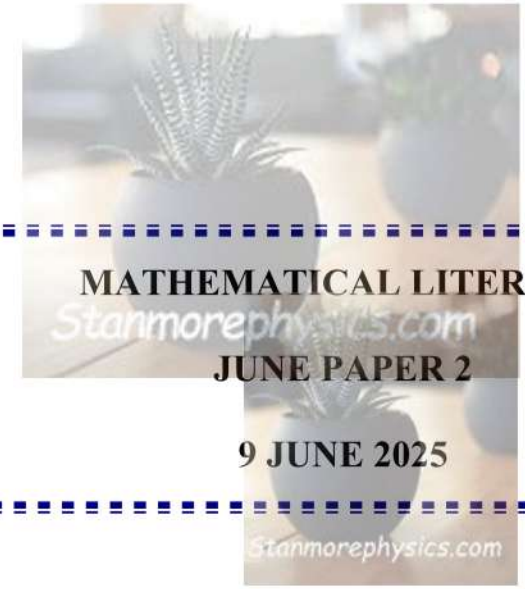
NAME OF SCHOOL

GRADE 12



MATHEMATICAL LITERACY

JUNE PAPER 2

9 JUNE 2025

Marks: 100
Time: 2 hours

This paper consists of 11 pages and an addendum with 4 annexures.

INSTRUCTIONS AND INFORMATION:

1. This question paper consists of FOUR questions. Answer ALL the questions.

2. Use the ANNEXURES to answer the following questions:

   - ANNEXURE A for QUESTION 2.1
   - ANNEXURE B for QUESTION 2.2
   - ANNEXURE C for QUESTION 3.3
   - ANNEXURE D 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 and non-graphical), unless stated otherwise.

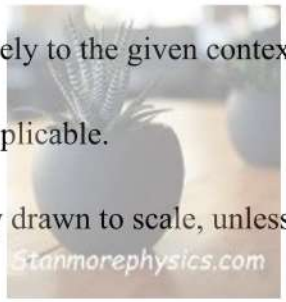
6. Show ALL the calculations clearly.

7. Round off ALL final answers appropriately 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 Fruit juice for lunch boxes is normally packaged in boxes or tins.

The diagrams below show pictures and dimensions of packaged juice.

Picture of 200 mℓ juice box	**Picture of 200 mℓ juice tin:**
	
Dimensions of juice box:	**Dimensions of juice tin:**
Length: 35 mm Width: 45 mm Height: 120 mm	Diameter: 5,3 cm Height: 11,1 cm

[Adapted from:makro.co.za&crownholdings.com]

Use the information above to answer the questions that follow.

1.1.1 Write down the unit of measurement for the surface area of a juice box. (2)

1.1.2 Choose the correct formula from the options below for the surface area of the juice tin:

Only write the correct letter in your answer book (e.g 1.1.4 D)

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

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

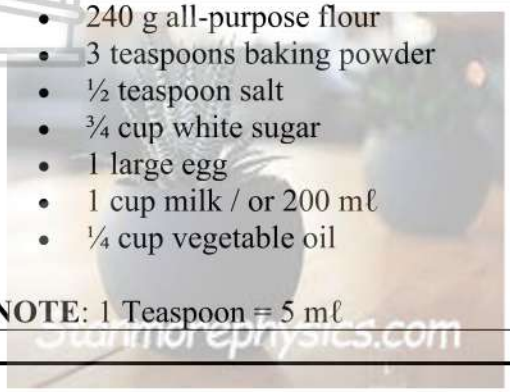
C Surface Area = $\pi \times \text{radius} \times \text{height}$ (2)

1.1.3 Convert the capacity of the juice box to litres. (2)

1.2 An extract of a basic muffin recipe is shown below:

Servings: 1 dozen
Cook Time: 25 min
Ingredients:
• 240 g all-purpose flour • 3 teaspoons baking powder • ½ teaspoon salt • ¾ cup white sugar • 1 large egg • 1 cup milk / or 200 mℓ • ¼ cup vegetable oil **NOTE**: 1 Teaspoon = 5 mℓ

[Adapted from dotdashmeredith.com]



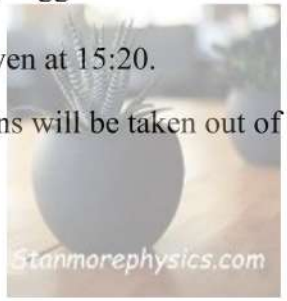
Use the information above to answer the questions that follow.

1.2.1 Calculate, in mℓ, the amount of salt needed. (2)

1.2.2 Determine the number of large eggs needed to make 24 muffins. (2)

1.2.3 Muffins were placed in the oven at 15:20.

Determine the time the muffins will be taken out of the oven. . (2)



1.3 Charlie is a works in construction and uses building plans and measuring instruments.

Some measuring instruments and scales used by builders are shown below:

Choose an item from COLUMN B that matches a description in COLUMN A. Write only the letter (A-G) next to the question numbers (1.3.1 – 1.3.4) in the answer BOOK.

