Province of the
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Iphondo leMpuma Kapa: Isebe leMfundo
Provinsie van die Oos Kaap: Department van Onderwys
Porafensie Ya Kapa Botjahabela: Lefapha la Thuto

NATIONAL SENIOR CERTIFICATE

GRADE 12



SEPTEMBER 2024

MATHEMATICAL LITERACY P2

MARKS: **150**

TIME: **3 hours**

This question paper consists of 14 pages and an addendum with 3 annexures.

INSTRUCTIONS AND INFORMATION

Read the following instructions carefully before answering the questions.

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 1.2
   - ANNEXURE B for QUESTION 2.3
   - ANNEXURE C for QUESTION 4.3

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 drawn to scale, unless stated otherwise.

10. Write neatly and legibly.

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QUESTION 1

1.1 A chef prepared a creamy chocolate mousse. Study the recipe below that she used and answer the questions that follow.

CREAMY CHOCOLATE MOUSSE RECIPE

INGREDIENTS

50 g Cocoa powder
125 mℓ Whipped double cream
35 g Powdered sugar
1 Egg
125 g White chocolate
½ Cup of milk
Almond or vanilla flavouring



Preparation time: 15 minutes
Cooking time: 6 minutes
Servings: 4 people

METHOD

- Grate the chocolate and melt in a pot.
- Whisk egg white, powdered sugar, cream and milk together until smooth. Add the mixture to the melted chocolate. Cook for six minutes while stirring.
- Spoon the mixture into glasses, sprinkle the cocoa powder and almond or vanilla flavouring on top and chill in the fridge for one hour.

Use the information above to answer the questions that follow.

1.1.1 Convert the heavy whipping cream to litres. (2)

1.1.2 Determine the number of grams of cocoa powder needed for 12 people. (2)

1.1.3 Determine the total time that it will take to repeat the recipe twice. (2)

1.1.4 The mousse was ready for serving at 12:05. At what time did the chef start to make the mousse? (2)

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1.2 Mandla lives in Durban and found a new job in Thaba Nchu (63 km east of Bloemfontein).

The map in ANNEXURE A shows the national roads of South Africa on which Mandla will travel to and from work.

Use the map in ANNEXURE A and the information above to answer the following questions.

1.2.1 Choose the TWO types of scales NOT used on the map. Write down only the letters that represent the correct scales.

A Word scale
B Bar scale
C Ratio scale (2)

1.2.2 Identify the town where the N1 and the N5 join. (2)

1.2.3 Determine the number of national roads on the map with an even number. (2)

1.2.4 If Mandla drives from Durban on the national roads and does not turn left on the N8 at Bloemfontein but continues on the N1. What is the first town that he will pass according to the map? (2)

1.3 Polokwane District Municipality supplied 920 schools with 2 water tanks each to reduce the cost of municipal water bills that schools must pay for water and sanitation.

The diameter of each tank is 132 cm and the height is 1,5 m.

The tank has a water storage capacity of 2,05 kilolitres.



[Adapted from https://www.builders.co.za/watertanks]

Use the information above to answer the questions that follow.

1.3.1 Determine the radius of one water tank in centimetres. (2)

1.3.2 Calculate the total number of tanks supplied to the 920 schools. (2)

1.3.3 Write down the correct unit of measurement for volume using only the letters A, B or C.

A centimeters
B cubic meters
C square millimeters (2)

1.3.4 Explain the term *diameter*. (2)

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1.4 Lindiwe is busy planning for the month of October 2024. The calendar of October 2024 is given below.

CALENDAR FOR THE MONTH OF OCTOBER 2024

SUN	MON	TUE	WED	THURS	FRI	SAT
		1 ***Schools re-open***	2	3 ***Mom's birthday***	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19 ***Youth camp***
20 ***Youth camp***	21	22 ***Mathematical Literacy Mock Examination***	23	24	25	26
27 ***Granny arrives to visit***	28	29	30	31 ***Granny goes back home***		

[Adapted from www.skillsportal.co.za/content/schoolcalender]

Use the information above to answer the questions that follow.

