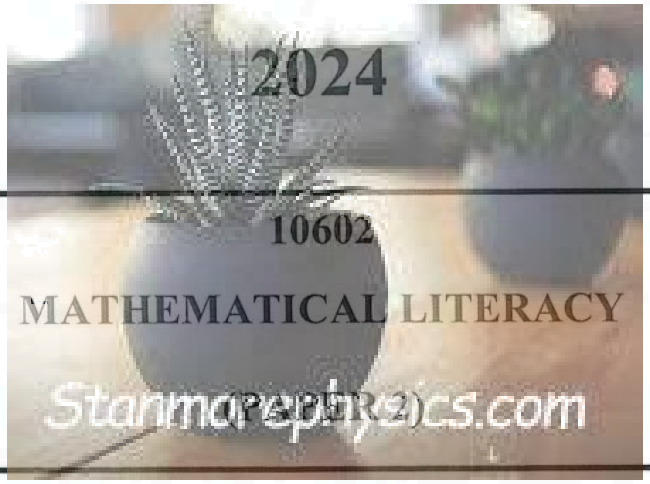
GAUTENG PROVINCE
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# PREPARATORY EXAMINATION



## 2024

## 10602

## MATHEMATICAL LITERACY

PAPER 2

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**TIME: 3 hours**

**MARKS: 150**

**MATHEMATICAL LITERACY: Paper 2**

10602E

**15 pages and an addendum with 4 annexures**

X10

## INSTRUCTIONS AND INFORMATION

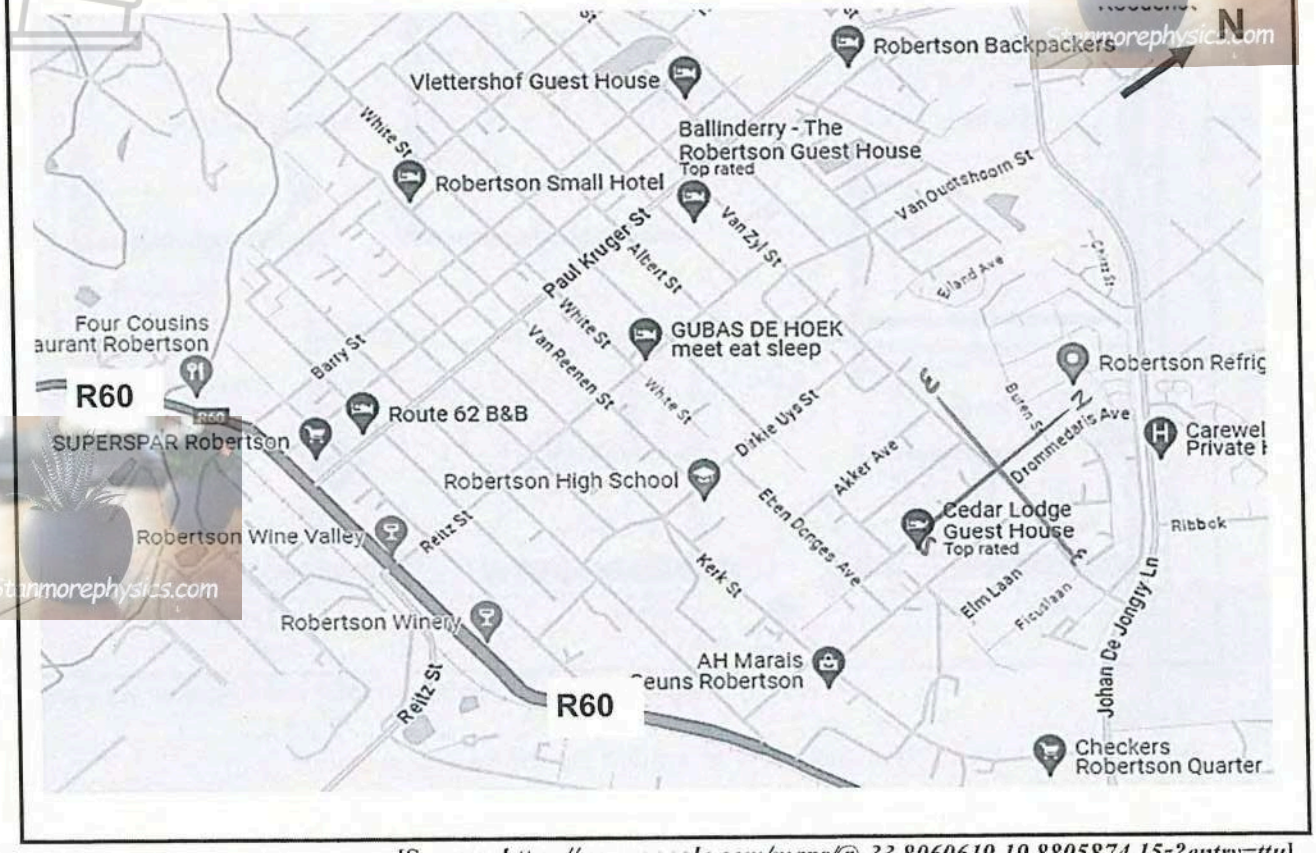
1. This question paper consists of FIVE questions. Answer ALL the questions.
2. Use the ANNEXURES in the ADDENDUM to answer the following questions:

