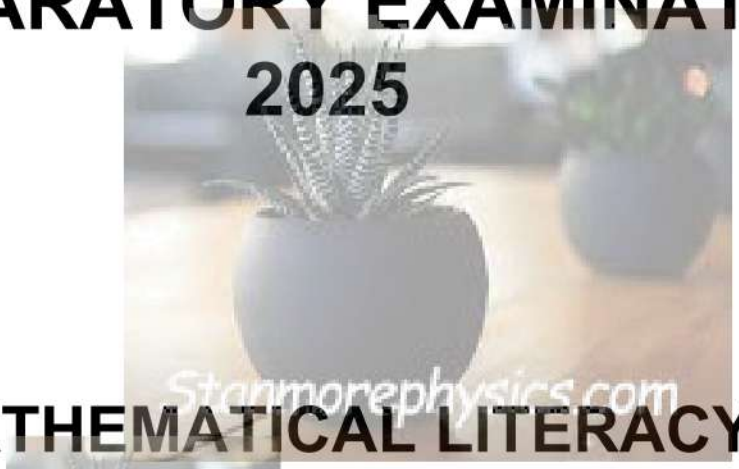
GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

PREPARATORY EXAMINATION 2025



MATHEMATICAL LITERACY PAPER 2 (10602)



MATHEMATICAL LITERACY: Paper 2

10602E

X05

GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

PREPARATORY EXAMINATION
2025

NAME OF SCHOOL												
CANDIDATE'S NAME												
DATE									BOOK NUMBER		OF	BOOK(S)
TEACHER									PAPER NUMBER	2		
SUBJECT NAME	MATHEMATICAL LITERACY (10602)											

ANSWER ALL THE QUESTIONS IN THE QUESTION PAPER.

MARKER				MODERATOR'S INITIALS IN RELEVANT BLOCK								RE-MARK/RE-CHECK			
Question	Marks			Marker's Code & Initials	Marks								Question	Marks		Initials
1													1			
2													2			
3													3			
4													4			
5													5			
				TOTAL									TOTAL			

TIME: 3 hours

MARKS: 150

31 pages

INSTRUCTIONS AND INFORMATION

Read the following instructions carefully before answering the questions.

1. This question paper consists of FIVE questions. Answer ALL questions in the spaces provided.
2. Show ALL calculations clearly.
3. You may use an approved scientific calculator (non-programmable and non-graphical), unless stated otherwise.
4. Round-off ALL final answers appropriately according to the given context, unless stated otherwise.
5. Indicate units of measurement, where applicable.
6. Diagrams are NOT necessarily drawn to scale, unless stated otherwise.
7. No pages may be torn from this question paper.
8. Candidates may not retain a question paper or remove it from the examination room. Question papers must be returned to the invigilator at the end of the examination session.
9. Answers must be written in black/blue ink as distinctly as possible. Do NOT write in the margins.
10. Indicate the questions you have answered by drawing a circle around the relevant numbers on the front cover of the question paper where marks are to be recorded.
11. Draw a neat line through any work/rough work that must NOT be marked.
12. In the event that you use the additional space provided:
    - 12.1 Write down the number of the question.
    - 12.2 Leave a line and rule off after your answer.
13. Write neatly and legibly.

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QUESTION 1

1.1 ***Mufasa: The Lion King*** blockbuster premiered on 20 December in cinemas across South Africa. Audiences have the option to enjoy the movie in various formats, including 4DX, 3D, and standard viewing experiences.

Peter decided to watch the movie after the holiday rush had passed. Below is a plan of the 4DX5 cinema in Emperor's Palace, Gauteng.

Choose your seats
Time remaining 5m 26s

Mufasa: The Lion King

Emperor's Palace
4DX5
Tuesday 7 January
17:00



SCREEN
Front of cinema

													EXIT
A1	A2	A3	A4		A5	A6	A7	A8		A9	A10	A11	A12
B1	B2	B3	B4		B5	B6	B7	B8		B9	B10	B11	B12
C1	C2	C3	C4		C5	C6	C7	C8		C9	C10	C11	C12
D1	D2	D3	D4		D5	D6	D7	D8		D9	D10	D11	D12
E1	E2	E3	E4		E5	E6	E7	E8		E9	E10	E11	E12
F1	F2	F3	F4		F5	F6	F7	F8		F9	F10	F11	F12
X	X	X	G4		G5	G6	G7	G8		G9	G10	G11	G12

Booked x Not available Available

[Source: *https://numetro.co.za/select-a-seat*]

Use the information above to answer the questions that follow.