1.4.1 Write down the number of days granny comes to visit. (2)

1.4.2 Lindiwe's mom will be 57 years old on 3 October 2024.

Determine the year in which Lindiwe's mom was born. (2)

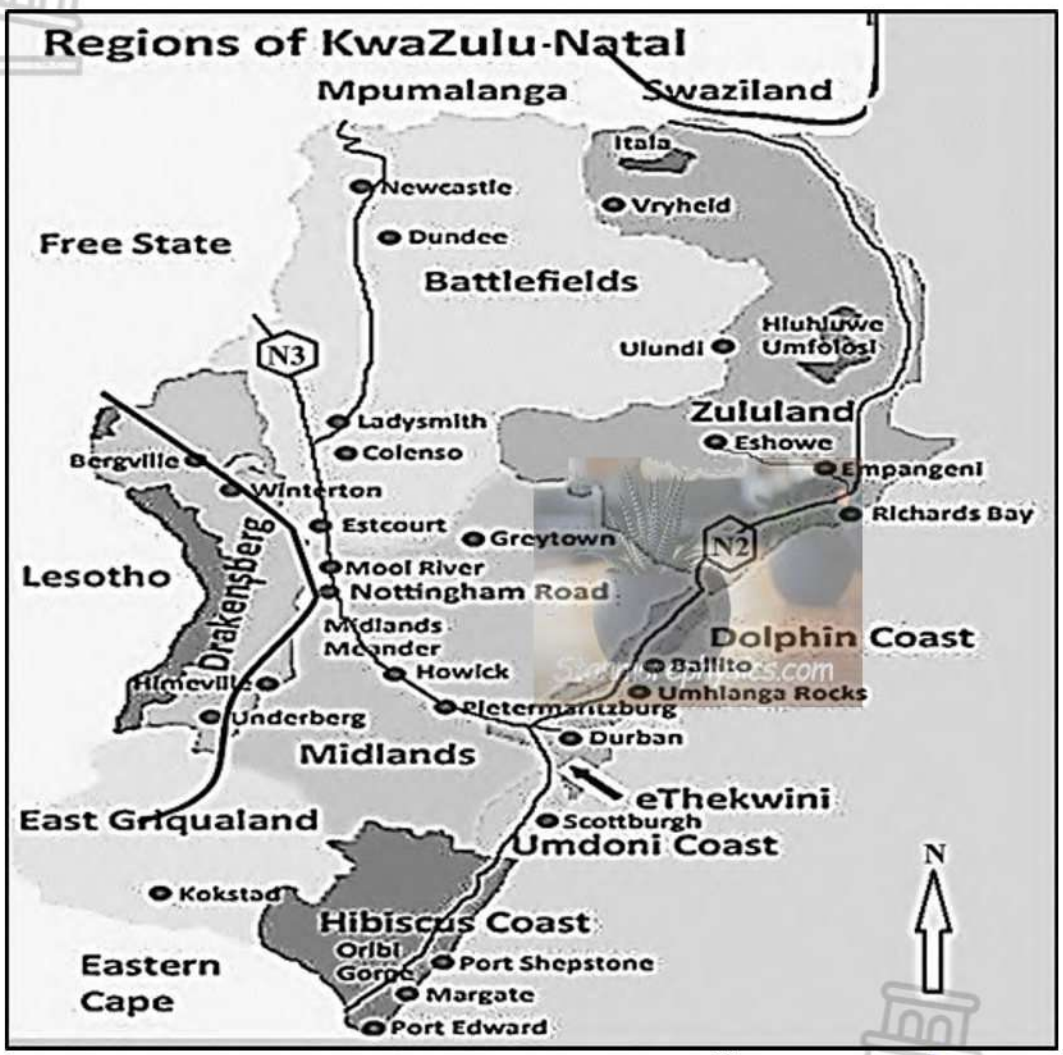
[28]

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QUESTION 2

2.1 Mrs Thazibane lives in Lesotho. She is planning a holiday in KwaZulu-Natal. She plans on going to Vryheid and a few other places. Below is the map that she will use to decide on all the places to visit.

Map showing regions of KwaZulu-Natal



[Source: www.googlemaps.com]

Use the information above to answer the questions that follow.

2.1.1 Identify the type of roads indicated on the map. (2)

2.1.2 What is the general direction of Vryheid from Lesotho? (2)

2.1.3 Which province is south of Lesotho, excluding KwaZulu-Natal? (2)

2.1.4 The distance from Lesotho to Vryheid is 614,6 km and Mrs Thazibane is driving at an average speed of 120 km/h. Determine how long it will take her to reach Vryheid. Give your final answer in hours and minutes.

