GRADE 11

MATHEMATICAL LITERACY

JUNE 2023 EXAMINATION PAPER 2

MARKS: 75

DURATION: 1 HOUR 30MIN

INSTRUCTIONS AND INFORMATION

1. This question paper consists of FOUR questions. Answer ALL the questions.
2. Number the questions correctly according to the numbering system used in this assignment/investigation.
3. Start EACH question on a NEW page.
4. You may use an approved calculator (non-programmable and non-graphical, unless stated otherwise).
5. Show ALL calculations clearly.
6. Round off ALL final answers appropriately according to the given context, unless stated otherwise.
7. Indicate units of measurement, where applicable.
8. Maps and diagrams are NOT necessarily drawn to scale, unless stated otherwise.
9. Write neatly and legible

The question paper consists of 9 pages, including the cover page and two ANNEXURES.

GRAND TOTAL: 75

QUESTION 1

1.1 Tumisho finds the information below on a 125-g packet of potato chips.

NUTRITIONAL INFORMATION per 100g		
Nutrition	**Unit**	**Amount**
Energy	Kcal	548,9
Protein	g	8,46
Total Carbohydrates	g	52,4
Sugars	g	1
Total fat	g	33,9
Saturated fat	g	15,56
Trans fat	g	0
Cholesterol	ml	0
Sodium	mg	204,19

Note: 1Kcal means 1kilocalories
1g means 1gram
1mg means 1milligram
1Kcal = 1000 calories
1g = 1000 mg

1.1.1 Explain the term ''per'' used in this context. (2)

1.1.2 The ratio of protein to carbohydrates in the nutritional information is 8,46: 52,4. Write the ratio as a unit ratio. (2)

1.1.3 If Tumisho eats 5 packets of the potato chips, how much sugar would be in the 5 packets of potato chips. Write your answer in grams. (2)

1.2 Tumisho has five different options whenever he must buy potato chips. The following are the five different options.

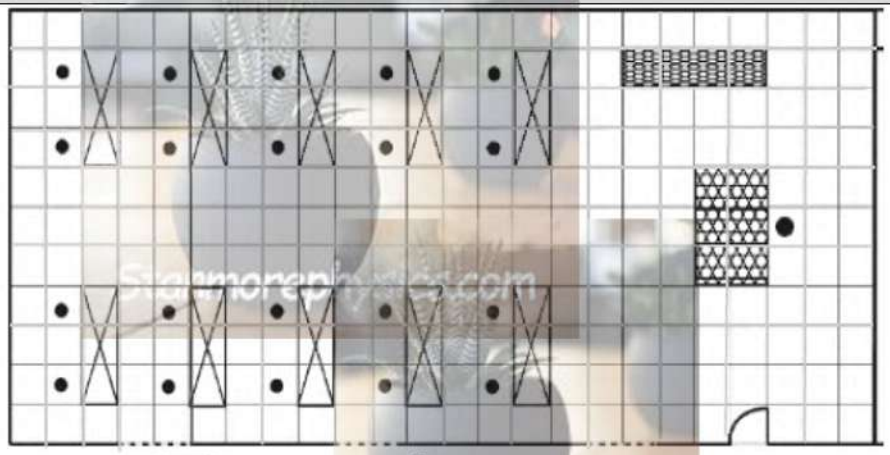
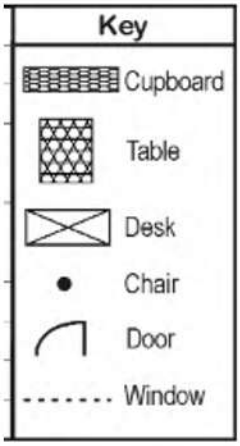
Flamin Hot	Salt and Vinegar	Barbecue	Sour Cream and Onion	Lemon
				

Use above information to answer the questions that follow.

1.2.1 Write down the number of the potato chips flavour with only ONE word flavour name. (2)

1.2.2 Determine the probability (as a percentage) that Tumisho will choose the Lemon flavoured chips. (2)

1.3 The map below shows the layout plan and symbols of a classroom of where Tumisho attends school.

CLASSROOM LAYOUT	CLASSROOM KEYS
	

NB 1block ( ) represents $1m^2$

Use the layout and the symbols above to answer the question that follow.