   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)

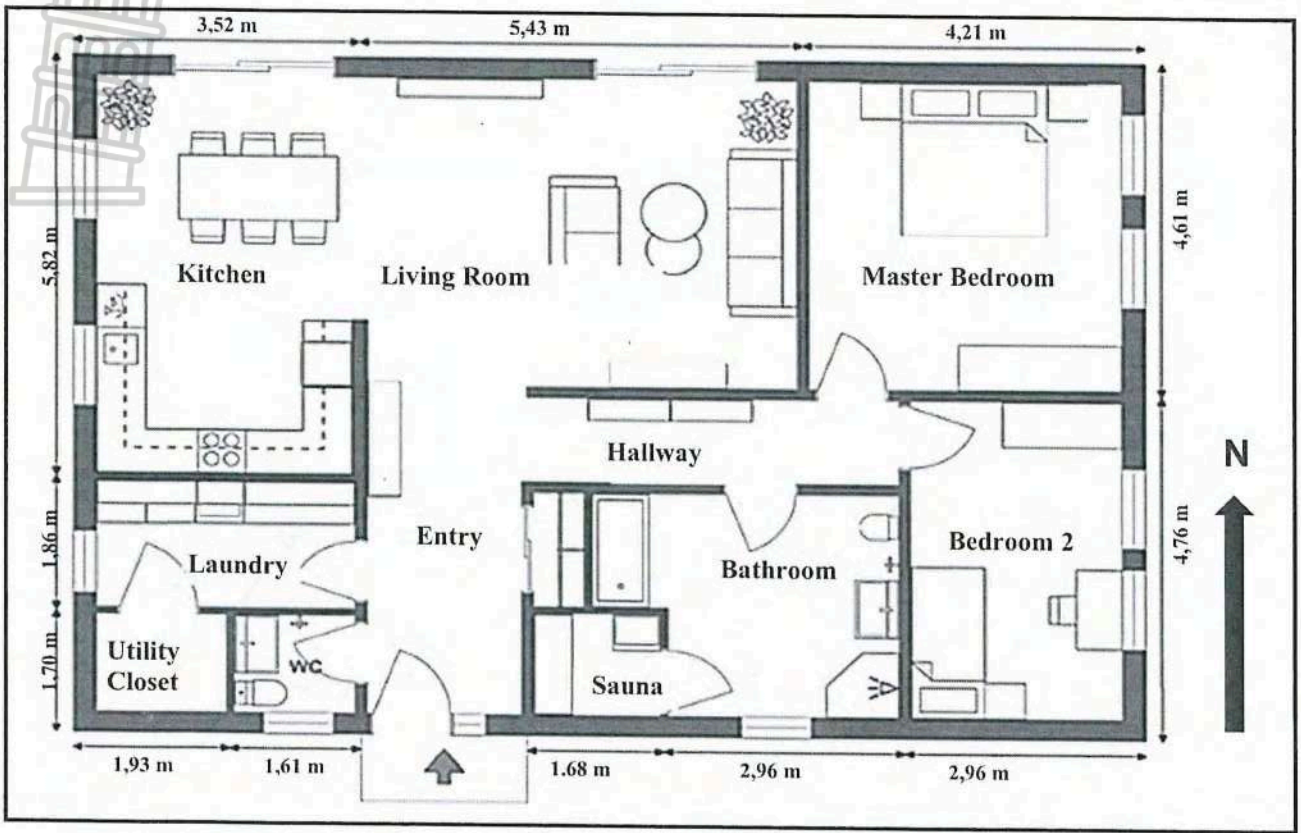
1.1.3 Name TWO grocery stores indicated on the map. (2)

