote Metrostraat	full marks
3.1.1	Charging Time = $8 \times 1,5$ ✓MA Herlaai tyd = $12 - 10$ ✓CA = 2 = $24 \div 2$ = 12 days	2 out of 3
4.1.1	Ratio/Verhouding = $4 : 5$ ✓RT ✓CA	2 out of 3



education

Department:
Education
North West Provincial Government
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

MATHEMATICAL LITERACY P2

SEPTEMBER 2024

MARKS: 150

TIME: 3 hours

This question paper consists of 13 pages and an addendum with 3 annexures.

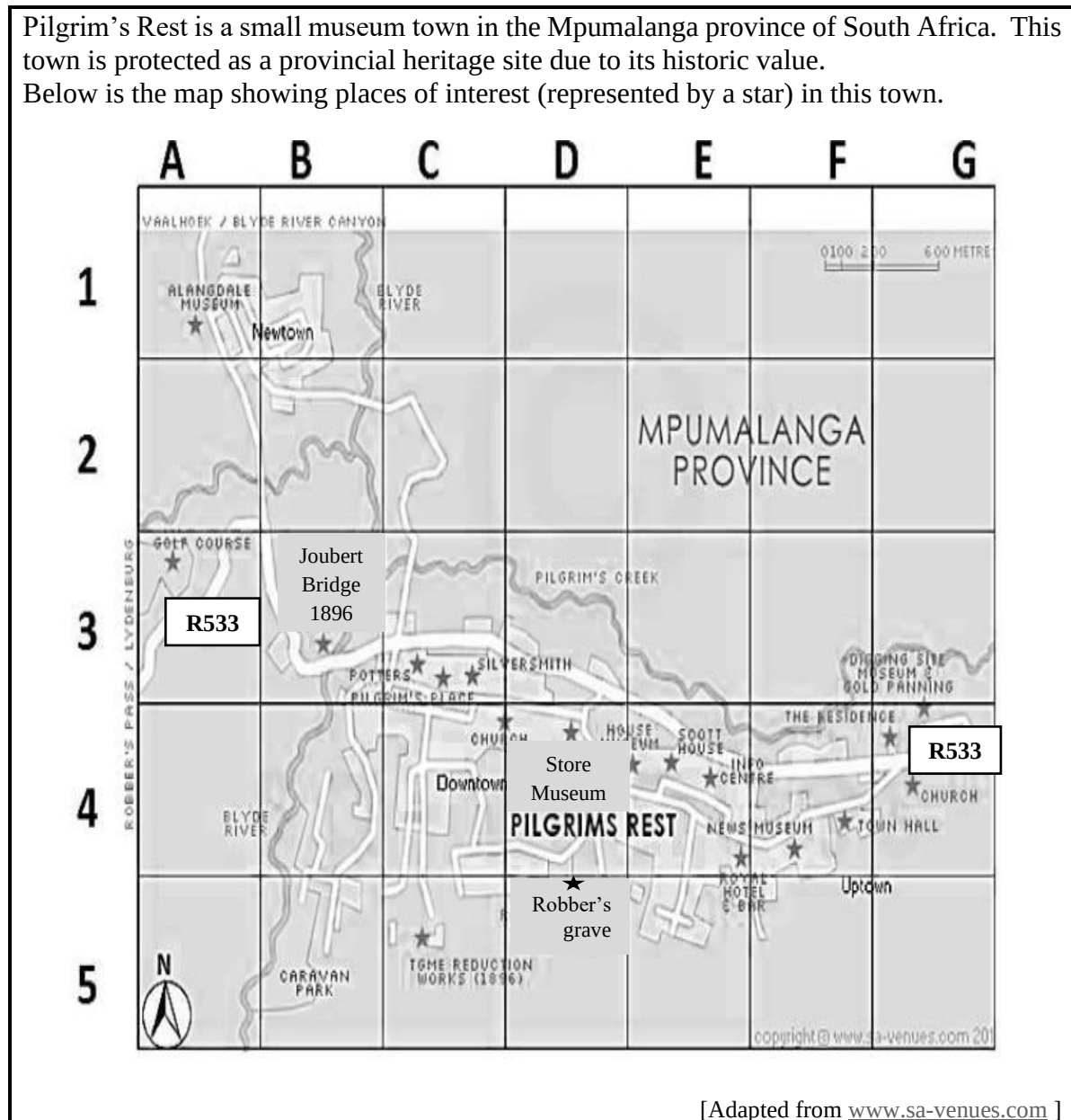
INSTRUCTIONS AND INFORMATION

1. This paper consists of FIVE questions. Answer ALL the questions.
2. Use the ANNEXURES in the ADDENDUM to answer the following questions:

ANNEXURE A for QUESTION 2.1
ANNEXURE B for QUESTION 2.2
ANNEXURE C for QUESTION 4.3
3. Number the answers 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 calculations clearly.
7. Round off ALL final answers appropriately according 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 Pilgrim's Rest is a small museum town in the Mpumalanga province of South Africa. This town is protected as a provincial heritage site due to its historic value. Below is the map showing places of interest (represented by a star) in this town.



Use the information above to answer the questions that follow.

- 1.1.1 Name the provincial road shown on the map. (2)
- 1.1.2 State the grid reference of Joubert Bridge. (2)
- 1.1.3 Complete: The scale used in the map is called a ... scale. (2)
- 1.1.4 Name the tourist attraction, in D4, that lies North of Robber's Grave. (2)

- 1.1.5 Mpumalanga province covers an area of $76\,495\text{ km}^2$. The area of the whole of South Africa is $1\,220\,813\text{ km}^2$.