COLUMN A		COLUMN B	
1.3.1	The most appropriate measuring instrument to measure the length of a sports field.	**A**	
1.3.2	An example of a ratio scale.	**B**	
1.3.3	The most appropriate scaled measurements to draw a floorplan of a house.	**C**	
		D	1 cm = 1 m
1.3.4	An example of a bar scale	**E**	
		F	1: 50 000
		G	1 mm = 10 m

(4×2) (8)

[20]

QUESTION 2

2.1 Linda is a student at the Durban University of Technology, studying to become a radiographer.

The campus layout map on ANNEXURE A shows the Ritson Campus where she is studying.

Use ANNEXURE A to answer the questions that follow.

2.1.1 Give the general direction of Mansfield Hall from Security. (2)

2.1.2 Determine the probability, as a decimal, of a student entering the campus at a gate that is not on Winterton Walk. (3)

2.1.3 The actual clinics section of the campus **(K)** has a length of 175 m.

Determine the scale used to draw this map. (5)

2.1.4 Linda needs to go to the Inkosi Albert Luthuli Central Hospital to do practical work for her course. The hospital is 14,25 km away from her campus.

The average speed driving to the hospital is 52 km/h.

Determine in minutes, the time taken to travel to the hospital.

You may use the formula:
Distance = speed × time (4)

2.2 Linda decides to take a road trip during her holidays.

Her car has an average fuel consumption rate of 6,5 litres per 100 kilometres.

The map on ANNEXURE B shows the distances between some cities on the route.

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

2.2.1 Identify the number of national roads indicated on this map. (2)

2.2.2 Write the probability of randomly selecting a route traveling directly to East London from Gqeberha ONLY using a national road. (2)

2.2.3 Use the driving instructions provided below regarding the route taken by Linda:

- Travel from Kei Mouth in the Direction of Durban.
- Travel 132 km of which 66 km is on the N2
- Continue driving on the N2
- Turn right onto the first regional road.
- Continue on the regional road for 313 km.

Write down the name of the town that is the destination. (2)

2.2.4 On another journey, Linda travels from Durban via Pietermaritzburg to Kokstad to pick up a parcel for her family.

She claims that she would need less than 15 litres of fuel for this part of the trip.

Verify, showing all calculations, whether her claim is valid. (5)
[25]

QUESTION 3

3.1 Abongile bought a 20-foot shipping container for storage.

The diagrams below show the dimensions of the container:

OUTER DIMENSIONS OF SHIPPING CONTAINER	INNER DIMENSIONS OF SHIPPING CONTAINER
	

Dimensions	length	width	height
Foot	20,0	8,0	8,60
Metres	**A**	2,40	2,60

Dimensions	length	width	height
Foot	19,4	7,9	7,4
Metres	5,89	2,35	2,39

Note:
1m = 3,28084 foot

You may use the following formulae:
Volume = length × width × height
Perimeter = 2 × (length + width)

[Adapted from www.bigboxcontainers.co.za]

Use the information above to answer the questions that follow.

3.1.1 Identify the shape of the base of the container. (2)

3.1.2 Calculate, in cubic foot (ft^3) rounded to two decimals places, the inner volume of the shipping container. (4)

3.1.3 Calculate, in m^2, the outer surface area of the shipping container.

You may use the formula:

Surface area of rectangular prism

= 2 × (length × width) + 2 × (width × height) + 2 × (length × height) (5)

3.2 Abongile calculated that the total inner surface area (excluding the floor of the container) to be painted with rustproof paint is 53,2287 m^2.

The paint to be used to paint the inner dimension of the shipping container is given below:

TIN OF PAINT	INFORMATION
	• Duram NS4 Anti-Rust Coating Primer Grey 5 litre tin. • Spread rate of 8 m^2 per tin of paint. **R599,00 (INCL VAT)**

[Adapted from www.buiders.co.za/Paint]

3.2.1 Determine the number of tins of paint that must be bought. (4)

3.2.2 Calculate the total cost of the paint for this project. (2)

3.3 ANNEXURE C shows a Weight for Height Chart for men and women 18 years and older as well as FOUR weight status indicators.

Use the information on ANNEXURE C to answer the questions that follow.

3.3.1 Determine the weight status of a person who is 150 cm tall with a mass of 121 pounds (lb). (2)

3.3.2 A nurse claims that a person with a BMI of 34,77 kg/m^2 and a height of 160 cm is overweight.

Critically comment on the nurse's statement by showing all calculations and by indicating the person's weight status.

You may use the formula:

$$\textbf{BMI} = \frac{\textbf{Weight (kg)}}{(\textbf{height in m})^2}$$ (6)

3.3.3 To compile this chart, the data of thousands of individuals was collected by medical staff.

Explain the importance of being barefoot when collecting information for this chart. (2)