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)

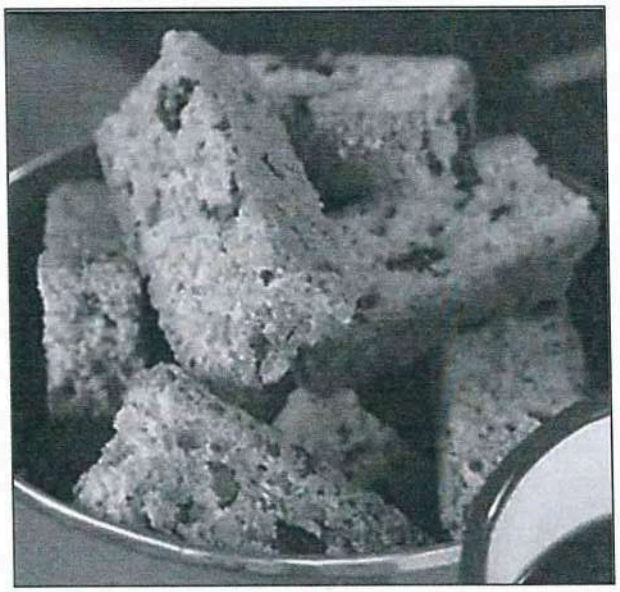
1.2.5 Select from the options below the correct unit that can be used for the area of the master bedroom. Write only the letter (A – C) next to the question number (1.2.5).

A. m
B. $m^2$
C. $m^3$

(2)

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.




(2)

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 km = 0, 62137119 miles. (3)

2.1.6 Calculate the population density of the North West Province in people/$km^2$.

You may use the following formula:

$$\textbf{Population density} = \frac{\textbf{Population}}{\textbf{Area}}$$

(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** = $\frac{\textbf{Distance}}{\textbf{Time}}$ (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 $10^{th}$ 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 $50^{th}$ 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)

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 |

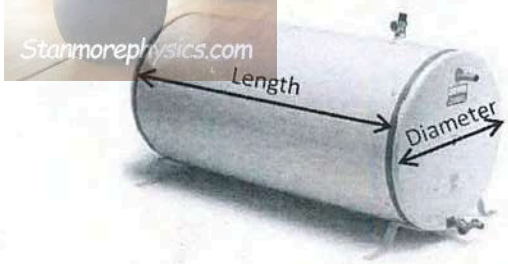
Study the information given in Table 2 above and use it to answer the questions that follow.

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 = $\pi$ × 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 × $\pi$ × radius$^2$) + (2 × $\pi$ × radius × 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**

Volume = $\pi$ × radius$^2$ × length
= $\pi$ × (550 mm)$^2$ × 840 mm
= 798 278 69,33 mm$^3$
= 79 827 869,33 cm$^3$
≈ 79 828 ℓ