Calculate, rounded off to ONE decimal place, the percentage that Mpumalanga province make out of the whole of South Africa. (3)

- 1.2 ABC Company won a tender to supply road signposts of TYPE 1 and TYPE 2 as shown in the pictures below.

TYPE 1	TYPE 2
 Each side of the triangle in the TYPE 1 road sign is equal to 500 mm.	 Radius (r) = 25 cm

[Source: [bing.com /images](https://www.bing.com/images)]

Use the information above to answer the questions that follow.

- 1.2.1 Choose, from the list below, the CORRECT formula to calculate the perimeter of a TYPE 1 road sign.

- A $P = 2(l + w)$
- B $P = \frac{1}{2}(b \times h)$
- C $P = \text{side} \times \text{side} \times \text{side}$
- D $P = \text{side} + \text{side} + \text{side}$ (2)

- 1.2.2 Convert the length of each side of TYPE 1 road sign to metres. (2)

- 1.2.3 Determine the diameter of a TYPE 2 road sign. (2)

1.3

Below are the items that Ivy bought at the wholesaler.

ITEMS THAT IVY BOUGHT AND THEIR MASS			
			
2 kg Sugar	12,5 kg Flour	3 packets of Macaroni Total mass 9 000 g	10 kg Mealie Meal
			
3 Pilchards tins Total mass 1 200 g	Wheat Bix 1,35 kg	2 kg washing powder	12 bars of 100 g soap

[Adapted from www.makro.co.za]

Use the information above to answer the questions that follow.

- 1.3.1 Determine the mass of ONE tin of Pilchards. (2)
- 1.3.2 Ivy carried a bag that could hold items with a total mass of 10 kg. Name the item that could NOT be placed in this bag. (2)
- 1.3.3 The macaroni in the three packets is repacked into four equally sized containers. Determine, in kg, the mass of the macaroni in EACH container. (3)

1.4

TABLE 1 below shows a list of concepts and explanations or definitions thereof, used in Mathematical Literacy.