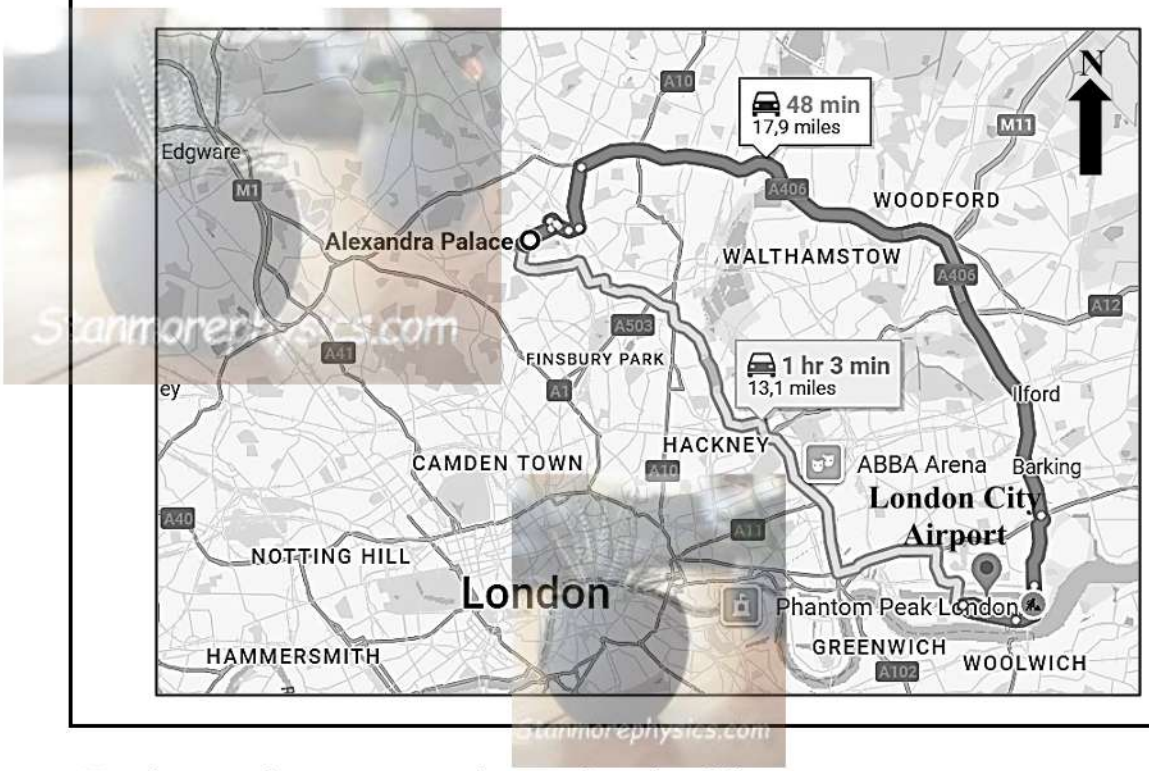
[27]

QUESTION 4

4.1 At 17 years and 347 days old, Luke Littler ("The Nuke") became the youngest-ever World Darts Champion in 2025. In the final on 3 January, he faced Michael van Gerwen ("Mighty Mike") from the Netherlands.

Van Gerwen travelled from London City Airport to Alexandra Palace for the championship.

The map below shows two routes from London City Airport to Alexandra Palace.



Use the map above to answer the questions that follow.

4.1.1 One of the following statements is incorrect.

Select the incorrect statement and write down only the corresponding letter (A, B, C, or D) next to the question number.

A Camden Town is south of Alexandra Palace.

B Alexandra Palace is northeast of Notting Hill.

C Alexandra Palace is east of Woodford.

D London City Airport is southeast of Alexandra Palace. (2)

4.1.2 Convert the distance of the longest route to the nearest km to travel from London City airport to Alexandra Palace.

Note: 1 mile = 1,60934 km (4)

4.1.3 Calculate the average speed in km/h to travel by car from the airport to Alexandra Palace via Woodford.

You may use the following formula:
Distance = Speed × Time (4)

4.1.4 Provide a possible reason why it will take longer to travel by car on the shorter route. (2)

4.2 The dart boards that were used in the World Darts Championship of 2025 are shown on ANNEXURE D.

Use ANNEXURE D to answer the questions that follow.

You may use the following formulae:
Circumference of circle = $\pi \times$ diameter
Area of circle = $\pi \times r^2$, where r = radius
Volume of a cylinder = $\pi \times r^2 \times h$, where r = radius and h = height

NOTE: Use $\pi = 3{,}142$

Use the information above as well as on ANNEXURE D to answer the questions that follow:

4.2.1 Determine the radius of the bull. (2)

4.2.2 Calculate, in mm, the circumference of the dart board. (3)

4.2.3 The volume of a dart board is 6 087,3 cm^3.

Determine the height in cm. (5)

4.2.4 Andrew calculated and rounded the answer of the out of play area to the nearest cm^2.
He got to an answer of 690 cm^2.

Verify showing all your calculations if his answer is correct. (6)
[28]