**NOTE: 1 000 cm$^3$ = 1 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:

**Volume = $\pi$ × radius$^2$ × length**

where: **$\pi$ = 3,142**

**NOTE: 1 000 cm$^3$ = 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)

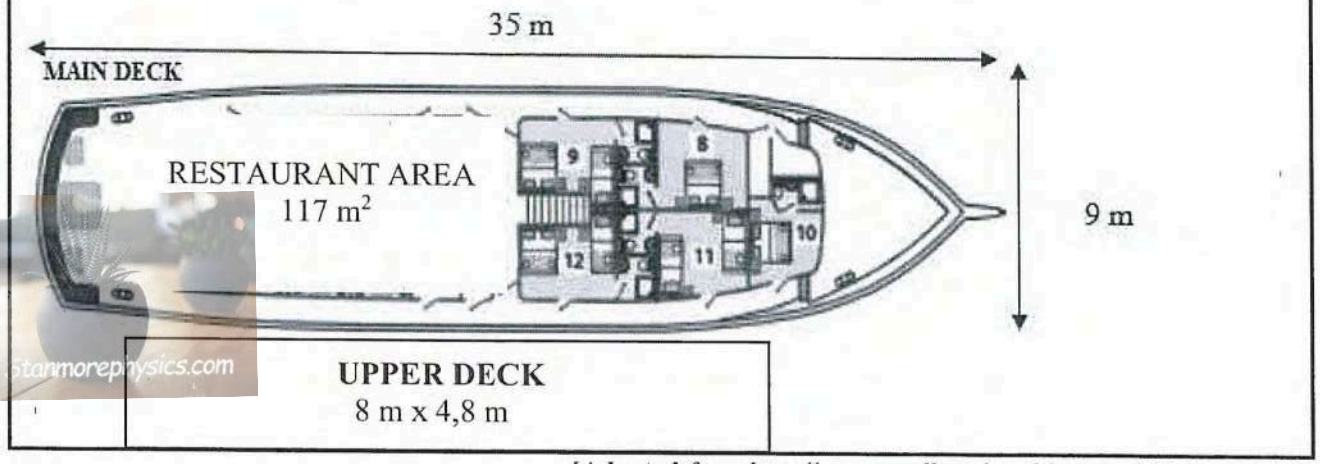
**[32]**

## 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.

**Ship's dimensions:**

| Dimensions | Area |
|---|---|
| Saloon: 13 m x 4,75 m | area = 61m$^2$ |
| Platform: 4 m x 4,75 m | area = 19 m$^2$ |
| Upper deck: 8 m x 4,8 m | area = 40 m$^2$ |




[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:

**Area of a rectangle = Length × Width** (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:

**Perimeter = 2 (Length + Width)** (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.

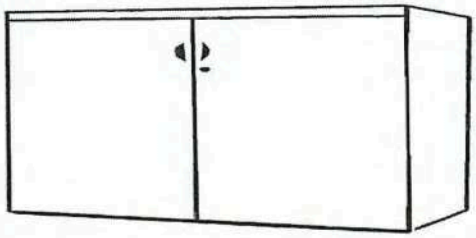
You may use the following formula: **Distance = Speed × Time** (4)

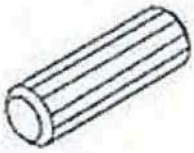
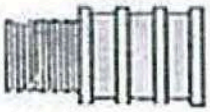
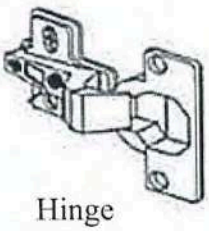
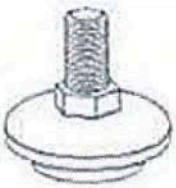
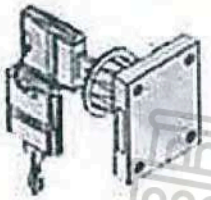
5.1.3 According to road safety regulations, a driver needs to rest for 15 minutes for every two hours of driving.

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)

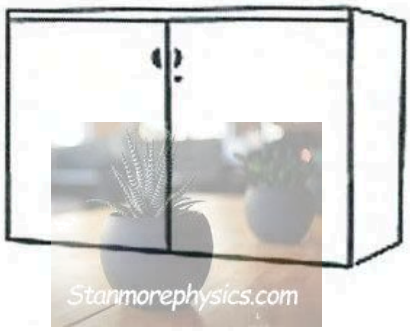
5.2.3 Identify a tool that can be used to turn the cam pins and cam locks. (2)

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(length × width) + 2(length × height) + 2(width × height)** (4)