TABLE 1 : CONCEPTS AND EXPLANATIONS

COLUMN A	COLUMN B
1.4.1 Map Scale	A The boundary of a circle/perimeter of a circle
1.4.2 Circumference	B Two or more events happening at once
1.4.3 Compound events	C Straight line passing through the centre of a circle, touching the circle at opposite ends
	D The distance from the centre of the circle to any point on the circumference of the circle
	E Ratio of the distance in real life compared to the same distance on a map
	F All possible outcomes of an experiment

Use TABLE 1 above to choose the explanation or definition from COLUMN B that matches a concept in COLUMN A. Write only the letter (A – F) next to the question numbers (1.4.1 to 1.4.3), e.g. 1.4.4 H.

(6)
[30]**QUESTION 2**

2.1

Dr Brooks decided to take his family to the George Ignatieff Theatre for a musical concert. ANNEXURE A shows the seating plan of the George Ignatieff Theatre in Toronto.

Use ANNEXURE A to answer the questions that follow.

2.1.1 Write down the total number of seats in the theatre. (2)

2.1.2 Seats H1 to H13 are reserved for wheelchair users. Write in simplest form the ratio of the number of seats for people in wheelchairs to the number of seats for people NOT in wheelchairs. (4)

2.1.3 State the compass direction from seat G30 towards the stage. (2)

2.1.4 Dr Brooks is seated in the middle block, third row from the back. His seat is exactly in the middle of the row.

Name the row and seat number where he is seated. (2)

2.1.5 Dr Brook's wife is seated in seat F15. She is invited to join her favourite artist on stage.

Describe the route from her seat to the stage. (3)

- 2.1.6 Determine the probability of randomly choosing a spectator to join the artist on stage if 62,5% of the seats in the theatre are occupied. (3)

- 2.2 Dr Brooke and his family stay in a townhouse. ANNEXURE B shows the floorplan of their townhouse.

Use ANNEXURE B to answer the questions that follow.

- 2.2.1 Define the concept *floor plan*. (2)

- 2.2.2 Determine the total number of doors on the floorplan. (2)

- 2.2.3 Which ONE of the following statements regarding the porch is CORRECT?

- A The porch is on the West elevation.
- B The porch is on the East elevation.
- C The porch is on the North elevation. (2)

- 2.2.4 The dimensions of BEDROOM 1 on the plan are as follows:

Length = 40 mm and width = 32 mm

The area of the window must be at least 12,5% of the floor area of the bedroom.
The actual window is 256 cm high.

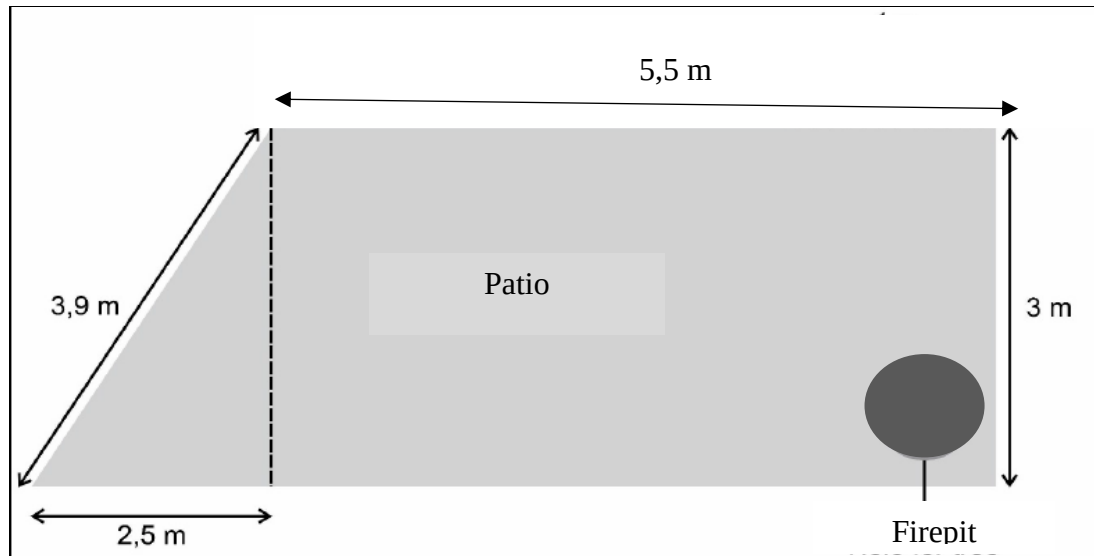
Calculate the actual width of the window.