1.1.1	Identify the type of plan provided.	(2)
1.1.2	Write down the date and time that Peter went to see Mufasa: The Lion King.	(2)
1.1.3	Using the online booking system, will Peter be able to reserve seat **E7**? Write YES or NO and explain your answer.	(2)
1.1.4	Determine the probability of Peter successfully booking a seat in row **D**. Express your answer as a fraction, by choosing the correct option below. A $\frac{4}{10}$ B $\frac{2}{4}$ C $\frac{8}{12}$	(2)
1.1.5	Determine the total number of available seats in the cinema.	(2)

1.2 Peter visited his cousin in Perth (Australia) during the December holidays in 2024. He booked a return flight from Perth to Johannesburg. When it is 07:24 in Johannesburg, it is 13:24 in Perth.



NOTE: 1 km = 0,621 miles

[Source: *https://www.airportia.com/flights/sa281/perth/johannesburg*]

Study the information above and answer the questions that follow.

1.2.1	Determine the time difference between Perth and Johannesburg.	(2)

1.2.2	Identify the flight number for the flight that Peter booked from Perth to Johannesburg.	(2)

1.2.3	The departure time of the plane from Perth to Johannesburg was indicated as 8 a.m. on the map. Indicate whether this time is written in the 12-hour or 24-hour time format.	(2)

1.2.4	If the flight departs from Perth at 14:00 South African time, determine its arrival time in Johannesburg. Express your answer in the 24-hour format.	(2)

1.2.5	Select the correct calculation from the options below, when you convert the total distance between Perth and Johannesburg from miles to kilometres, rounded-off to the nearest 10 kilometres. Write down only the letter (A – C) of the answer. A $\frac{5\ 193\ \text{miles}}{0{,}621\ \text{miles}}$ = 8 362,318841 km ≈ 8 360 km B $\frac{5\ 193\ \text{miles}}{0{,}621\ \text{miles}}$ = 8 362,318841 km ≈ 8 362 km C 5 193 miles × 0,621 miles = 3 224,853 km ≈ 3 220 km	(2)

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1.3 The Oreo cookie mug cake, which requires only two ingredients, went viral in 2023.

Refer to the pictures and the information below, which show the steps for preparing the Oreo cookie mug cake.

VIRAL OREO COOKIE MUG CAKE WITH ONLY 2 INGREDIENTS



Ingredients:

4 Oreo cookies
¼ cup of Milk

NOTE:

You can use any flavour of Oreo cookies.

Popular variants include the following Oreo cookie flavours: Strawberry, Mint, Peanut butter, Vanilla.

To make the recipe more bespoke you can insert a block of chocolate of your choice in the middle before microwaving the cookies for 1 minute.

[Source: *www.bakingenvy.com*]

Study the pictures and the information above and answer the questions that follow.

1.3.1 Convert the amount of milk needed for the recipe, to millilitres, given that 1 cup is 250 mℓ. (2)

1.3.2 Select the correct option when calculating the cups of milk needed to make 8 mug cakes. Write down only the letter (A – C) of the answer.

A $\frac{500\text{ ml}}{250\text{ ml}} \times 8 = 16\text{ cups}$

B $62{,}5 \times 8 = 500\text{ m}\ell$

C $62{,}5 \times 8 = \frac{500\text{ ml}}{250\text{ ml}} = 2\text{ cups}$

(2)

1.3.3	Identify the correct image from the information above and write down the corresponding letter for each step given below e.g. Step 1 = E. **Step 1**: Place 4 Oreo cookies in mug. **Step 2**: Pour $\frac{1}{4}$ cup of milk over crushed Oreo cookies. **Step 3**: Microwave for 1 min.	(3)

1.4 Other cookie companies also started the 'cookie in a mug' trend. There are now Oreo, Dina, Bolf, Hulk and Shiz type cookies available.

1.4.1	Define the term *probability* in this context.	(2)

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1.4.2	Determine, as a percentage, the probability that a customer will still choose Oreo as his/her favourite type. Select the correct answer from the options below. A $\frac{1}{5}$ B 20% C 1%	(2)

[31]

QUESTION 2

2.1 *Friends* is an American sitcom that aired from 1994 to 2004. The show revolves around six friends in their 20s, who shared an apartment in Manhattan, New York. A floor plan of the apartment is shown below.



10 mm on the map is 3 m in the apartment

[Source: *www.roomsketcher.com*]

Study the floor plan above and answer the questions that follow.

