KWAZULU-NATAL PROVINCE

EDUCATION
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

MATHEMATICAL LITERACY P2

PREPARATORY EXAMINATION

SEPTEMBER 2024

Stanmorephysics.com

MARKS: 150

TIME: 3 hours

This question paper consists of 13 pages and an Addendum with 3 Annexures.

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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 2.3.1
- ANNEXURE B for QUESTION 2.3.2 and 2.3.3
- ANNEXURE C for QUESTION 4.2

3. Number the answers correctly according to the numbering system used in thisquestion paper.

4. Start EACH question on a NEW page.

5. You may use an approved calculator (non-programmable and non-graphical), unlessstated 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.

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QUESTION 1

1.1

The instruments shown below measure time, speed, and temperature.



Use the information above to answer the following questions.

1.1.1 Identify the two different types of clocks represented above. (2)

1.1.2 Name the notation that can be used to differentiate the time of day on a 12-hour digital clock. (2)

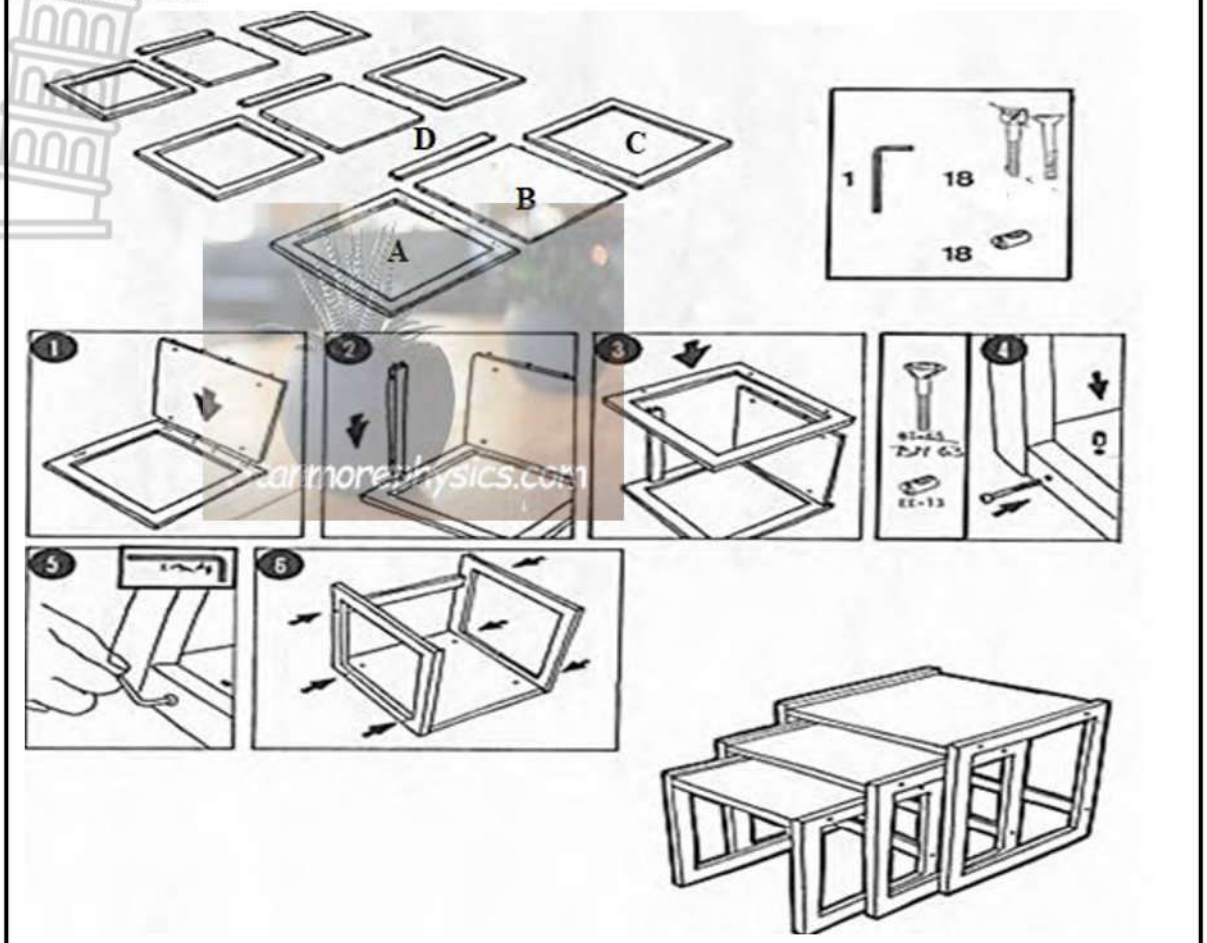
1.1.3 Write the time in the evening on clock C in 24-hour time format. (2)