**[29]**

**TOTAL: 150**

**END**

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# PREPARATORY EXAMINATION



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MATHEMATICAL LITERACY

ADDENDUM

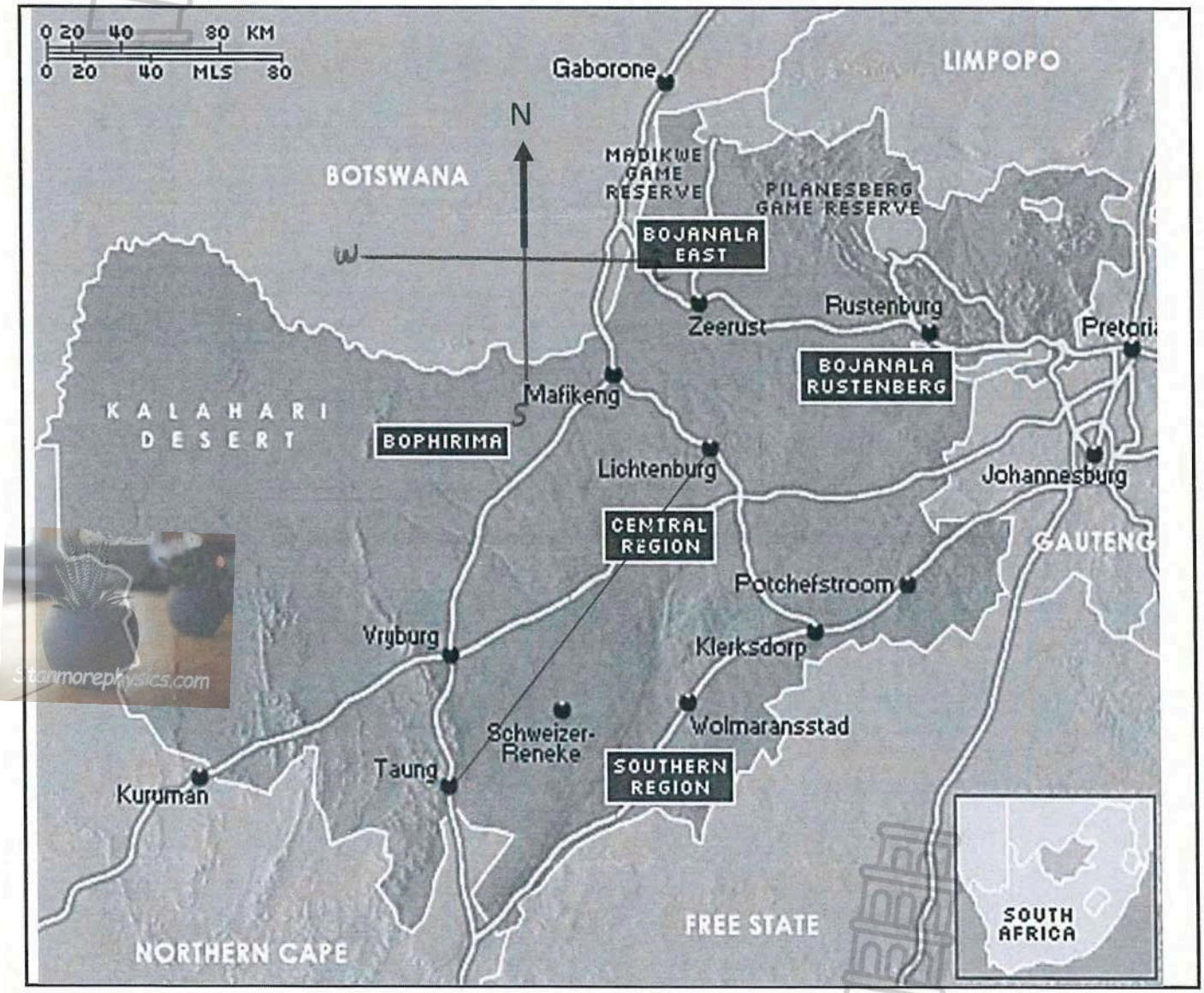
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(PAPER 2)