TOTAL: 100

NAME OF SCHOOL
District name

GRADE 12

MATHEMATICAL LITERACY

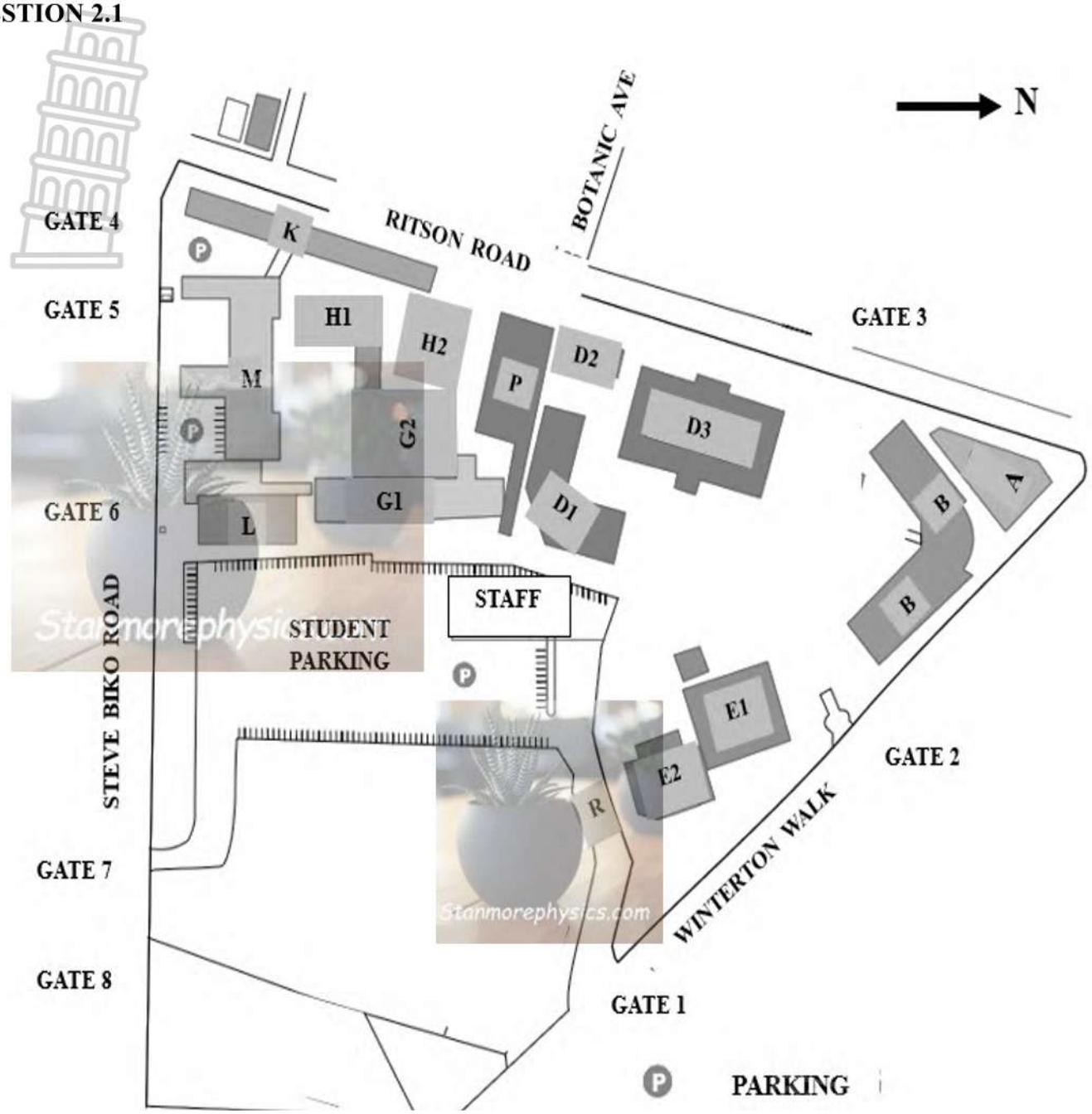
ADDENDUM

PAPER 2

9 JUNE 2025

πThis addendum consists of 5 pages with 4 annexures.