1.1.4 Identify the speed in miles/hour that is seen on the speedometer. (2)

1.1.5 Write the temperature of 20^0C in ^{0}F. (2)

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1.2 An assembly plan for a set of side tables can be seen below. This assembly plan has no instructions.



COMPONENTS USED TO ASSEMBLE THE TABLES		
1 ALLEN KEY	**18 BIG SCREWS**	**18 SMALL BOLTS**
		

[Adapted source: https://www.ikea.com]

Use the information above to answer the following questions.

1.2.1 Determine the total number of parts that must be used to make up all the tables. (3)

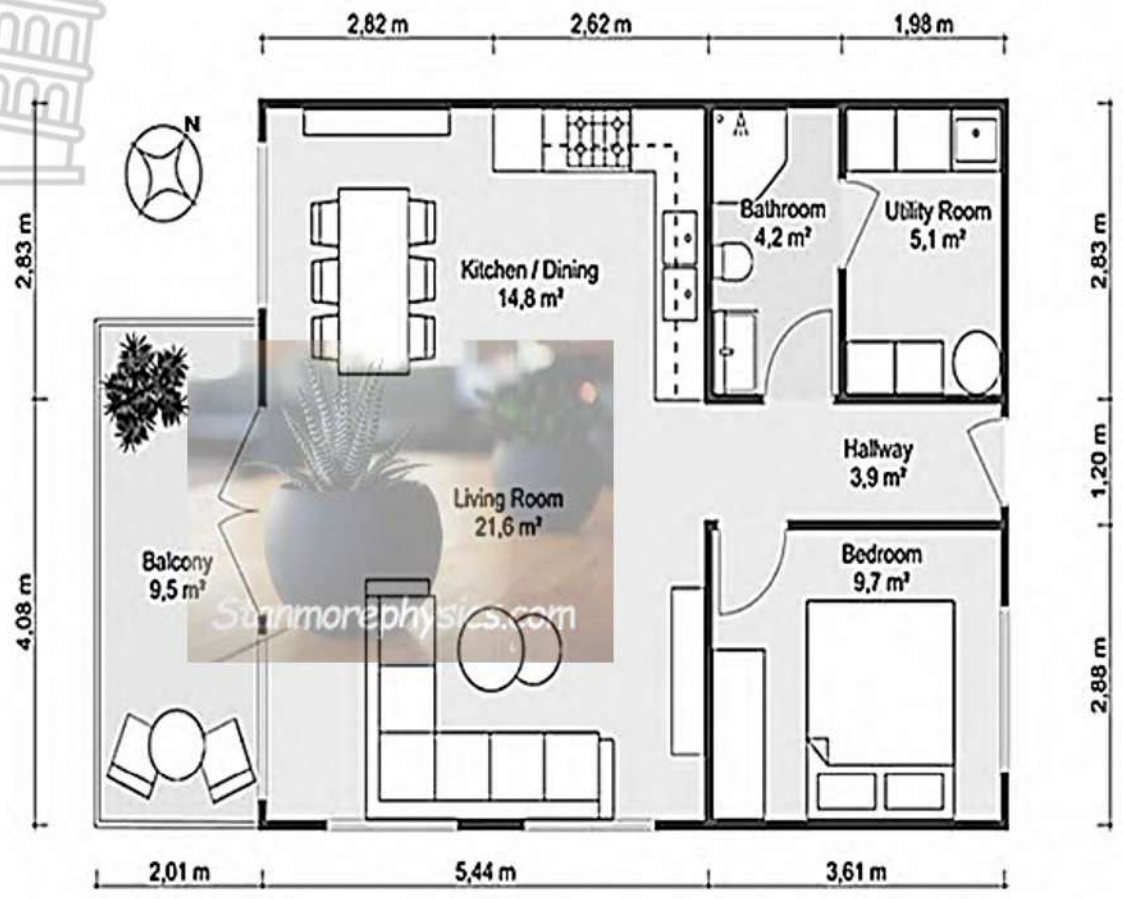
1.2.2 Identify the part of the table that will help to reinforce or support the table. (2)