5 pages

ANNEXURE A

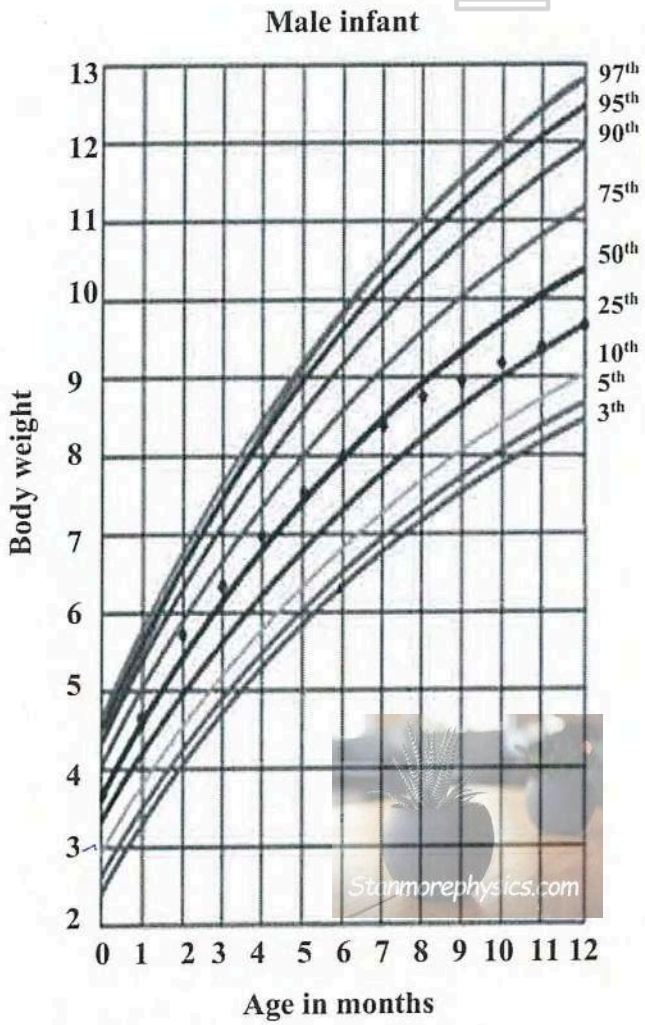
QUESTION 2.1

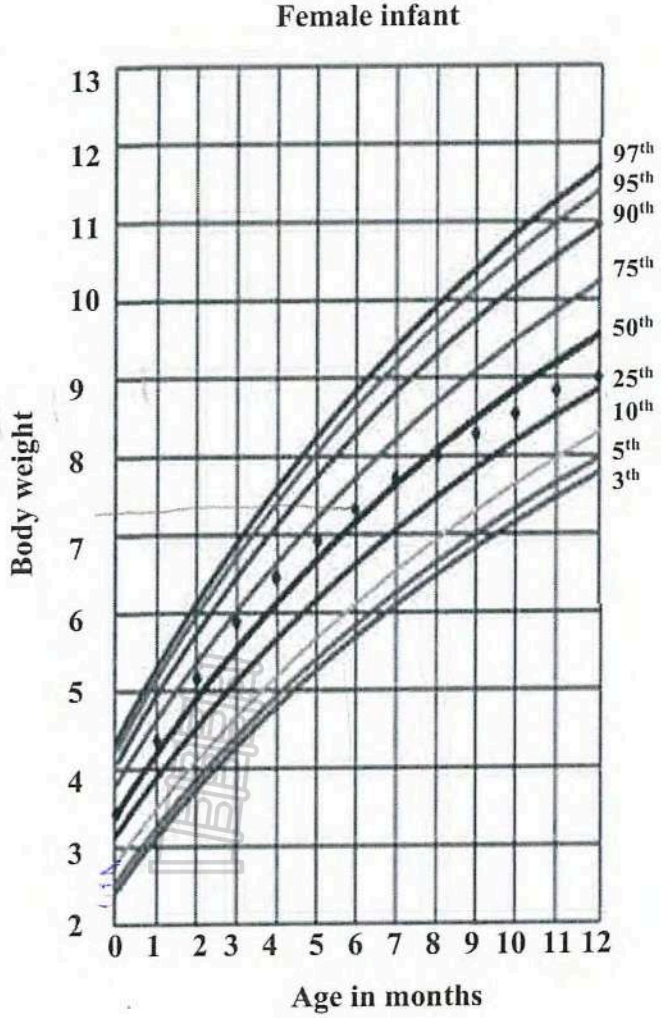