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

(4)

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2.2 Mrs Thazibane has decided to stop in the Free State before leaving to Vryheid. The car she drives has a fuel consumption of 5,9 litres per 100 km and the cost of petrol is R24,45 per litre.

2.2.1 Give Mrs Thazibane a clear set of directions to get to Eshowe from the Free State, where she plans to spend a day with family, before going to Vryheid. (3)

2.2.2 Determine the number of litres of petrol Mrs Thazibane will need for a return trip from Lesotho to Vryheid. (3)

2.2.3 Hence, calculate the petrol cost for Mrs Thazibane's return trip. (2)

2.3 Mrs Thazibane registered her daughter at one of the tertiary institutions in Lesotho.

ANNEXURE B illustrates the layout plan of the second floor of the tertiary institution.

Use the layout plan in ANNEXURE B to answer the following questions.

2.3.1 Explain the meaning of the given scale. (2)

2.3.2 Identify ONE feature on this layout plan that indicates that this is a multi-storey building. (2)

2.3.3 Which entrance is the furthest from the library? (2)

2.3.4 Determine the number of restrooms available on this layout plan. (2)

2.3.5 Determine the probability of finding a Science Laboratory on the second floor. (2)

2.3.6 Measure, in mm, the length of the south facing wall of the presentation room. (2)

2.3.7 Hence, calculate the actual length of the south facing wall of the presentation room in metres, using the given scale. Give your answer to the nearest metre. (4)

[34]

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QUESTION 3

3.1 Queens High School decides to tile the floor of their school hall using square-shaped dark blue tiles.

The hall is rectangular-shaped. A smaller rectangular stage is located against the front wall of the hall as illustrated in the diagrams below.

The length of the stage is 10 metres, and the width is 5,5 metres. The stage will not be tiled.

The length of each side of one tile is 60 cm.

The school needs to determine the number of tiles needed.

Example of image of tiled school hall

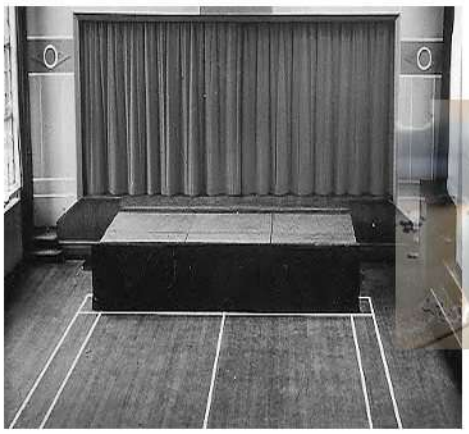
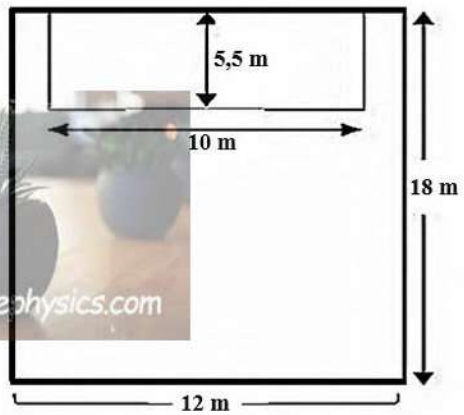


Diagram of the floor plan of the school hall with dimensions



You may use the following formulae:
Area of a square = side × side
Area of a rectangle = length × width

3.1.1 Calculate the area of the floor of the school hall to be tiled, considering that the stage will not be tiled. (5)

3.1.2 The tiler requires 10% more tiles to be purchased to complete the tiling job.

(a) Calculate the area of one tile that will be used. Give your answer in m^2. (3)

(b) Hence, determine how many tiles must be bought including the extra 10%. (3)

(c) Provide ONE reason for the 10% extra tiles required by the tiler. (2)

3.1.3 Determine the unit scale used to draw the floor plan if the length of the wall is 60 mm. Write your final answer as 1 : … (3)

3.2 Ms Johnson, the chairperson of the Awards Committee at Queens High, is designing the prize-giving certificates for the annual prize-giving ceremony.

The certificate will have a shaded border of 2,5 cm, as shown in the diagram below. The length of the certificate is 28,5 cm and the width 22 cm.

A performance level circular sticker with a radius of 8 cm is placed at the bottom of the certificate.

The diagram of the certificate for the prize-giving



Use the above information to answer the questions that follow.