1.3.1 Determine the total number of chairs in the classroom. (2)

1.3.2 To which side does the door open when one enters the classroom? (2)

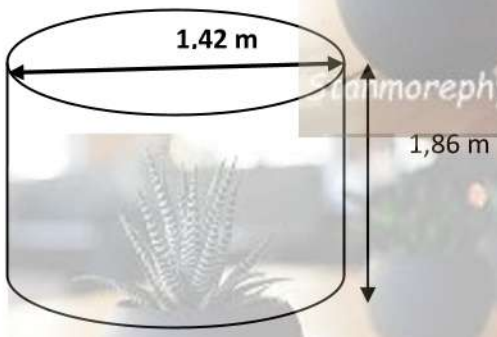
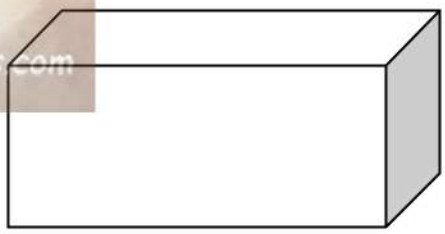
1.4 Tumisho leaves home at 06:30 am every day to school and arrives at 07:25 am (2)
Determine how much time Tumisho spends on his way to school.

[16]

QUESTION 2

2.1 The Ephraim Mogale municipality has decided to supply the community of Rathoke with water tanks to address the water scarcity.

The following are the two types of tanks they had to choose from.

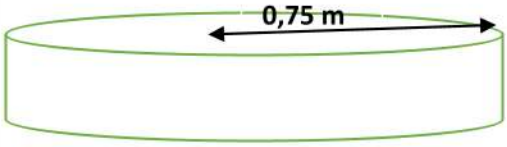
Cylindrical tank	Rectangular tank
	
Diagram of the cylindrical tank	Diagram of the Rectangular tank
	
$V = \pi r^2 h$, where $\pi = 3{,}142$ • Diameter = 1,42 m • Height = 1,86 m **Note**: $1m^3$ = 1 000 litres.	**V = length × breadth × height** • Capacity of rectangular tank = 30 000 litres

2.1.1 The community of Rathoke consumes THREE rectangular tanks filled with water per day.

Determine the quantity of water (in kilolitres) that is consumed by the community per day. (3)

2.1.2 Determine the number of cylindrical tanks will be needed to supply 90 000 litres of water to the community if the municipality decides to supply the community with the cylindrical tanks. (6)

2.2 The picture below shows the concrete stand where a cylindrical tank will be placed on.

Picture of the stand	Diagram of the stand
	 **radius = 0,75 m** $\pi = 3,142$ $A = \pi r^2$

Use the above information to answer the questions that follow.

2.2.1 Calculate the top area of the concrete stand in m^2. (2)

2.2.2 Hence, determine the Area that will be left after the tank has been place on the stand. (4)

2.2.3 To mix 1 cubic metre of medium strength concrete you will need:

- 7 bags of cement
- 0,70 cubic metres of sand
- 0,70 cubic metres of stone

Determine the quantity of cement that is required for the concrete slab the Jojo tanks sits on if the volume of the concrete slab is $1,54m^3$. (2)

2.2.4 Explain why it is important that the mixture of concretes must be adhered to. (2)

[19]

QUESTION 3

On **ANNEXURE A** is the map of an extract of the Gauteng Province part of South Africa. Use this map to answer the following questions

3.1 Name the type of scale that is indicated on the map. (2)

3.2 Write down the number of the neighbouring provinces that surround Gauteng. (2)

3.3 Explain why Johannesburg and Pretoria are indicated in bold CAPITAL letters (2)

3.4 Describe the route from Johannesburg to Vereeniging by mentioning the routes that must be used and places that must be passed. (2)

3.5 The map shows the national roads like N1, N4, N12, N14 etc.
Explain why these roads are called national roads (2)

3.6 The ratio scale for the map is 1: 1 500 000

3.6.1 Explain the meaning of the scale 1: 1 500 000 (2)

3.6.2 Use your ruler to measure the distance between Pretoria and Johannesburg and use the measured distance to calculate the actual distance between Pretoria and Johannesburg. (4)

3.6.3 Explain why the above answer could be wrong in terms of accuracy (2)

3.7 The actual distance between Pretoria and Vereeniging is 155 km. Mr. Prince from USA wants to convert the information according to his country's unit so that he understands them better.