1.2.3 Name the step of the assembly diagram which will secure the screws and small bolts. (2)

1.2.4 Write a set of instructions for Steps 1 to 3 of the assembly diagram. (3)

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1.3 The floorplan for an apartment is shown below.



[Adapted source:www.roomsketcher.com]

Use the information on the floor plan above to answer the following questions.

1.3.1 Write down the compass direction of the Bedroom from the Kitchen/Dining room. (2)

1.3.2 Determine which rooms will receive the afternoon sun. (2)

1.3.3 Calculate the width of the apartment. (2)

1.3.4 Determine the number of windows in the apartment. (2)

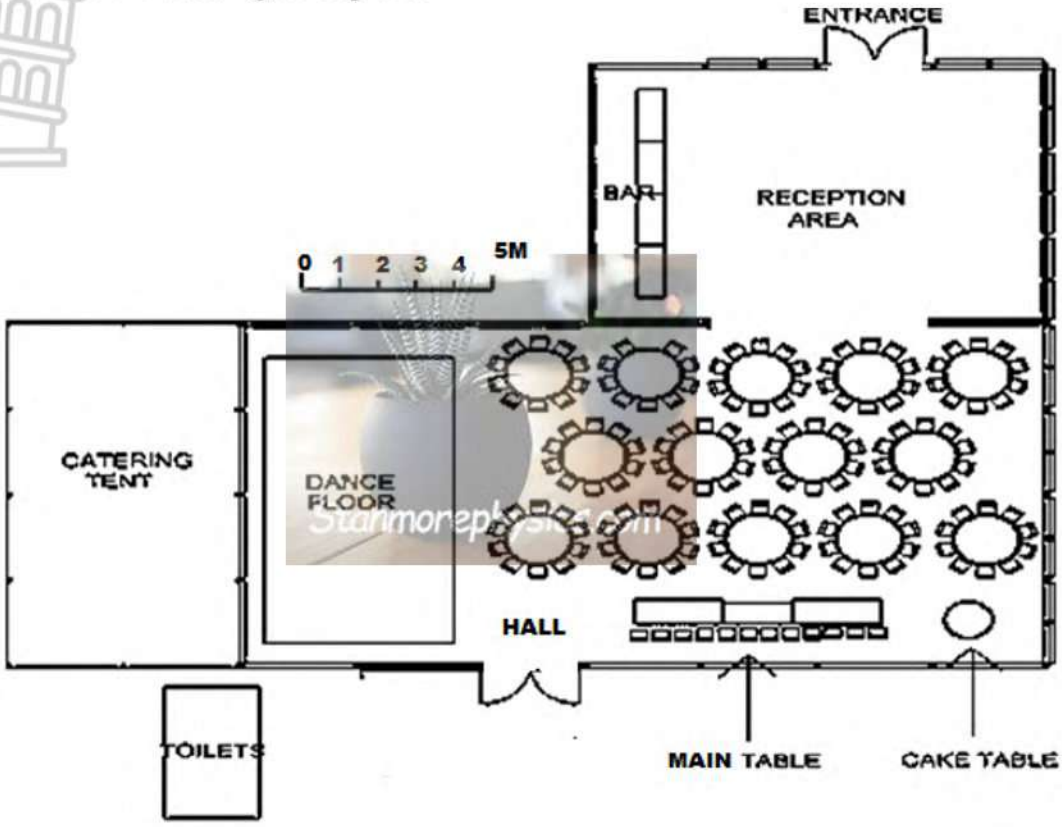
1.3.5 Identify a design error in this plan. (2)

[30]

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QUESTION 2

2.1 Shown below is the layout plan for a wedding venue. The venue has a reception area and a hall where the wedding takes place.