You may use the following formula:

Area of a rectangle = length × width (9)
[31]

QUESTION 3

- 3.1 Abel wants to build a backyard patio using bricks. The patio will be fenced and paved. Abel will also add a round 12-inch-high fire pit, built with bricks in one of the corners of the patio. The diameter of the fire pit is 91,44 cm.



Use the information given above to answer the questions that follow.

- 3.1.1 Calculate the total length of the fencing required for the patio. (3)

- 3.1.2 The height of the fire pit is 30,48 cm.

Calculate, in cm^2 , the lateral surface area of the fire pit.

You may use the following formula:

$$\text{Lateral surface area} = 2 \times 3,142 \times \text{radius} \times \text{height} \quad (4)$$

- 3.1.3 Show, using ALL calculations, that the surface area of the patio is approximately 20 m^2 .

You may use the following formulae:

$$\text{Area of rectangle} = \text{length} \times \text{width}$$

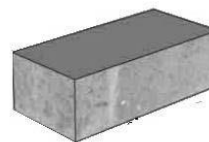
$$\text{Area of a circle} = 3,142 \times \text{radius}^2$$

$$\text{Area of a triangle} = \frac{1}{2} \times \text{base} \times \text{height} \quad (9)$$

3.2 The bricks that will be used to pave the patio (area 20 m^2) have the dimensions:

length = 0,215 m, width = 0,1025 m and height = 6,5 cm

The mass of one brick is 3,276 kg.



Use the information above to answer the questions that follow.

3.2.1 Determine the number of bricks needed to pave the patio excluding the fire pit.

You may use the following formula:

$$\text{Area} = \text{length} \times \text{width} \quad (5)$$

3.2.2 Convert the mass of all the bricks needed to tons.

NOTE: 1 kg = 0,001 ton (4)

3.3 TABLE 2 below shows the relationship between the number of workers Abel employs and the time taken to build the patio.

TABLE 2: RELATIONSHIP BETWEEN THE NUMBER OF WORKERS AND THE TIME TAKEN

Number of workers	1	2	3	B	5
Time in days	60	A	20	15	12

Use the information above to answer the questions that follow.

3.3.1 Determine the missing values **A** and **B**. (3)

3.3.2 State the type of proportion represented by the relationship between the number of workers employed and time taken to build the patio. (2)

3.4

Ruth is a mother to twins Nick and Nicolene. She is very health conscious and regularly monitors their Body Mass Index (BMI). On a particular day, she recorded the twins' mass and height as follows:

TWIN	MASS	HEIGHT
NICK	56 kg	1,65 m
NICOLENE	45 kg	60 inches

NOTE: 1 cm = 0,3937 inches

Use the information above to answer the questions that follow.

3.4.1 Convert, rounded off to TWO decimal places, Nicolene's height to metres. (3)

3.4.2 Ruth states that, the difference between the twins' BMI is less than 1 kg/m².

Verify, showing ALL calculations, whether her statement is CORRECT.

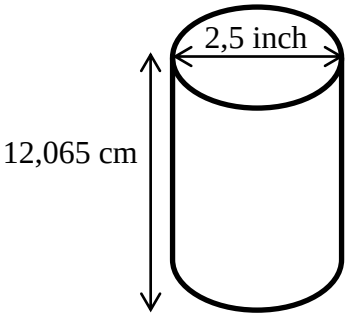
You may use the following formula: $\text{BMI} = \frac{\text{Mass in kg}}{(\text{Height in m})^2}$

(6)
[39]

QUESTION 4

4.1

The picture and diagram below represent an American cooldrink can.