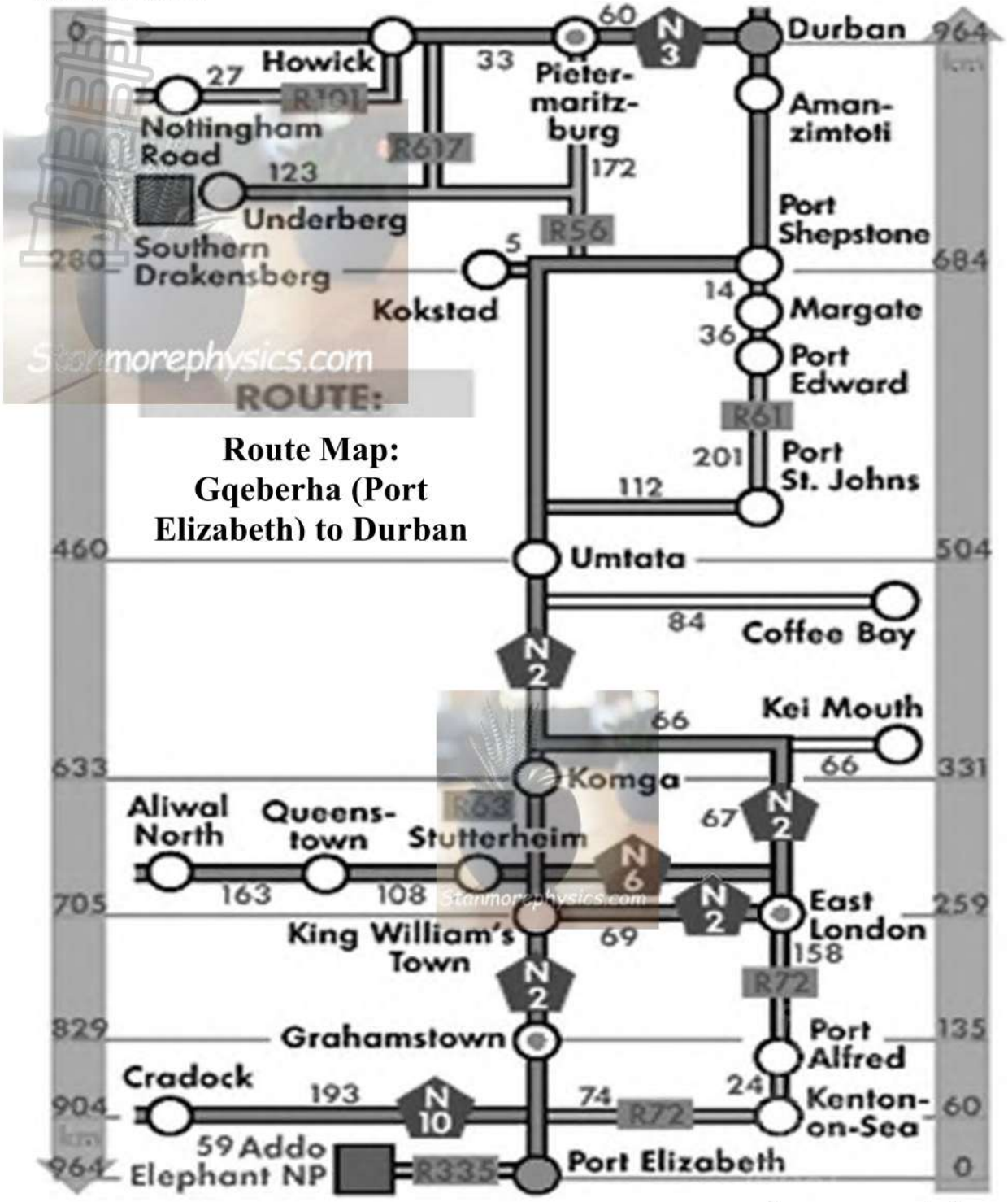
ANNEXURE A
QUESTION 2.1



KEY:			
Venue:	**Description:**	**Venue:**	**Description:**
A	Emergency Medical Care & Rescue	**G2**	Faculty of Health Sciences: Office
B	Information Technology Block	**H1**	Radiography
D1	Hotel School & Restaurant	**H2**	Radiography
D2	Hotel School Offices	**K**	Clinics
D3	Hotel School lecture room	**L**	Mansfield Hall
E1	Exam Venue	**M**	Drama Studies & Courtyard Theatre
E2	Canteen	**P**	Conference Venue
G1	Dental Sciences	**R**	Security

[Adapted from:DUT.ac.za]