Use the layout plan above to answer the following questions.

2.1.1 Explain the term *layout plan* in the given context. (2)

2.1.2 Identify the type of scale seen on the layout plan. (2)

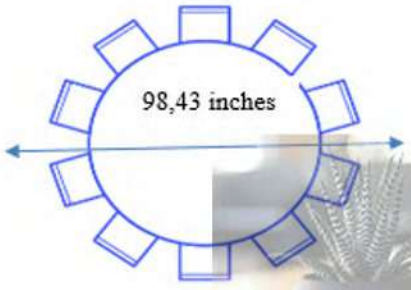
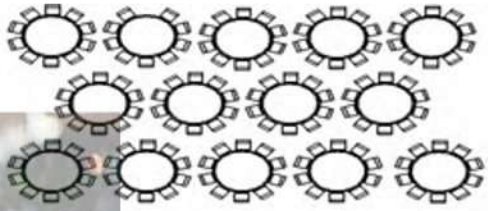
2.1.3 Measure the scale. (2)

2.1.4 Explain what this scale represents. (2)

2.1.5 Determine the total number of people the hall can seat. (3)

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2.2 The layout plan shows that the number of round tables that can fit in the seating area in the hall. A wedding planner wants to confirm that the seating area can accommodate all the tables shown below.

LENGTH OF TABLE INCLUDING CHAIRS AND SPACE AROUND TABLE	DIMENSIONS OF THE SEATING AREA
	
NOTE: 1 inch = 2,54 cm	**LENGTH = 15 metres** **WIDTH = 7,5 metres**

Use the information above to answer the following questions.

2.2.1 Determine the length of the table, including chairs, and the space around the table in metres. (4)

2.2.2 Calculate the maximum number of tables that can fit in the seating area. (5)

2.3 A route map showing directions to the wedding venue at Langverwacht Farm is shown in ANNEXURE A and the weather forecast is shown in TABLE 1 in ANNEXURE B.

2.3.1 Give a guest travelling on the N1 Johannesburg directions to the wedding venue. (4)

2.3.2 Determine the likelihood of it snowing. (2)

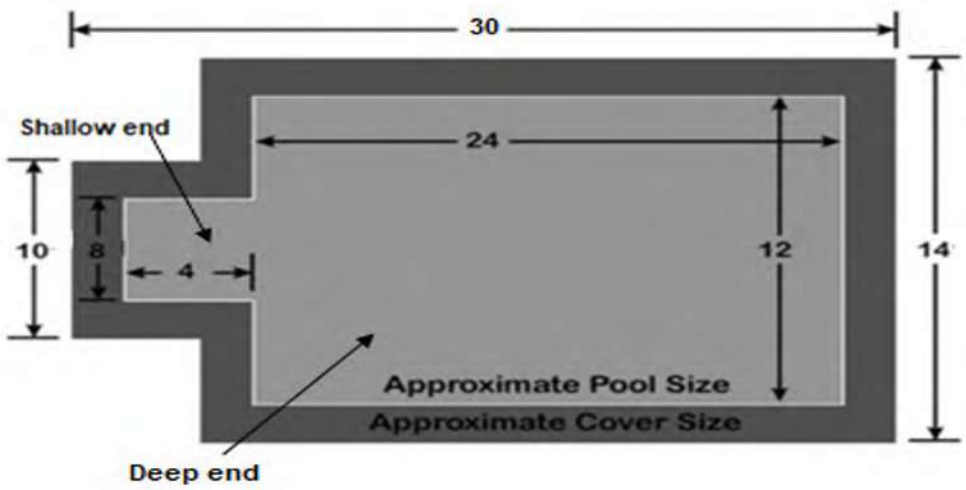
2.3.3 Determine the probability, as a percentage, of it raining on Saturday, the day of the wedding. (4)

[30]

QUESTION 3

3.1 The pool at school needs a pool cover. A pool cover prevents people falling into the pool and protects the pool. The diagram below shows the dimensions of the pool and the cover. The pool cover overlaps the pool by 1 metre all around.