PICTURE OF A COOLDRINK CAN	DIAGRAM OF A COOLDRINK CAN
	

NOTE: 1 inch = 2,54 cm

Use the information above to answer the questions that follow.

4.1.1 Show with calculations that the volume of the cooldrink can is 382 cm³.

You may use the following formula:

Volume = 3,142 × radius² × height (6)

4.1.2 The can is only filled to 95% of its volume.

Calculate, rounded off to the nearest $\text{m}\ell$, the volume of the can.

NOTE: ($1 \text{ cm}^3 = 1 \text{ m}\ell$)

(4)

4.2

Lesego would like to build a modern kitchen. She approached a company that builds three-dimensional (3D) model of buildings. This must represent a scaled model of an actual kitchen that Lesego requires.

3D VIEW OF ACTUAL KITCHEN	TABLE USED FOR SCALED MODEL
	

The actual dimensions of the kitchen are length = 4,8 m; width = 4,2 m and height = 3 m. The 3D scale model of the kitchen must fit on a rectangular table top with dimensions: length = 1,75 m and width = 1 m.

Only 50% of the table top area may be used for the scaled model.

Verify, showing ALL calculations, whether a scale of 1 : 10 will be suitable for the scale model.

(5)

4.3

Mr Modise stays in Horizon View. He works in Rosebank and travels by bus to and from work daily. ANNEXURE C shows different bus timetables. It is only valid during the week.

Use the bus timetable on ANNEXURE C to answer the questions that follow.

4.3.1 Calculate the time taken to travel with BUS 1 from Horizon View to Rosebank.

(3)

4.3.2 Mr Modise gets off the bus at 07:17 and walks for 15 minutes to his workplace. He rests for 10 minutes before he starts to work. He works 9 hours and 45 minutes including breaks per day.

Verify, showing ALL calculations, whether Mr Modise will knock off at 17:00.

(4)
[22]

QUESTION 5

- 5.1 Phumeza's mother stays in Malelane. She wants to come and visit her daughter, who stays in Johannesburg.

- 5.1.1 The map distance between Malelane and Johannesburg is measured as 10,8 cm. The scale of the map is 25 mm : 100 km.

Determine the actual distance between the two towns.

(3)

- 5.1.2 Phumeza's mother left Malelane at 08:00 a.m. She drove at an average speed of 120 km/h.

Verify, showing ALL calculations, whether she will arrive in Johannesburg before or after midday/12:00.

You may use the following formula: **Time** = $\frac{\text{Distance}}{\text{speed}}$

(6)

- 5.2 Phumeza's mother bought her a flower bouquet with roses only. The flower bouquet consists of 12 red roses, 15 pink roses and other roses with different colours.



Use the information above to answer the questions that follow.

- 5.2.1 Determine the number of roses in the bouquet if the roses with different colours are 10% of the total number of roses?

(3)

- 5.2.2 Phumeza stated that the probability of randomly selecting a rose with a different colour is 0,1.

Verify, showing ALL calculations, whether her statement is VALID.

(4)

- 5.3 Siphho is a vendor at the local flea market. She sells different types of jams. She put the jam in jars/bottles shown below.



Use the information above to answer the questions that follow.

- 5.3.1 The jars must be sterilized at the temperature of 275°F before use. Convert this temperature to $^{\circ}\text{C}$.

You may use the following formula:

$$^{\circ}\text{F} - 32^{\circ} = \frac{9}{5} \times ^{\circ}\text{C} \quad (4)$$

- 5.3.2 The jam jars will be packed in a cardboard box as follows:
Six rows of three jars, and two jars high. A tiny space of $0,8\text{ cm}$ around each jar is allowed.