2.1.1	What instrument can be used to determine the dimensions on the map?	(2)

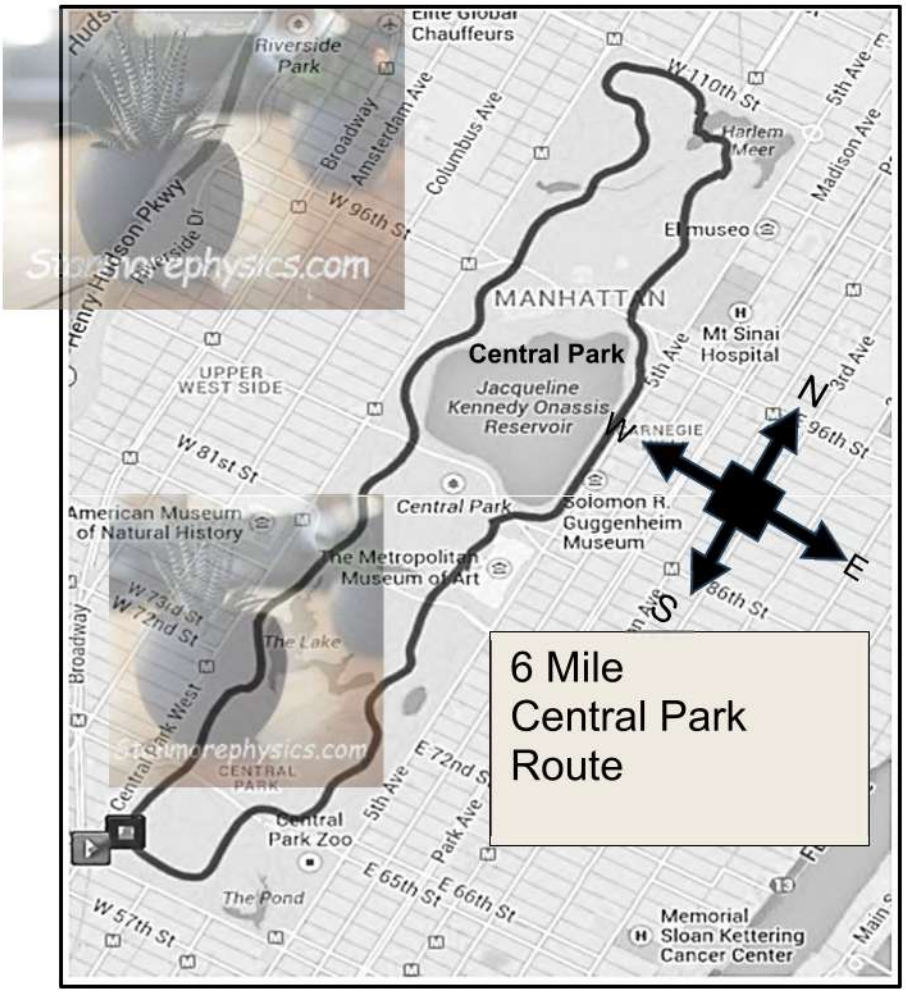
2.1.2	Determine the number of bedrooms shown on the floor plan.	(2)

2.1.3	Write down the total number of bathroom windows as a ratio to the total number of bedroom windows.	(2)

2.1.4	What is the general direction of bathroom **A** from bathroom **B**?	(2)
2.1.5	Show, with calculations, that the ratio scale for this floor plan is 1 : 300.	(2)
2.1.6	Hence, determine the total length of the apartment, if the measured length on the floor plan is 10 cm from left to right. Write your answer in metres.	(4)
2.1.7	Write down the appropriate letter that makes the following statement TRUE. The eastern and western elevation walls are the boundaries for: A Two bathrooms and two bedrooms B Four bedrooms C Two bedrooms, one living room and one bathroom	(2)
2.1.8	The land area that the apartment was built on has a length of 12,6 m and a width of 8,4 m. The floor area of the apartment is approximately 60 m^2. Determine the percentage of the land area that the apartment occupies. Round-off your final answer to the nearest 5%.	(5)

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2.2 Central Park is in New York City, close to the *Friends* apartment. There is a route indicated on the map for walkers and runners. This map is shown below.



[Source: www.preppyrunner.com]

Study the map above and answer the questions that follow.

2.2.1	Identify the type of map shown above.	(2)

2.2.2	Name any TWO bodies of water shown on the map.	(2)

2.2.3	Name the FIRST street on the northern side of Central Park.	(2)

2.2.4	One of the *Friends* characters, Joey, started cycling. His cycling speed is 13 km/h**.** The distance around the park is 6 miles. Calculate the time that it will take Joey to complete one lap around the park if **1 mile = 1,609 km**. Round-off your final answer to the nearest minute. You may use the formula: **Time** $= \frac{\textbf{Distance}}{\textbf{Speed}}$	(6)

[33]