ANNEXURE B
QUESTION 2.2

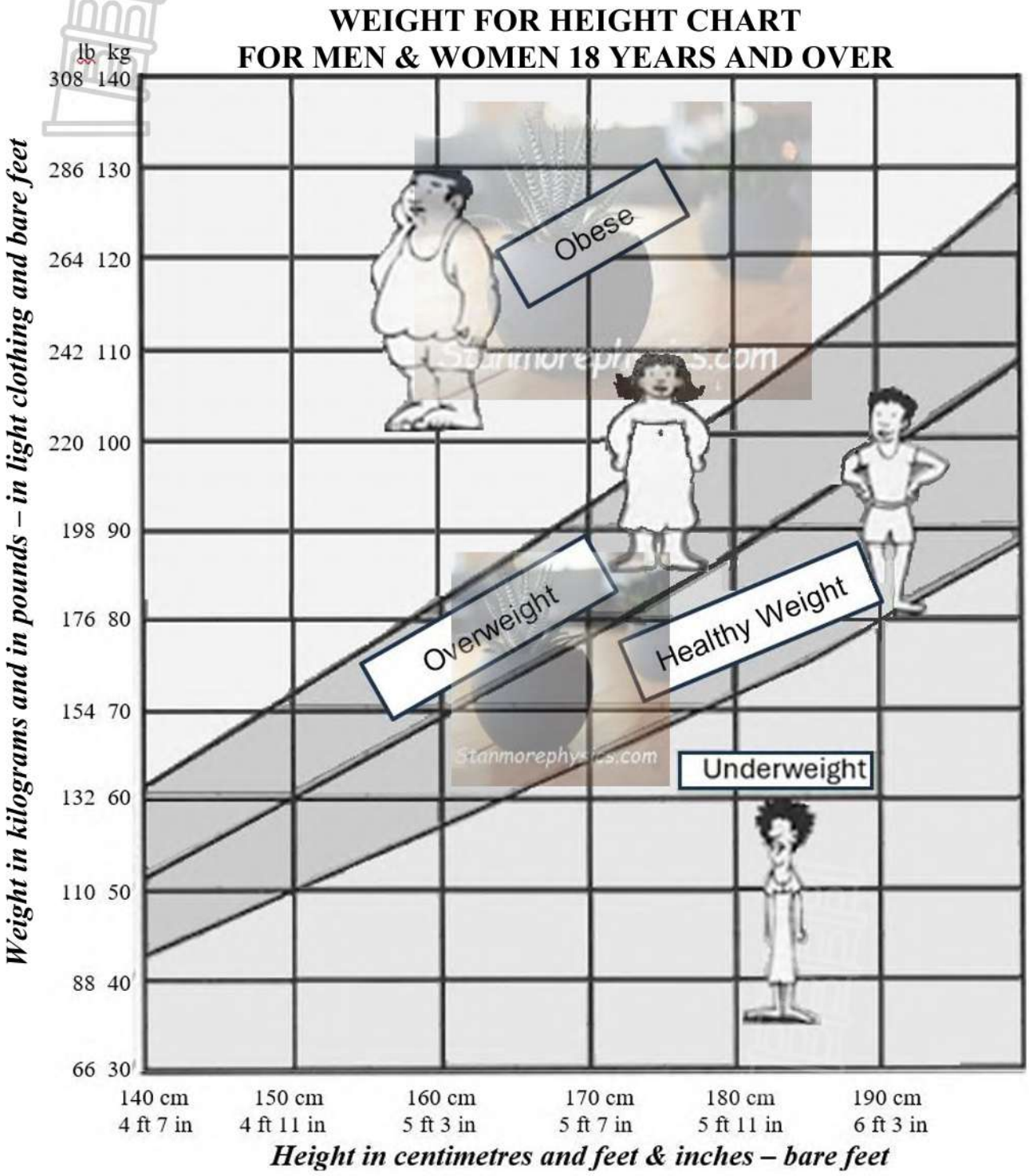


[Source: www.eaglesfare.co.za]

ANNEXURE C

QUESTION 3.3

WEIGHT FOR HEIGHT CHART



[Adapted from nsatng.wordpress.com]

ANNEXURE D
QUESTION 4.2

DARTBOARD SECTIONS AND DIMENSIONS:

Sections	Dimensions
Overall diameter of board	451 mm
Bull's diameter	12,7 mm
Centre of bull to outside edge of double wire	17 cm

DIAGRAM OF THE DARTBOARD:

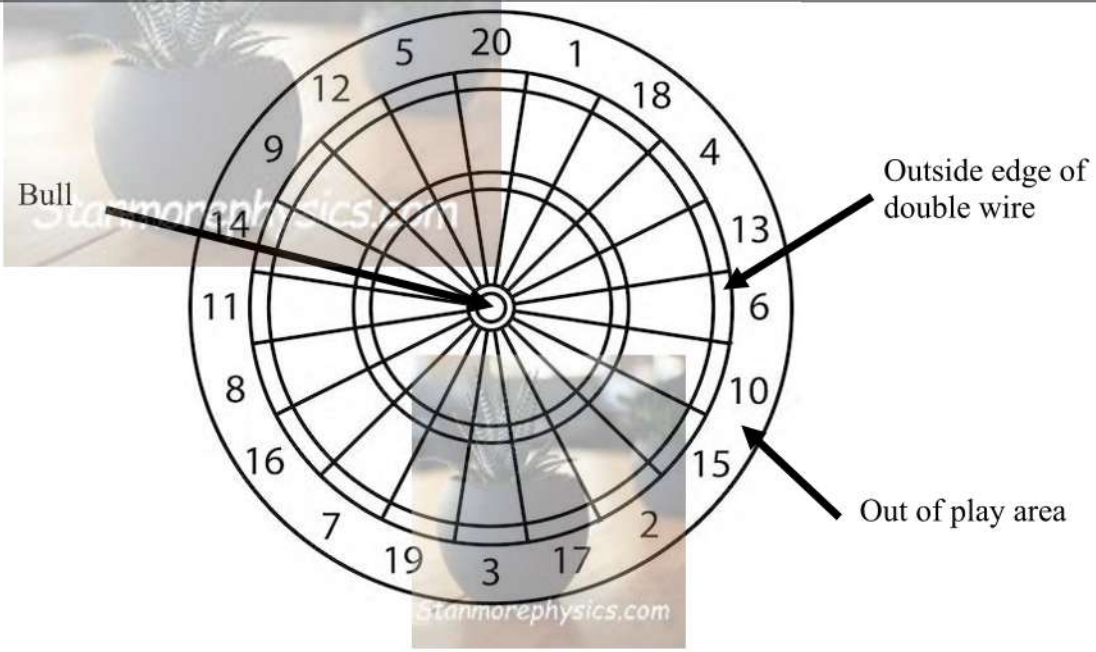
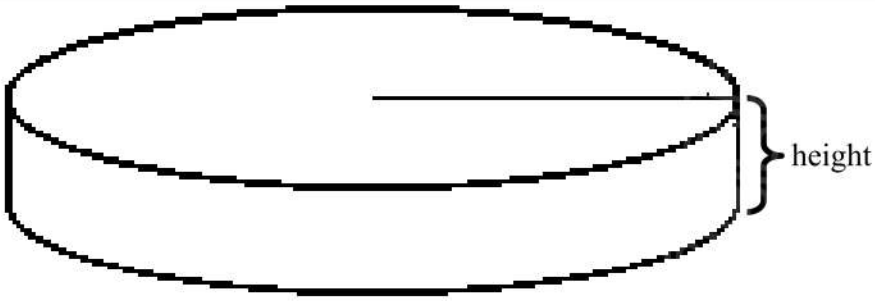


DIAGRAM OF THE 3D SHAPE OF THE DART BOARD



[Adapted from www.dartswdf.com]

MATHEMATICAL LITERACY

JUNE PAPER 2
9 JUNE 2025

MARKING GUIDELINES

NAME OF YOUR SCHOOL

MARKS: 100

Cognitive Distribution for Assessment:

	Level 1	Level 2	Level 3	Level 4
Expected:	30%	30%	20%	20%
Actual:	30%	26%	23%	21%

Per Topic Distribution for Assessment:

Topic:	Finance	Data Handling	Measurement	Maps & Plans	Probability
% of task:			55%	40%	5%

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/dokument/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*
AO	Answer only/*Slegs antwoord*
MCA	Method with consistent accuracy/*Metode met volgehoue akkuraatheid*
RCA	Rounding consistent with accuracy/ *Afronding met volgehoue akkuraatheid*

These marking guidelines consist of 8 pages.