- (a) Determine the dimensions of the cardboard box, where in the jam jars will be packed. (5)
- (b) Determine, in m^3 , the volume of the cardboard box in QUESTION 5.3.2 (a).

You may use the following formula:

$$\text{Volume of the box} = \text{length} \times \text{width} \times \text{height} \quad (3)$$

[28]

TOTAL: 150



education

Department:
Education
North West Provincial Government
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

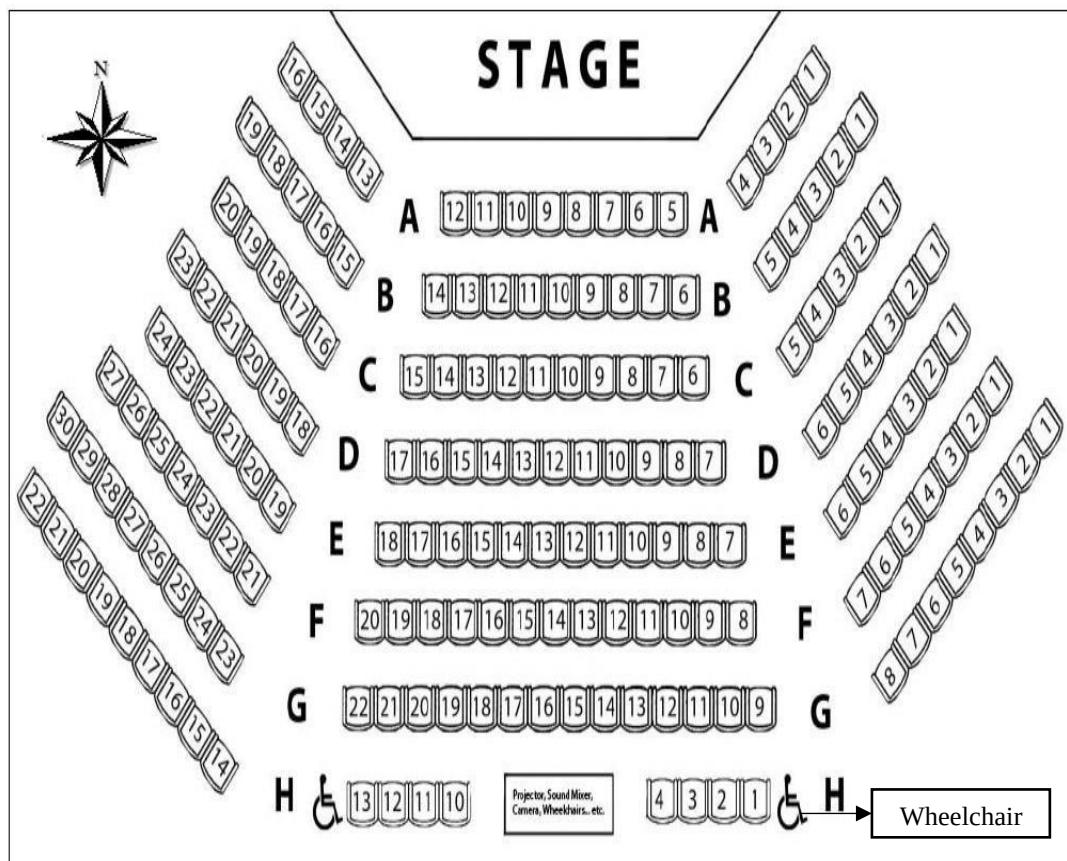
MATHEMATICAL LITERACY P2
ADDENDUM
SEPTEMBER 2024

This addendum consists of 4 pages with 3 annexures.