DIMENSIONS OF THE POOL AND POOL COVER ARE IN METRES



NOTE: $1m^3 = 1000$ Litres

[Adapted source:www.suntekpools.com]

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

3.1.1 Determine the perimeter of the pool cover.

You may use the formula:

Perimeter = 2 (L + B) (3)

3.1.2 Determine how many times larger the area of the pool cover is compared to the area of the pool. Show all working.

You may use the formula:

Area = length × breadth (8)

3.2 The shallow end of the pool has a depth of 1m and the deep end has a depth of 2m.

3.2.1 Determine the total capacity of the pool.

You may use the formula:

Volume = length × breadth × height (4)

3.2.2 Chlorine is a chemical that is used to prevent bacteria and algae from forming in the pool. For every 1000 litres of pool water 1,5 teaspoons of chlorine is required.

NOTE: 1 teaspoon = 5ml (7)

Determine the number of litres of chlorine required to treat the pool.

3.3 The pool needs to be refilled with water. An empty pool fills with water at a rate of 9 gallons per minute.

3.3.1 Determine the number of litres of water per minute required to refill the pool.

NOTE: 1 gallon = 3,78541 litres. (2)

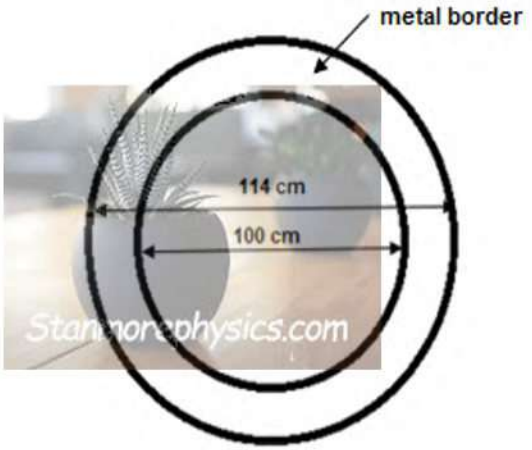
3.3.2 Determine the time taken, in days, to fill the pool. Round up your answer to the nearest day. (6)

[30]

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QUESTION 4

4.1 Siya makes fire pits for a living. A fire pit can be used for outdoor entertaining. The pit is made of metal.

SIDE VIEW OF THE FIRE PIT	TOP VIEW OF THE FIRE PIT
	
Height of the fire pit = 25cm	**Inner diameter = 100cm**

[Adapted source www.amazon.com]

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

4.1.1 Determine the area of the metal border.

You may use the formula:

$$\textbf{Area of a circle} = 3{,}142 \times r^2$$ (4)

4.1.2 Siya claims he needs 1,99m^2 of metal sheeting, including 10% for wastage, to make one fire pit.

Verify his **CLAIM** by showing all calculations.

You may use the formula:

$$\textbf{Surface Area of a Cylinder} = (2 \times 3{,}142 \times r^2) + (2 \times 3{,}142 \times r \times h)$$ (8)

4.1.3 Siya wants to apply two coats of paint to the fire pit to rust proof it.
Determine the number of litres of paint he must buy, if one litre of paint covers 5m^2. (4)

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4.2

Siya sells the fire pits at a local market. His expenses for the month are as follows.

- R800 to rent a stall at the market.
- R650 for transportation.
- The metal costs R530 to make 2 fire pits.
- One litre of paints costs R199 for one fire pit.

Use ANNEXURE C to answer the following questions.

4.2.1 Write an equation to represent Siya's total expense for the month.

Total Expense = (5)

4.2.2 (a) Write down the break-even values. (2)

4.2.2 (b) Explain the meaning of the *break-even point* in this context. (2)

4.2.3 A shop orders 15 fire pits. Siya thinks he will make approximately R20 000 in profit.

Verify this **CLAIM**, showing all calculations. (5)

[30]

QUESTION 5

5.1

Mia is travelling from Johannesburg Airport to Rome in Italy. Pilots measure distance in nautical miles. A nautical mile is a unit of length in air, marine and space travel.

NOTE: 1 nautical mile = 1,151 miles

1 km = 0,6215 miles

Use the information above to answer the following questions.