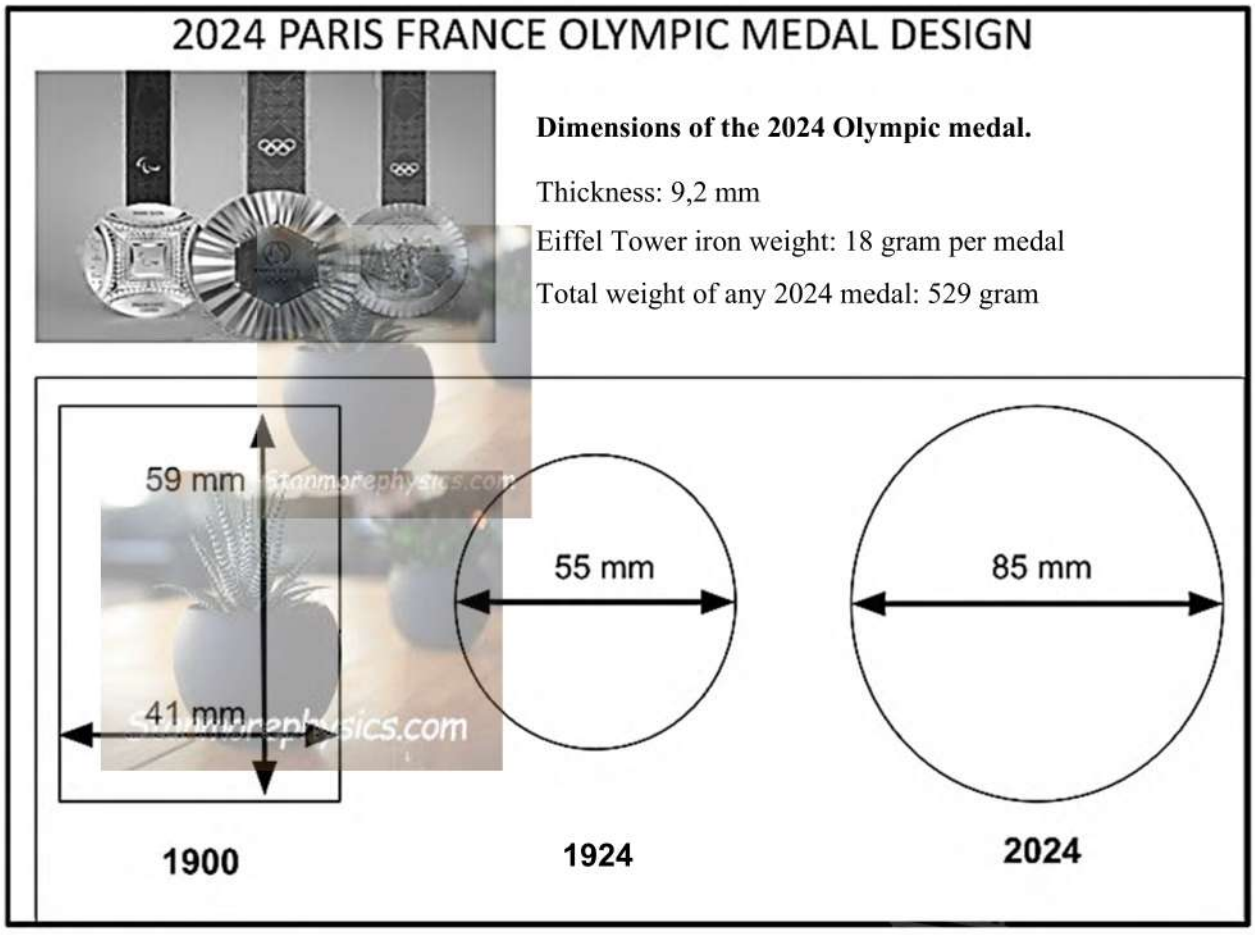
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QUESTION 3

3.1 During the 2024 Olympic Games held in France, millions of people around the world tuned in to watch athletes compete. The host nation France added a unique touch to the Olympic and Paralympic medals by incorporating a piece of its iconic Eiffel Tower into each medal.

Each medal features an 18-gram central piece of wrought iron from the Eiffel Tower, symbolising France's rich history and its connection to the games.

Below is a diagram with various types of medals throughout the Olympic Games' history.



This is the only rectangular medal in the Olympic Games' history

[Source: *https://themissinggraph.wordpress.com*]

Study the information above and answer the questions that follow.

3.1.1	Define the term *diameter* in this context.	(2)
3.1.2	The circumference of the 1924 medal is 172,81 mm. Determine the difference (in cm) between the circumference of the 1924 medal and the 2024 medal. You may use the following formula: **Circumference** = $\pi \times d$ where π = **3,142**	(4)
3.1.3	The organisers of the Paris Olympic Games stated that the area of the 1924 medal and the area of the 1900 rectangular medal are equal when rounded-off to the nearest whole number. Show, by means of calculations, that both areas are equal. Round-off your answer to the nearest squared centimetre. You may use the following formulae: **Area** = πr^2 where π = **3,142** **Area** = $\ell \times b$	(5)

3.1.4	The Olympic gold medal has a total weight of 529 grams. The medal is not entirely made of pure gold. The organisers used 6 grams of gold to plate its surface and incorporated an 18-gram piece of iron from the Eiffel Tower. The rest of the medal is made from silver. They claim that the medal consists of 95,5% silver. Use calculations to verify the accuracy of their percentage claim.	(5)

3.1.5	Why did the organisers choose to gold-plate the gold medal instead of making it entirely out of gold? Provide TWO reasons to support their decision.	(4)

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3.2 The 4 x 100 m relay for both men and women always promises to be the highlight of each Olympic Games. South Africa had four phenomenal athletes qualify for the men's race. The USA introduced Sha'Carri Richardson as one of the outstanding women athletes who never fails to impress.