3.7.1 Convert the distance from Pretoria to Vereeniging to miles. (2)
NB 1 km = 0,621 mile

3.7.2 It takes about 2hrs 30min to drive from Pretoria to Vereeniging. (3)

Determine the speed in miles/hour rounded off to the nearest 10 miles per hour

You may use the formula: $\textbf{Speed} = \frac{\textbf{Distance}}{\textbf{Time}}$

[23]

QUESTION 4

ANNEXURE B shows layout plan of the Church basement. Use the **ANNEXURE** to answer the question that follow

4.1 Two items are indicated or mentioned on the layout plan that to help people to go to higher level of the church. Mention the two items indicated or mentioned. (2)

4.2 The layout plan of the church shows Women RR (Women Rest Room) and Men RR (Rest Room).
The area of Women RR is 18 m^2

The dimensions of Men RR is 400cm by 300 cm.

Determine the difference between the area of Women RR and Men RR in m^2

You may use the formula: **A = length × breadth** (6)

4.3 The church management has decided to retile the **FELLOWSHIP HALL**.
The total Area of the **FELLOWSHIP HALL** that needs to be retiled is 294 m^2

Information and costs.

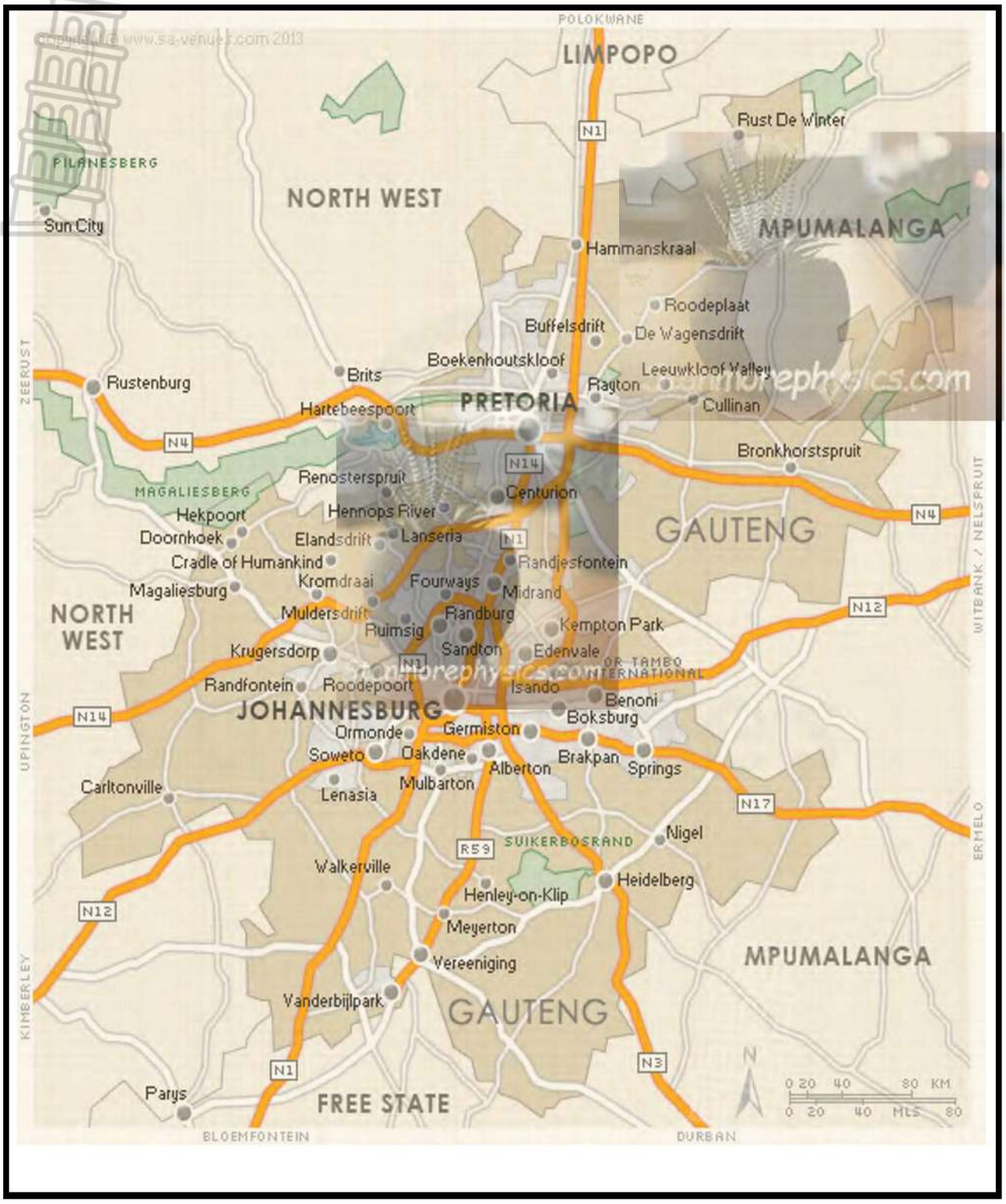
- The tiles to be used have an area of 0,1225m^2
- One box of 8 tiles costs R189,95
- The church management's total budget is R55 000 for tiles.