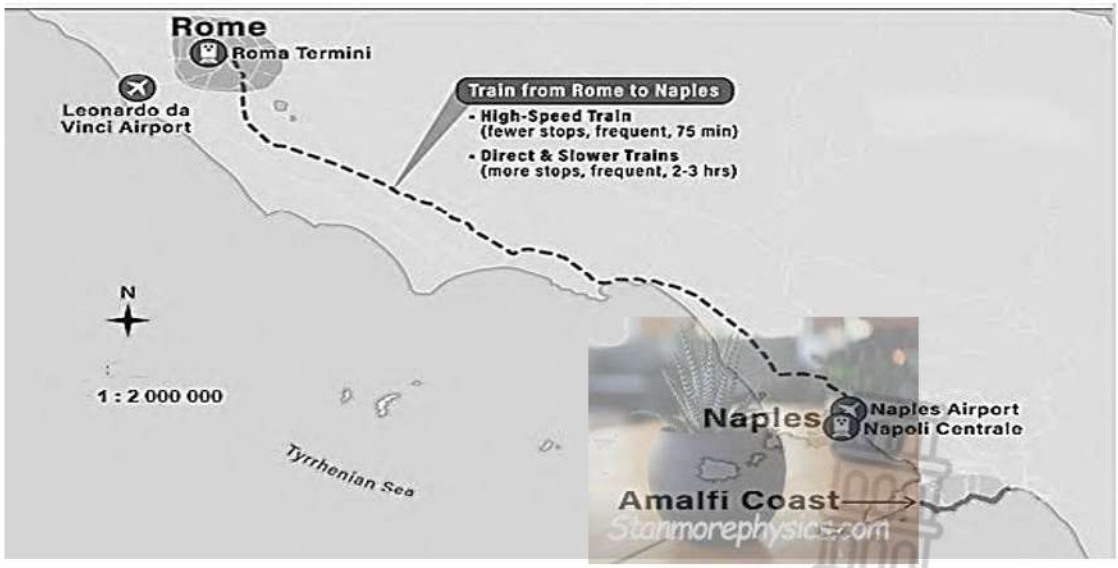
5.1.1 Rome is 4 158 nautical miles away from Johannesburg. Calculate this distance in kilometres. (4)

5.1.2 The flight time to Rome is 13 hours 10 minutes. Determine the speed in km per hour that the plane is travelling at. (4)

5.1.3 Rome has an approximate population of 2,9 million that covers an area of 1 285,3 km^2. Determine the number of people per km^2. (2)

5.2

A map of Italy and the Amalfi Coast is shown below. The map shows the train and flight route from Rome to Naples.



[Source: santorinidave.com]

Use the map above to answer the following questions.

5.2.1 Measure the distance from Rome to Naples on the map and calculate the actual distance using the given scale. (5)

5.2.2 A single flight costs R2 697 and a high-speed train trip costs €52 to Naples.

Mia claims that the cost of a train trip is a third of the price of flight ticket.

Verify this **CLAIM** showing all calculations.

NOTE: R1 = €0,049 (5)

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5.2.3 Mia is travelling 60,9 km by car from Naples to Amalfi Coast. The car has a petrol consumption of 6,6 litres per 100 km. Petrol costs €1,865 per litre.

Determine the total cost of a return trip to Naples. (6)

5.2.4 Mia states that if she leaves Rome by high-speed train at 13:45, she will reach Amalfi Coast by 7pm.

- Train trip is 75 minutes long
- Takes 45 minutes to collect a car at Naples train station
- Stops for 1 hour 15 minutes for supper
- Drive to Amalfi Coast takes 90 minutes

Verify showing all calculations if her statement is **CORRECT**. (5)

[30]