ANNEXURE A

QUESTION 2.1

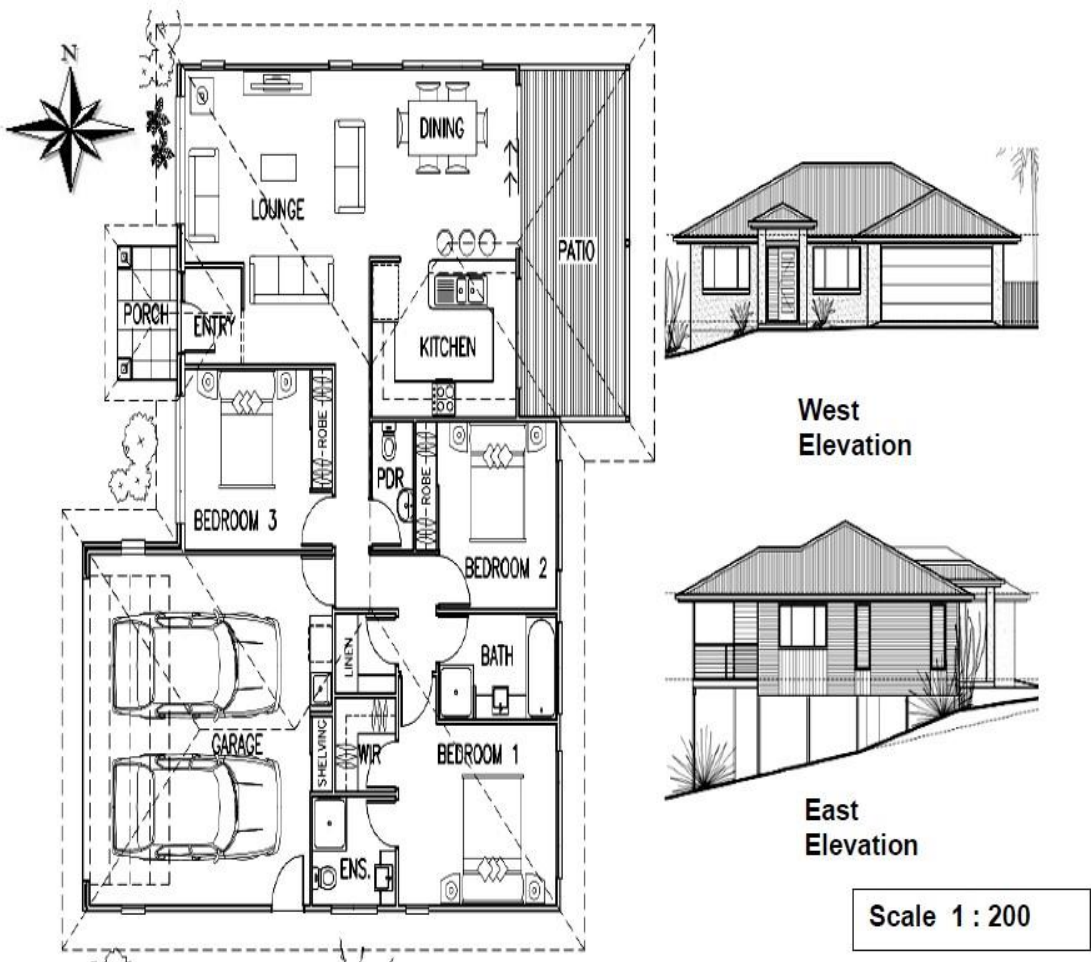
SEATING PLAN OF GEORGE IGNATIEFF THEATRE IN TORONTO

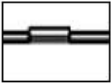
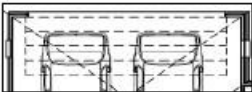
[Source: [www.http//Levin & Associates Architects](http://Levin & Associates Architects)]

ANNEXURE B

QUESTION 2.2

FLOOR PLAN OF DR. BROOKE’S TOWN HOUSE

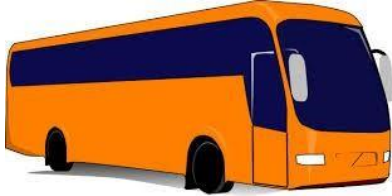


KEY:	
	