Verify with calculations whether their budget would be enough or not. (7)

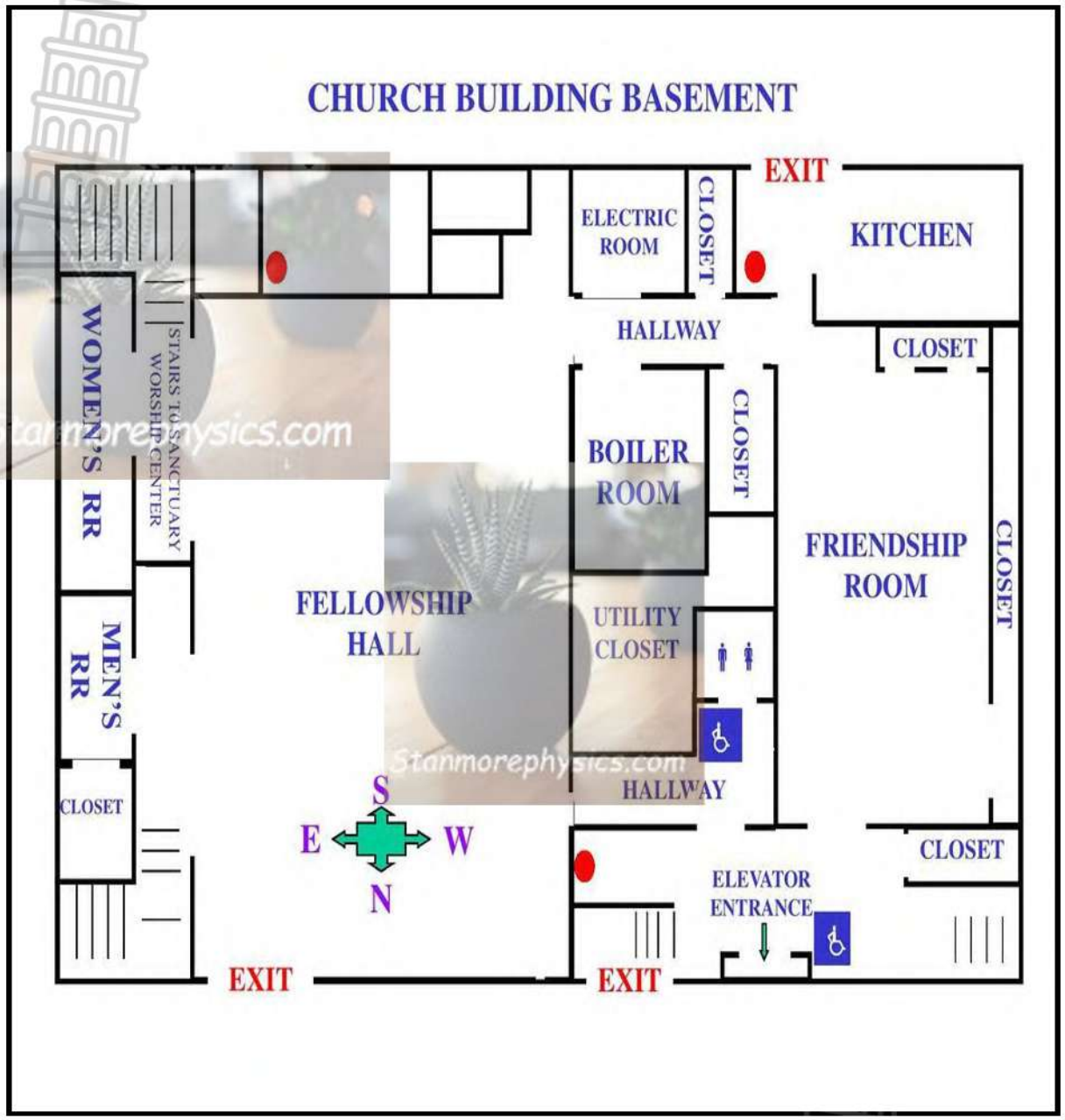
4.4 Do you think the church layout plan shows that it accommodates people with disability? Motivate you answer. (2)