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ANNEXURE B

QUESTION 3.1

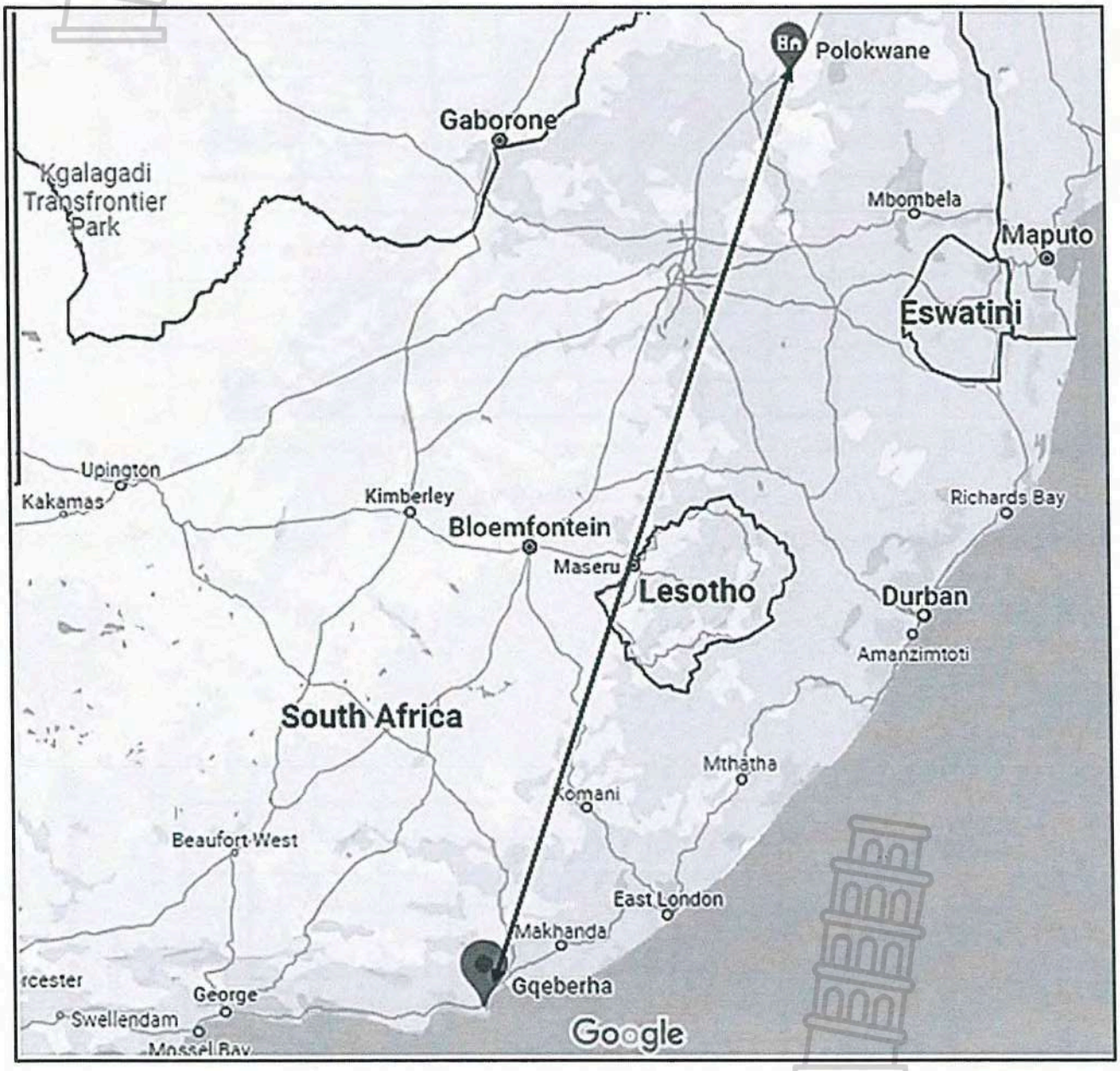



NOTE: The dots represent an average growth rate.