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.

• NOTE: consistent accuracy (CA) does not apply in cases of a breakdown.

• If the candidate presents any extra solution when reading from a graph, table, layout plan and map, then penalise for every extra 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.

• Rounding is an independent mark.

• In order to award the verification / conclusion mark the candidate must have scored at least one mark in the calculations preceding the final conclusion.

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 op by die tweede berekeningsfout.

• Let wel: volgehoue akkuraatheid (CA) geld nie in die geval van 'n afbreuk nie.

• Wanneer 'n kandidaat aflesings vanaf 'n grafiek, tabel, uitlegplan en kaart geneem en ekstra antwoorde gee, penaliseer vir elke ekstra 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.

• Afronding tel as 'n afsonderlike punt.

• Ten einde die verifikasie/ gevolgtrekking punt toe te ken moes die kandidaat ten minste een punt gekry het in die berekeninge wat lei tot die finale gevolgtrekking.

QUESTION 1 [20 MARKS] Q1 = ANSWER ONLY			
Q/V	**SOLUTION**	**EXPLANATION**	**T&L**
1.1.1	mm^2 OR cm^2 ✓✓A	2 correct formula (2)	M L1
1.1.2	B✓✓A	2A Correct unit (2)	M L1
1.1.3	✓MA 200 ÷ 1 000 = 0,2ℓ ✓A	1MA divide by 1 000 1 A Simplify (2)	M L1
1.2.1	✓MA 5 ÷2 = 2,5 ml ✓A	1MA divide by 2 1A Simplify (2)	M L1
1.2.2	✓MA 1egg x 2 = 2✓A	1MA correctly multiply by 2 1A Simplify (2)	M L1
1.2.3	✓MA 15:20 +00:25 = 15:45 ✓A	1MA adding cooking time 1A correct time (2)	M L1
1.3.1	E ✓✓ A	2 A correct option (2)	MP L1
1.3.2	F ✓✓ A	2 A correct option (2)	MP L1
1.3.3	D✓✓ A	2 A correct option (2)	MP L1
1.3.4	A ✓✓ A	2 A correct option (2)	MP L1
			[20]

QUESTION 2 [25 MARKS]			
Q/V	**SOLUTION**	**EXPLANATION**	**T&L**
2.1.1	SW ✓✓A	2A correct direction (2)	MP L2
2.1.2	Probability / *Waarskynlikheid:* ✓A $\frac{6}{8} = 0,75$ ✓CA ✓A	1A numerator 1A denominator 1CA simplify **NPR** (3)	P L2
2.1.3	Scale of layout map / *Skaal van uitlegkaart:* 175 m = 175 000 mm ✓C ✓A 35 mm = 175 000mm ✓MCA $\frac{35}{35} = \frac{175\,000}{35}$ ✓MCA 1: 5 000 ✓CA	1C m to mm 1A measurement 1MCA scale in order 1MCA division 1CA scale used. (5) Measure: 33-36 mm	MP L3
2.1.4	Time in minutes / *Tyd in minute:* time = $\frac{\text{distance}}{\text{speed}}$ ✓MA time = $\frac{14,25}{52}$ ✓SF time = 0,2740384615 hours ✓C Time : 0,27 hours x 60 = 16 minutes ✓CA	1MA changing subject of the formula 1SF correct values into formula 1C hours to minutes 1CA time in minutes Accept 16,44 minutes (4)	MP L3
2.2.1	4 ✓✓RT	2RT number of national roads (2)	MP L1
2.2.2	Probability / *Waarskynlikheid:* ✓A $\frac{1}{2}$ ✓A	1A numerator 1A denominator (2)	P L2

2.2.3	Destination / *Bestemming:* Port Edward ✓✓ A	2A correct town (2)	MP L2
2.2.4	Fuel consumption / *Brandstof verbruik:* ✓MA 60+172+ 5 = 237 km ✓CA 6,5 ℓ = 100 km ??? = 237 km ✓MCA $\frac{237}{100} \times 6{,}5$ = 15,405 ℓ ✓CA Her statement is invalid. ✓O	1MA adding distances 1CA total distance 1MCA calculating consumption 1CA total consumption 1O invalid. (5)	MP L4
			[25]

QUESTION 3 / *VRAAG 3* [27 MARKS/*PUNTE*]