[17]

ANNEXURE A QUESTION 3



ANNEXURE B QUESTION 4



GRADE 11

MARKING GUIDELINES

MATHEMATICAL LITERACY

JUNE EXAMINATION 2023 PAPER 2

MARKS: 75

Codes	Explanation
M	Method
MA	Method with Accuracy
CA	Consistent Accuracy
A	Accuracy
C	Conversion
D	Define
J	Justification/Reason/Explain/Conclusion
S	Simplification
RT	Reading from a graph
SF	Substitution in the formula
O	Opinion

QUESTION 1 **[16]**

Quest	Answer	Explanation of mark allocation	TOPIC and Cognitive level.
1.1.1	For every✓✓	2A Explanation	M L1
1.1.2	8,43: 52,4 1✓: 6,2✓	2A Answer **AO**	M L1
1.1.3	1g + 1g + 1g + 1g +1g✓ = 5g✓ OR 1g×5✓ = 5g✓	1M Addition 1A 1M Multiplication 1A **AO**	M L1
1.2.1	2/ Two✓✓	2A Number	P L1
1.2.2	$\frac{1}{5}$ ✓ 20%✓	1A Fraction / decima 1CA Percentage **AO**	P L1
1.3.1	21 /Twenty-one✓✓	2A Number	MP L1
1.3.2	To the right✓✓ or inside ✓✓	2A Answer	MP L1
1.4	07:25 – 06:30✓ =55 min✓	1A Difference 1A Answer **AO**	M L1

QUESTION 2 **[19]**

Quest	Answer	Explanation of mark allocation	TOPIC and Cognitive level.
2.1.1	Amount of water in litres = 30 000 litres ×3✓ = 90 000 litres✓ Amount of water in kl = 90 000 ÷ 1000 = 90 kl✓	1M Multiplication 1A water in litres 1C water in kl	M L2
2.1.2	Radius = 1,42 ÷2 = 0,71 m✓ Volume of cylindrical tank = 3,142x(0,71)^2×1,86 ✓ = 2,946 m^3✓ Capacity of one cylindrical tank = 2 946 litres OR Capacity of one cylindrical tank = 2, 946 kilolitres Number of cylindrical tanks needed = 90 kl ÷2,946✓ = 30,54989817✓ = 31✓	1C Conversion of Diameter to radius 1SF Substitution 1CA Answer **(CA from Q2.1.1)** 1M Dividing capacity/volume of rectangular tank by capacity/ volume of cylindrical tank 1CA Answer 1 Rounded up answer	CA from 2.1.1 M L3
2.2.1	A = 3,142x(0,75)^2✓ = 1,767375 m^2✓	1SF Substitution 1A Answer	M L2
2.2.2	Bottom area of the cylindrical tank = 3,142x(0,71)^2✓ = 1,5838822 m^2✓ Difference = 1,767375 – 1,5838822✓ = 0,1834928 m^2✓	1SF Substitution 1A Answer 1M Difference 1CA Answer	CA from 2.2.1 M L3
2.2.3	1m^3 of medium strength concrete needs 7 bags of cement Therefore 1,54 m^3 need : 7×1,54 bags✓ = 10,78 bags = 11 bags✓	1M Multiplication 1A Answer	M L2
2.2.4	So that the concrete stand can be strong✓✓	2O Opinion /Reason	M L4