[Source: *www.wikipedia.com*]

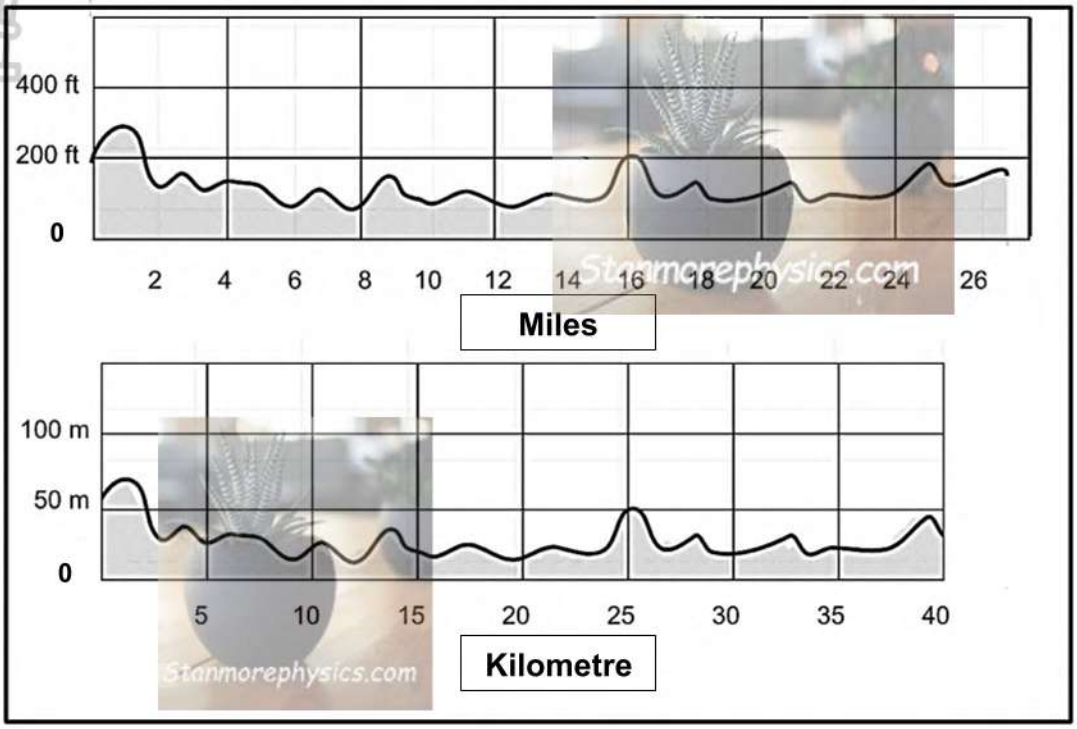
3.2.1	Sha'Carri Richardson was born on 25 March 2000. Determine her age in years and months on 25 September 2025.	(2)

3.2.2	The four South African athletes each received a silver medal. Silver medals are made from pure silver. Show, by means of calculations, that the total weight is 2,02 kilograms.	(5)

[27]

QUESTION 4

4.1 The New York City Marathon is run every year during the first weekend of November. The elevation map above sea level of the marathon is shown below in miles and kilometres.



Use the information above and answer the questions that follow.

4.1.1	Which of the following best describes this elevation map? A Shows the New York City Marathon's height above sea level B Shows the New York City Marathon's kilometres and miles at sea level C Shows the New York City Marathon's average speed for miles and kilometres at sea level	
		(2)

4.1.2	Identify the second-highest point of the New York City Marathon in metres.	(2)
4.1.3	If you consider the 6-mile mark on the map and the 10 km mark on the map, the 6-mile mark is just short of the 10 km mark. Show, with calculations, the difference in distance between 6 miles and 10 km. Round-off your answer to ONE decimal place and show your final answer in metres. **NOTE:** 1 km = 0,622 miles	(5)

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4.2 Adam and John both entered the NYC Marathon and recorded the following information. A standard marathon is 26,2 miles on the imperial system or 42,2 km on the metric system.

Adam	Time
Start 0 miles	07:30
15 miles	09:45
Average speed	Distance + Time

John	Time
Start 0 miles	07:30
20 km	09:45
Average speed	Distance + Time

Determine, using calculations, the finishing time for both Adam and John, (assuming they maintained their average speed from 07:30 to 9:45). State which of the two athletes finished first.