TOTAL MARKS: 150

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ADDENDUM

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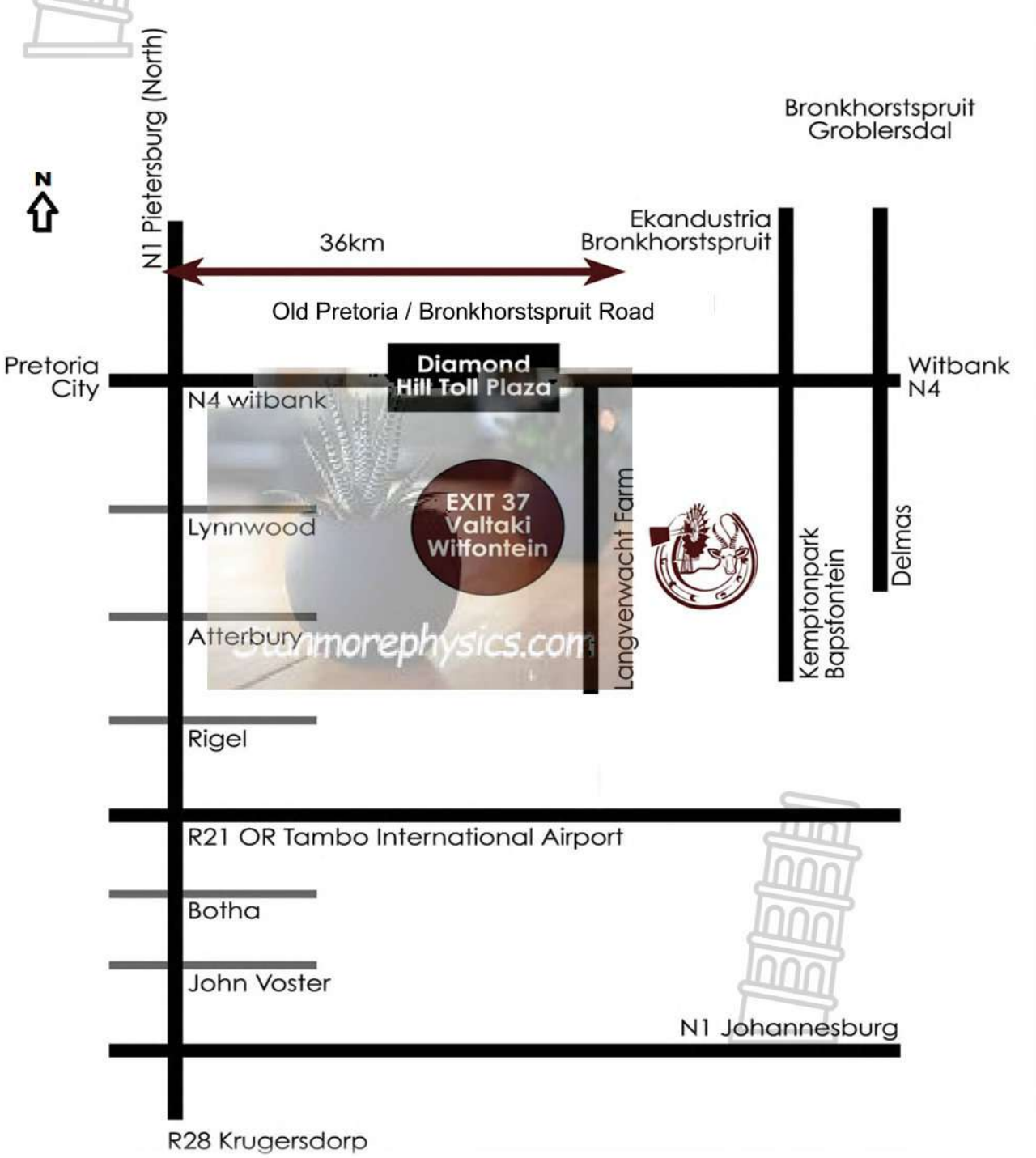
This Addendum consists of 4 pages with 3 Annexures.

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ANNEXURE A

QUESTION 2.3.1

MAP SHOWING ROUTE TO THE WEDDING VENUE



[Adapted Source:www.langverwachtfarm.co.za]