QUESTION 3 **[23]**

Quest	Answer	Explanation of mark allocation	TOPIC and Cognitive level.
3.1	Bar scale /line scale✓✓	2A Name	MP L1
3.2	5/ five✓✓	2A Number	MP L1
3.3	They are major cities / They are Capital cities✓✓ Or any relevant opinion	2O Reason	MP L4
3.4	From Johannesburg take N1 South, then N17, then R59, pass Henley-on-klip, Meyerton then Vereeniging is the next one place. ✓✓ A Any relevant explanation	2A Answer	MP L2
3.5	They connect South African provinces Or They connect South Africa with neighbouring countries✓✓	2O Reason	MP L4
3.6.1	1 unit on the map represents 1 500 000 units in reality. ✓✓ OR 1 cm on the map represents 1 800 000 cm in reality. ✓✓ OR The map is 1 800 00 smaller than what it is in reality. ✓✓	2O Explanation	MP L1
3.6.2	Measured length = 5 cm✓ Actual distance = 5cm × 1 500 000✓ = 7 500 000cm = 75 km✓	1A Measure distance 1M Multiplying by the number scale. 1CA Answer 1C Conversion to km Allow 4,9 cm & 5,1cm	MP L2
3.6.3	The map could have been enlarged or reduced while the number scale remained the same✓✓	2O Reason	MP L4
3.7.1	155× 0,621 miles✓ = 96,255 miles ✓	1M Multiplying by the conversion factor	MP L2

		1CA Answer	
3.7.2	Time = 2hrs 30min = 2,5 hrs✓ Speed = 96,255 miles ÷2,5hours✓ = 38,502 miles per hour = 40 miles per hour✓	CA from 3.7.1 1C Conversion 1SF Substitution 1CA Rounded Answer	MP L3

QUESTION 4 **[12]**

Quest	Answer	Explanation of mark allocation	TOPIC and Cognitive level.
4.1	Staircases symbol is indicated Elevator entrance is also indicated. ✓✓	2A Explanation	MP L2
4.2	Length of the Men RR in m = 4m✓ Breadth of the Men RR in m = 3m✓ Therefore, the area of the Men RR is = 4m× 3m✓ = 12 m^2✓ Difference = 18m^2 – 12m^2✓ = 6m^2✓	1C Conversion of length from cm to m 1C Conversion of breadth from cm to m 1SF Substitution 1 CA Answer 1 Difference 1CA Answer	M L3
4.3	Number of tiles needed = $\frac{294}{0,1225}$ = 2400 Number of boxes = $\frac{2400}{8}$ = 300 Cost = 300× R189,95 = R56 985 Their budget would not be enough	1M Dividing 1A Answer 1M Dividing 1A Answer 1M Multiplication 1CA Answer 1 Opinion	M L4
4.4	Yes. Wheelchair symbols are indicated✓✓	2O Reason	MP L4

ANALYSIS GRID					
	L1	L2	L3	L4	
1.1.1	2				
1.1.2	2				
1.1.3	2				
1.2.1	2				
1.2.2	2				
1.3.1	2				
1.3.2	2				
1.4	2				
2.1.1		3			
2.1.2			6		
2.2.1		2			
2.2.2		4			
2.2.3		2			
2.2.4				2	
3.1	2				
3.2	2				
3.3				2	
3.4		2			
3.5				2	
3.6.1	2				
3.6.2		4			
3.6.3				2	
3.7.1		2			
3.7.2			3		
4.1		2			
4.2			6		
4.3				7	
4.4				2	
TOTAL	22	21	15	17	
%	29	28	20	23	