Hint: **You may follow the steps below as guidance in your calculations:**

- Determine the average speed for both Adam and John from 7:30 to 09:45.
- Use the average speed for both Adam and John and the full marathon distance to calculate their finishing times.
- State which of the two athletes finished first.

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(9)

4.3 Adam's girlfriend, Cindy, also wants to participate in the marathon the following year. She decided to measure her fitness and BMI (Body Mass Index) to get fit and healthy for the marathon.

Cindy is 170 cm tall and is unsure of her weight. However, the dietician measured her BMI at 23,6 kg/m^2.

According to the World Health Organisation, a person's BMI can be classified using the table below.

BMI	**Classification**
0 – 18	Underweight
19 – 25	Normal weight
26 – 30	Overweight
30 +	Obese

Consider the information above and answer the questions that follow.

4.3.1 Cindy's body temperature is 98,6 °F.

Use the formula below to convert her temperature to °C.

$$°C = (°F - \mathbf{32}) \times \frac{\mathbf{5}}{\mathbf{9}}$$

(2)

4.3.2 Determine Cindy's weight in kilograms.

You may use the following formula: $\mathbf{BMI} = \frac{\mathbf{weight\ (in\ kg)}}{\mathbf{length\ (in\ m^2)}}$

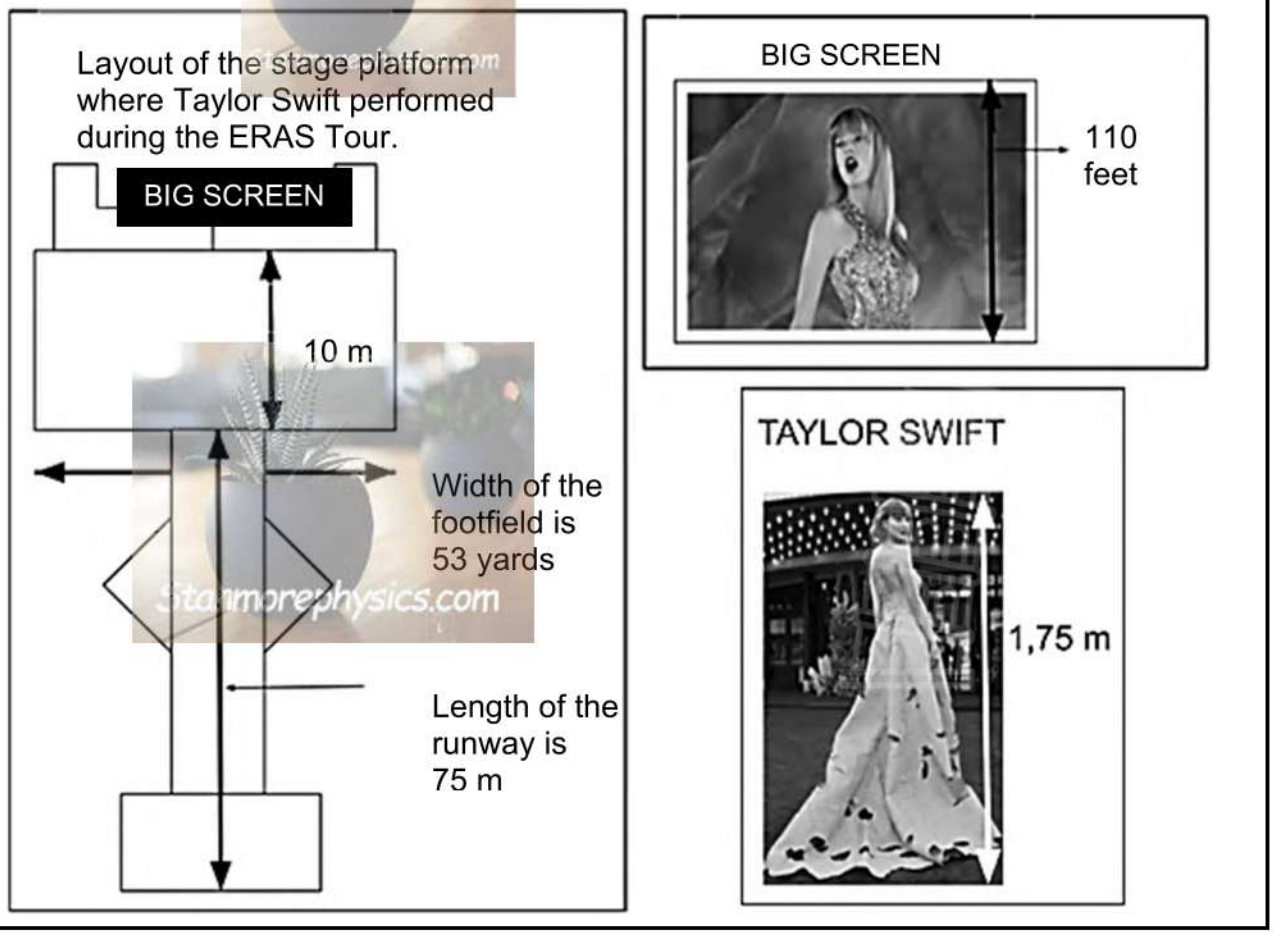
(4)