ANNEXURE B

QUESTION 2.3.2 and 2.3.3

TABLE 1 SHOWING WEATHER FORECAST FROM 19 TO 21

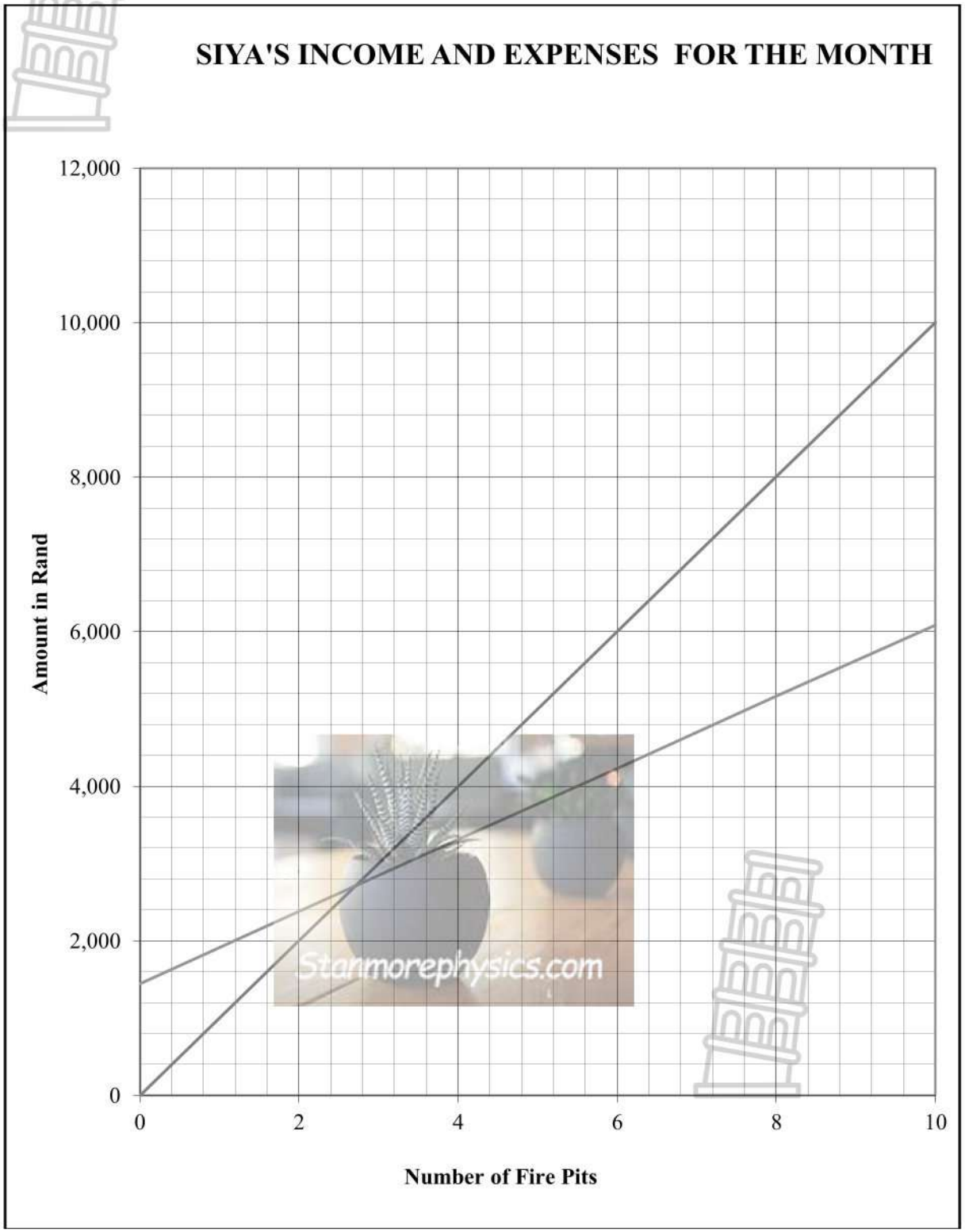
°C / °F	Thursday 19			Friday 20			Saturday 21		
	AM	PM	Night	AM	PM	Night	AM	PM	Night
									
									
km/h	10	20	10	5	15	5	25	15	5
	clear	clear	clear	clear	clear	clear	rain shwrs	rain shwrs	clear
mm	-	-	-	-	-	-	1	1	-
cm	-	-	-	-	-	-	-	-	-
max °C	21	21	20	28	29	27	23	30	19
min °C	19	21	18	21	26	20	19	19	18

[Source www.logdown.com]

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ANNEXURE C

QUESTION 4.2



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