3.2.1 Calculate the diameter of the circle in millimetre. (2)

3.2.2 Determine the dimensions of the certificate without the shaded border. (3)

3.2.3 Hence, calculate the perimeter of the inside (without border) of the certificate.

You may use the following formula:

Perimeter = 2 (length + width) (2)

3.2.4 Ms Johnson claims that the area of the unshaded part (excluding the border and the circle) of the certificate to the nearest squared centimetre, is 198 cm^2.

Verify, with the necessary calculations, whether her statement is valid or not.

You may use the following formulae:

Area of a rectangle = length × width
Area of a circle = 3,142 × radius^2 (7)

[30]

QUESTION 4

4.1 FedEx Express is an international courier service company that provides rapid, reliable and time-definite delivery to more than 220 countries and territories.

To send a 5 kg box anywhere in South Africa, it will cost R2 250.

The dimensions of a 5 kg box are shown below:



NOTE: 1 inch = 25,4 mm

[Adapted from www.fedex.com/en-us/tracking.html]

Use the above information to answer the questions that follow.

4.1.1 Calculate, in mm^3, the volume of a 5 kg box.

You may use the formula: **Volume = length × width × height** (3)

4.1.2 One of the drivers stated that the surface area of the 5 kg box is more than 2 m^2. Verify, with the necessary calculations, whether the driver's statement is valid or not.

You may use the following formula:

Total surface area = 2 (l × w) + 2 (l × h) + 2 (w × h) (5)

4.1.3 Many of the parcels are transported with E-transit delivery trucks. Given below are the dimensions of a FedEx E-transit delivery truck.



Dimensions of E-transit delivery truck

Length = 2,2 m
Width = 1,5 m
Height = 1,6 m

Calculate the maximum number of 5 kg boxes that can fit into the delivery truck. (5)

4.2 FedEx travels from Detroit to Denver either by truck or plane. The travelling time by truck is approximately 18 hours 48 minutes.



[Adapted from www.googlemaps.com]

Study the map above and answer the questions that follow.

4.2.1 Calculate the average speed of the delivery truck (in miles/hour) travelling from Detroit to Denver.

You may use the following formula:

Distance = Speed × Time (4)

4.2.2 The flight distance between Detroit and Denver is 1 862 km, which is equal to 1 157 miles. Determine how many kilometres there are in one mile, rounded to 3 decimal places. (3)

4.3 Charles works for a seed company, helping schools to produce their own vegetable gardens. These vegetables are planted in greenhouses.

ANNEXURE C illustrates the structure of a greenhouse and all the related information.

Use ANNEXURE C to answer the questions below.

4.3.1 Calculate how many arches would be needed to build 5 greenhouses. (2)

4.3.2 The greenhouse is 20 metres in length and held upright using aluminium poles planted 5 metres apart. Determine the number of poles needed to keep one greenhouse upright. (2)

4.3.3 Charles claims that more than 50 steel rods will be needed to construct one greenhouse. Verify, with calculations, whether his statement is valid or not. (3)

4.3.4 The water tank that is included in the package is a rectangular prism as shown in the diagram below.



The dimensions of the water tank are as follow:

Length = 1,2 m
Width = 1 m
Height = 140 cm

NOTE:
1 m^3 = 1 kilolitre

Calculate, in kilolitres, the capacity that the water tank can store.

You may use the following formula:

Volume of a rectangular prism = length × width × height (4)

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4.3.5 The package includes a chemical mask.