Window	Door
	
Sliding Door	Garage Door

ANNEXURE C

QUESTION 4.3

BUS TIMETABLE FROM WESTGATE CENTRE

 430 Westgate Centre Sandton Square via ROSEBANK			
	BUS 1	BUS 2	BUS 3
FROM WESTGATE CENTRE	6:00	6:15	6:30
Horison View	6:02	6:17	6:32
Horison	6:05	6:20	6:35
Roodepoort-North	6:10	6:25	6:40
Discovery	6:20	6:35	6:50
Florida	6:30	6:45	7:00
Maraisburg	6:40	6:55	7:10
Delarey	6:50	7:05	7:20
Newlands	6:55	7:10	7:25
Sophiatown	6:57	7:12	7:27
Greymont	6:59	7:14	7:29
Montgomery Park	7:04	7:19	7:34
Parktown-North	7:12	7:27	7:42
Rosebank	7:17	7:32	7:47
Illovo	7:20	7:35	7:50
Sandton Square	7:30	7:45	8:00
Rivonia			8:10
Sunninghill			8:25

[Source: <https://www.gapbs.co.za>]

MATHEMATICAL LITERACY

2024 PREPARATORY EXAMINATION

PAPER 2 ADDENDUM

QUESTION 1		
1.3.2	Accept names of quantities for full marks Snowflake OR White star OR Fattis 'n Monis	
1.3.3	If divided by 3, (award CA for answer and a mark for conversion) $9\ 000\text{ g} \div 3$ $= 3\ 000\text{ g} \checkmark^C \div 1\ 000$ $= 3\text{ kg} \checkmark^{CA}$	
QUESTION 2		
2.1.6	62,5% of 176 = 110✓ Probability = $\frac{110}{110} \checkmark \checkmark = 1$ OR 100% Accept the answer in the MG for full marks	
2.2.2	Accept 12 doors 2/2	
2.2.4	Accept the answer in m or mm	
QUESTION 3		
3.1.2	Correction of unit in the step below $LSA = 2 \times 3,142 \times 45,72\text{ cm} \times 30,48\text{ cm}$ $= 8\ 757,04055\text{ cm}^2$	
3.1.3	Question marked as follows: Area of circle: 3 marks Area of rectangle: 2 marks Area of triangle: 2 marks Shaded area: 2 marks	
3.2.1	CA area from Q3.1.3	
QUESTION 4		
4.1.2	CA from Q4.1.1	
4.2	Alternatives 50% of the length of the table = $1,75\text{ m} \div 2 = 0,875\text{ m} \checkmark$ The actual length of the kitchen = 4,8 m Then $0,875\text{ m} : 4,8\text{ m} \checkmark$ $1 : 5,48 \checkmark$ $\therefore$ It will fit $\checkmark \checkmark$ OR Area of the table = $1,75\text{ m} \times 1\text{ m} = 1,75\text{ m}^2$ 50% of the area = $0,875\text{ m}^2 \checkmark$ Area of the scaled model if 1 : 10 is used $\left. \begin{array}{l} \text{Length} = 4,8\text{ m} \div 10 \checkmark = 0,48\text{ m} \\ \text{Width} = 4,2\text{ m} \div 10 = 0,42\text{ m} \end{array} \right\} \checkmark$ Area = $0,48\text{ m} \times 0,42\text{ m}$ $= 0,2016\text{ m}^2 \checkmark$ Model will fit on half of the table✓	

QUESTION 5		
5.1.2	Alternatives 12:00 – 08:00✓ = 4 hrs✓ Speed = distance ÷ time✓ = 432 km ÷ 4 hrs✓ = 108 km/h✓ More speed required to arrive after 12 midday Yes, she will arrive before midday✓ OR 12:00 – 08:00✓ = 4 hrs✓ Distance = speed × time✓ = 120 km/h × 4 hrs✓ = 480 km✓ More distance required to arrive after 12 midday Yes, she will arrive before midday✓	