Q/*V*	Solution/*Oplossing*	Explanation/*Verduideliking*	T&L
3.1.1	Rectangle ✓✓A	2A Correct Shape (2)	M L1
3.1.2	Volume = length x width x height ✓RT Volume = 19,4 × 7,9 × 7,4 ✓SF = 1134,124 ft^3 ✓CA =1134,12 ft^3 ✓R	1RT correct values 1SF substitute into formula 1CA simplification 1RCA Two decimals (4)	M L3
3.1.3	Length in meters $=\frac{20{,}0}{3{,}2804}$ ✓C = 6,096817461 = 6,10 meters ✓A SA = 2(length × width) + 2(width × height) + 2(length × height) = 2(6,10 × 2,4) + 2(2,4 × 2,6) + 2(6,10×2,6) ✓SF = 29,28 +12,48 +31,72 ✓S =73,48 m^2 ✓CA unrounded answer (73,44 m^2)	1C foot to m 1A Simplify 1SF subst values 1S simplification 1CA answer **NPR** (5)	M L3

Q/*V*	Solution/*Oplossing*	Explanation/*Verduideliking*	T&L
	OR/ *OF* Length in meters $=\frac{20,0}{3,2804}$ ✓C $= 6,096817461$meters ✓A SA = 2(length × width) + 2(width × height) + 2(length × height) = 2(6,096817461× 2,4) + 2(2,4 × 2,6) + 2(6,096817461×2,6) ✓SF = 29,26472381+ 12,48 + 31,7034508 ✓S = 73,44817461 m^2 = 73,45 m^2 ✓CA	1C foot to m 1A Simplify 1SF subst values 1S simplification 1CA answer **NPR**	
3.2.1	✓MA Cans of paint required $=\frac{53,2287}{8} \times 5$ ✓MA = 33,26 litre ✓CA = 7 tins of paint ✓R	1MA divide by spread rate 1MA calculating paint needed 1CA Simplify 1R number of tins. (4)	M L2
3.2.2	Total Cost = number of cans x price of 1 can of paint = 7 x R 599, 00 ✓MA = R 4 193 ✓CA	**CA from 3.2.1** 1MA multiply by R599 1 CA answer (2)	M L2
3.3.1	Healthy weight ✓✓ RT	2 RT correct weight status (2)	M L1
3.3.2	$\frac{160}{100}$ cm = 1,6 meters ✓C BMI = weight (kg) / [height (m)] ² 34,77 kg/m^2 = $\frac{Weight}{(1,6)^2}$ ✓SF = 34,77kg/m^2 x 2,56 m^2 ✓S = 89,0112 kg ✓CA The nurse claim is not true ✓O The person is Obese ✓C	1C convert cm to m 1SF substitute values into formula 1S Simplification 1CA mass in kg 1O Not true 1A correct weight status (6)	M L4
3.3.3	To get the accurate reading on the scale ✓✓O Shoes have a sole which add extra height/weight.	2O Opinion (2)	M L4
			[27]

QUESTION 4 [28 Marks]			
Q/*V*	**Solution/*Oplossing***	**Explanation/*Verduideliking***	**T&L**
4.1.1	C ✓✓A	2A (2)	MP L1
4.1.2	17,9 miles ✓RT 1 mile = 1,60934 km 17,9 miles = 17,9 × 1,60934 ✓MA = 28,807186 ✓CA = 29 km ✓R	1RT longest route 1MA × miles with conversion factor 1CA distance in km 1R (4)	MP L2
4.1.3	48 minutes = 0,8 hours ✓C Average Speed = $\frac{\text{Distance}}{\text{Time}}$ ✓MA $= \frac{29\text{ km}}{0{,}8\text{ hours}}$ ✓SF = 36,25 km/h ✓CA **OR/*OF*** Unrounded value: 48 minutes = 0,8 hours ✓C Average Speed = $\frac{\text{Distance}}{\text{Time}}$ ✓MA $= \frac{28{,}807186\text{ km}}{0{,}8\text{ hours}}$ ✓SF = 36,0089825 km/h ✓CA	**CA from 4.1.2** 1C minutes to hours 1MA change the subject of formula 1SF substitution 1CA speed in km/h (4)	MP L2
4.1.4	There are more traffic congestions on the road. OR Speed limits on the road. ✓✓O	2O reason (2)	MP L4
4.2.1	Radius = 12,7 ÷ 2 ✓MA = 6,35 ✓A	1MA concept of radius of bull 1A radius (2)	M L1
4.2.2	Circumference = 3,142 × 451 mm ✓RT ✓SF = 1 417,042mm ✓CA	1RT diameter of board 1SF diameter 1CA circumference (3)	M L2
4.2.3	451 mm = 45,1 cm ✓C Radius = 22,55 cm ✓A 6 087,3 = 3,142 × 22,5^2 × height ✓SF Height = $\frac{6\,087{,}3}{1\,597{,}714855}$ ✓MA = 3,810004007 ✓CA	1C convert to cm 1A radius 1SF correct substitution 1MA changing the subject of the formula and answer 1CA height (5)	M L3

4.2.4	Area of dart board = 3,142 × 22,55² ✓SF = 1 597,714855 ✓CA Area from centre of bull to outside edge of double wire = 3,142 × 17² ✓SF = 908,038 ✓A ✓MA Out of play area = 1 597,714855 - 908,038 = 689,676855 ≈ 690 He is CORRECT.	**CA from 4.2.3** 1SF radius 1CA area 1SF radius 1A area up to edge of double wire 1MA difference 1O conclusion (6)	M L4
			[28]
TOTAL: 100			