4.3.3	(a) Use Cindy's BMI reading and classify her weight according to the table above.	(2)
	(b) Hence, advise Cindy on her health status and give her ONE tip to follow in order to participate in the marathon the following year.	(3)

[29]

QUESTION 5

5.1 Bullet Bhuti travelled to England to visit his cousin. While there, they secured tickets to attend Taylor Swift's ERAS Tour at Wembley Stadium. A layout of the stage platform where Taylor is said to perform, is given below.



Use the information above to answer the questions that follow.

5.1.1	The screen used at the Wembley Stadium for the ERAS Tour has a height of 110 feet. Convert the screen's height from feet to metres, if **1 foot = 0,3048 metres**.	(2)

5.1.2	A scaled model of the screen is built, with a height of 0,5 meters**.** Taylor Swift is 1,75 metres tall**.** Calculate the required height of a scaled-down Taylor Swift figure, in cm.	(4)

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5.1.3	Taylor Swift covers the full length of the main stage and the full length of the runway once during a song. Calculate (in metres) the total distance she covers in one song.	(2)

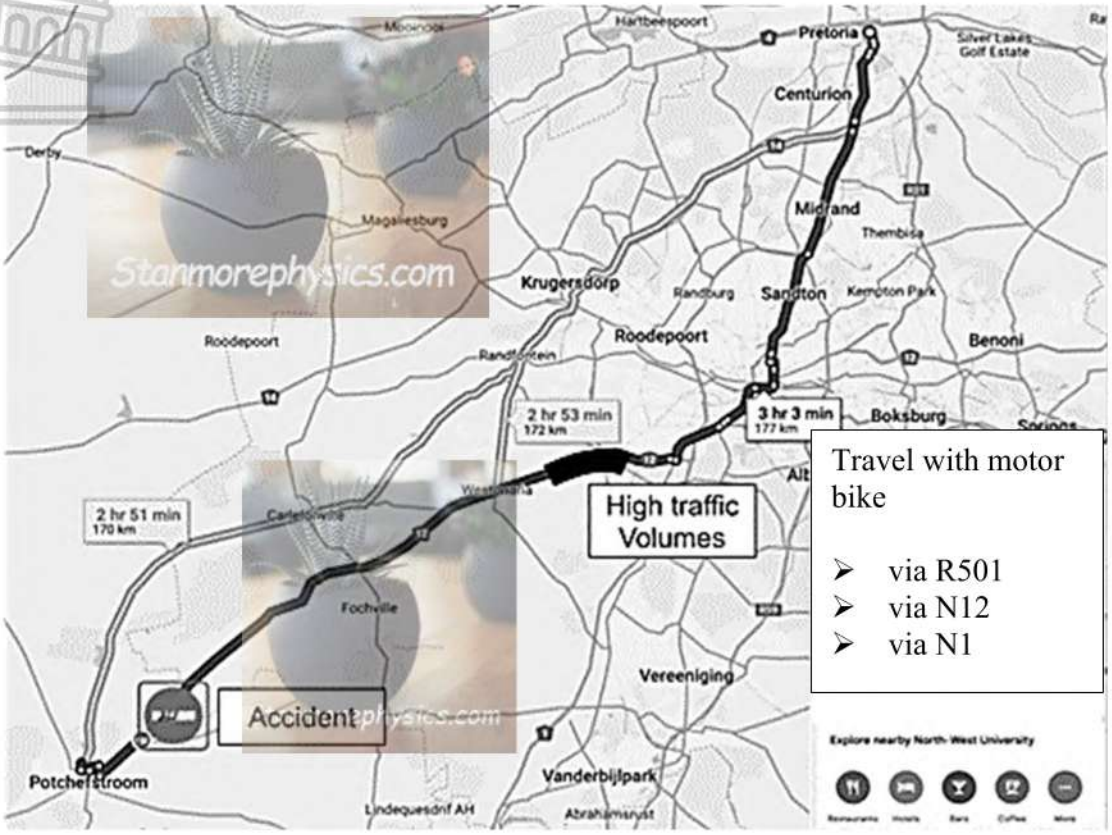
5.1.4	It is estimated that Taylor Swift covers approximately 3,91 km during one show on the stage and runway. Determine how many times she would cover each of the distances shown below:	
	A The length of a standard soccer field (105 metres)	
	B A 400-meter athletics track	
		
	C A half marathon (21,1 km) (Express your answer as a percentage.)	
		(6)



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5.2 Bullet Bhuti lives in Pretoria and will be studying at the North-West University, which is situated in the city of Potchefstroom.