**ANNEXURE C**

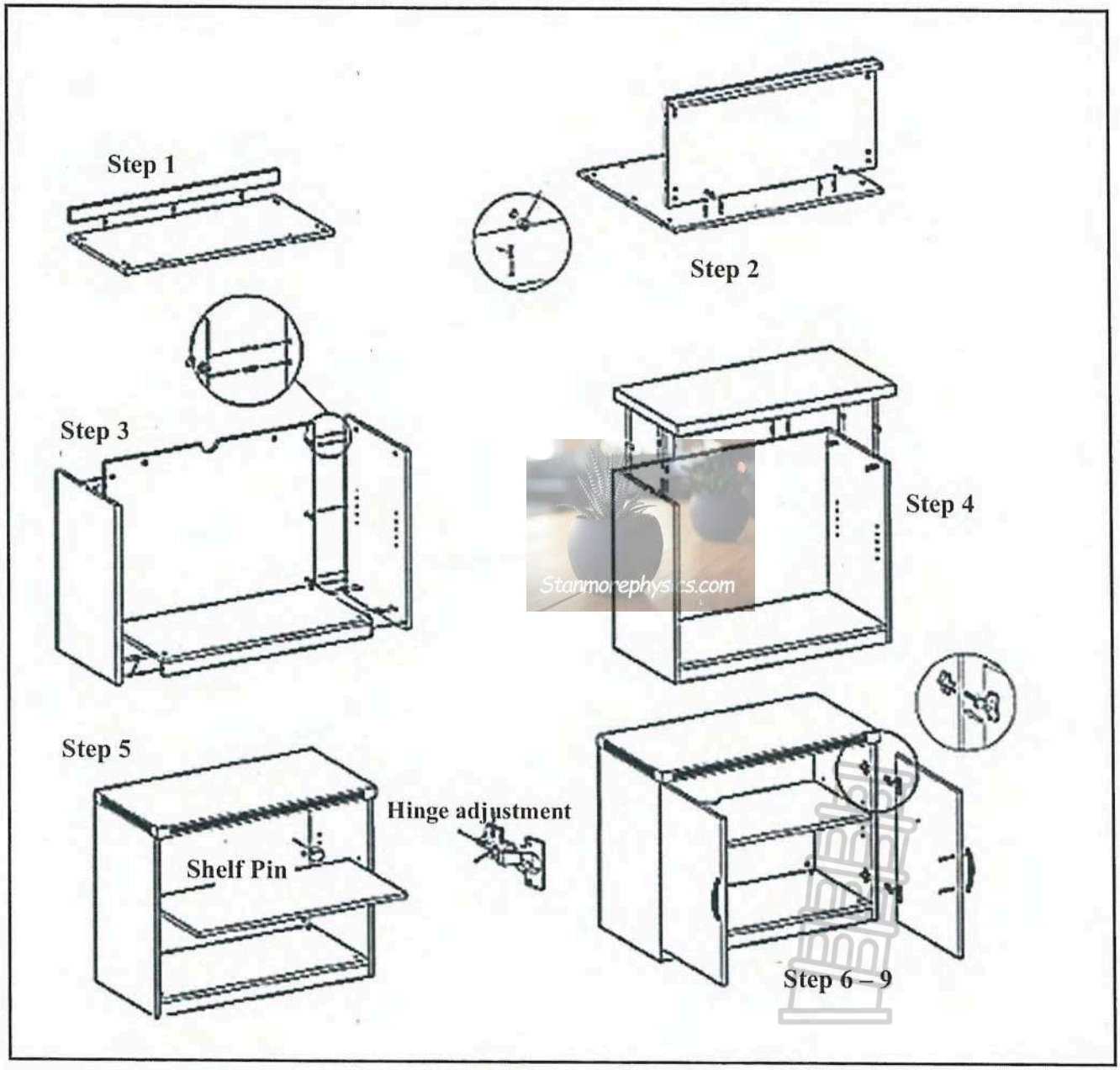
**QUESTION 5.1**



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**