The map below shows various routes to travel from Pretoria to Potchefstroom.



Study the map above and answer the questions that follow.

5.2.1	Identify the type of transport that Bullet Bhuti uses. In your opinion, explain why this mode of transport is suitable for a student.	(2)

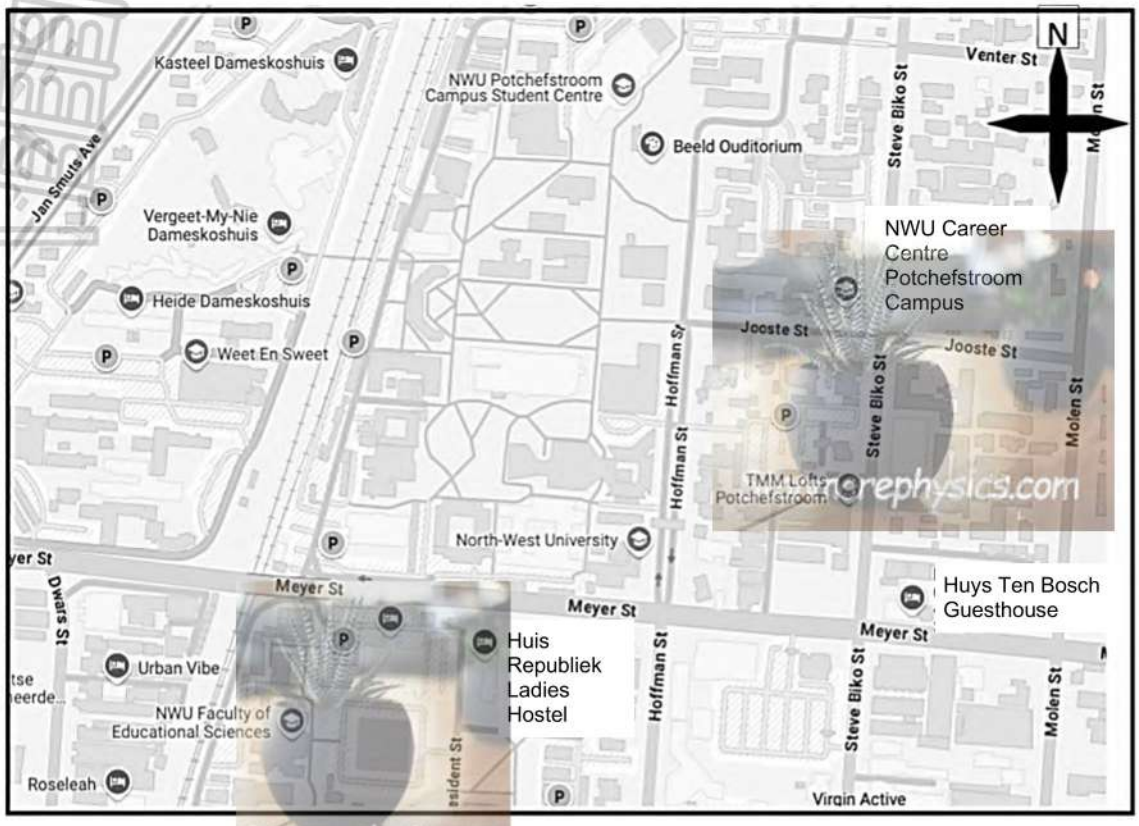
5.2.2	Bullet Bhuti travels on the N1 and N12 from Pretoria to Potchefstroom. Name TWO possible reasons why Bullet Bhuti may choose to travel on national roads rather than on regional roads.	(2)

5.2.3	Name TWO incidents indicated on the map that might cause Bullet Bhuti to use an alternative route.	(2)

5.2.4	Given that the time taken will be 3 hours 3 minutes and the distance travelled is 177 km. Bullet Bhuti states that he travels at approximately 60 km/h (rounded-off to the nearest 10 km/h). Verify that Bullet Bhuti's statement is correct. Show ALL your calculations. You may use the formula: **Distance = Speed × Time**	(4)

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5.3 A map of the North-West University campus in Potchefstroom is given below.



Study the map and answer the questions that follow.

5.3.1	If you drive in a westerly direction on Meyer Street, will Huys Ten Bosch be on your left or right-hand side?	(2)

5.3.2	Provide a possible reason why there are so many parking areas available on the campus.	(2)

5.3.3	Bullet Bhuti directed his friend, Gunston, as follows: From the NWU Career Centre go south on Steve Biko Street and turn right onto Meyer Street. Go across Hoffman Street. Identify his destination on the left.	(2)

[30]

Additional space



Additional space



Additional space



TOTAL: 150

END