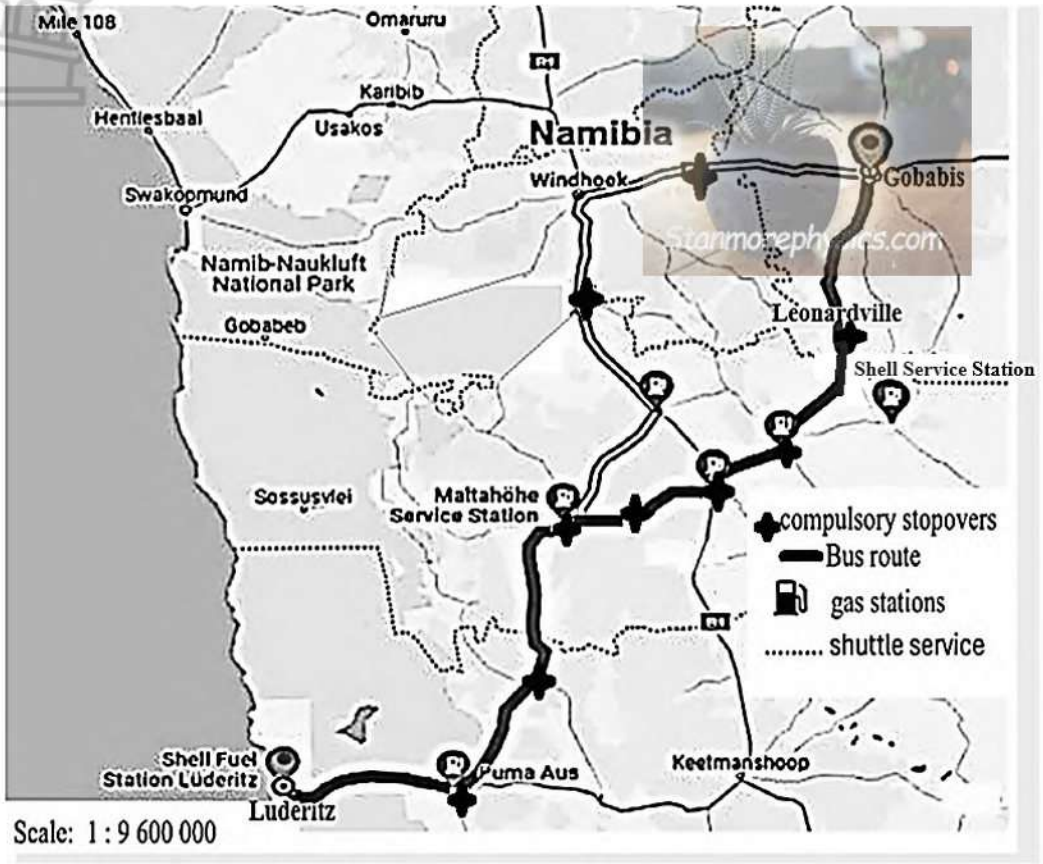
Explain why a chemical mask is included in the package. (2)

4.3.6 There are many ways to fill the water tank. Mention ONE way how the water tank can be filled with water. (2)

[35]

QUESTION 5

5.1 Thembani works in Gobabis as an Electrical Engineer but lives in Lüderitz. He decided to travel by bus to minimise travelling expenses. Below is the map, the bus will use from Gobabis to Lüderitz. The travelling distance between Gobabis and Lüderitz is 815,6 km.



[Adapted from www.googlemaps.com]

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

5.1.1 Determine the probability (as a percentage) of finding a petrol station that is NOT directly on the route between Gobabis and Lüderitz. (3)

5.1.2 The actual distance from Gobabis to Leonardville is 144,9 km. Determine the distance, in metres, from Leonardville to Lüderitz. (3)

5.1.3 Hence, use the given scale and determine the map distance between Gobabis and Lüderitz in centimetres to ONE decimal place. (3)

5.1.4 Calculate the time that the bus spent on the **ROAD** if the bus travelled at an average speed of 80 km/h between Gobabis and Luderitz.

NOTE: Taking into account that every compulsory stopover was 15 minutes.

You may use the following formula: $\textbf{Speed} = \frac{\textbf{Distance}}{\textbf{Time}}$ (6)

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5.2 Pam, the sales manager at AGM, and her team discussed various strategies to improve their sales of perfume.

One of these strategies is to package their perfume using a cylindrical bottle and a rectangular bottle. The bottles will be filled to 90% capacity.

The picture below shows the bottles and the dimensions of the bottles.

Cylindrical bottle	Rectangular bottle
 **Radius = 4 cm** **Height = 5 cm**	 **Length = 7 cm** **Width = 3,5 cm** **Height = 7 cm**

5.2.1 Explain why the perfume bottles are not filled to its maximum capacity. (2)

5.2.2 In one month, AGM storage workers packed 75 perfume bottles as cylindrical and rectangular bottles, in the ratio 2 : 3 in a box. Determine the probability of selecting a rectangular bottle from the box. (3)

5.2.3 Pam claims that if the volume of one rectangular bottle rounded off to the nearest whole number, then the capacity of the rectangular bottle or cylindrical bottle would be the same. The volume of the rectangular bottle is 172 cm^3.

Verify, with the necessary calculations, whether Pam's claim is valid or not.

You may use the following formula:

Volume of a cylindrical bottle = 3,142 × radius^2 × height (3)

[23]

TOTAL: 150

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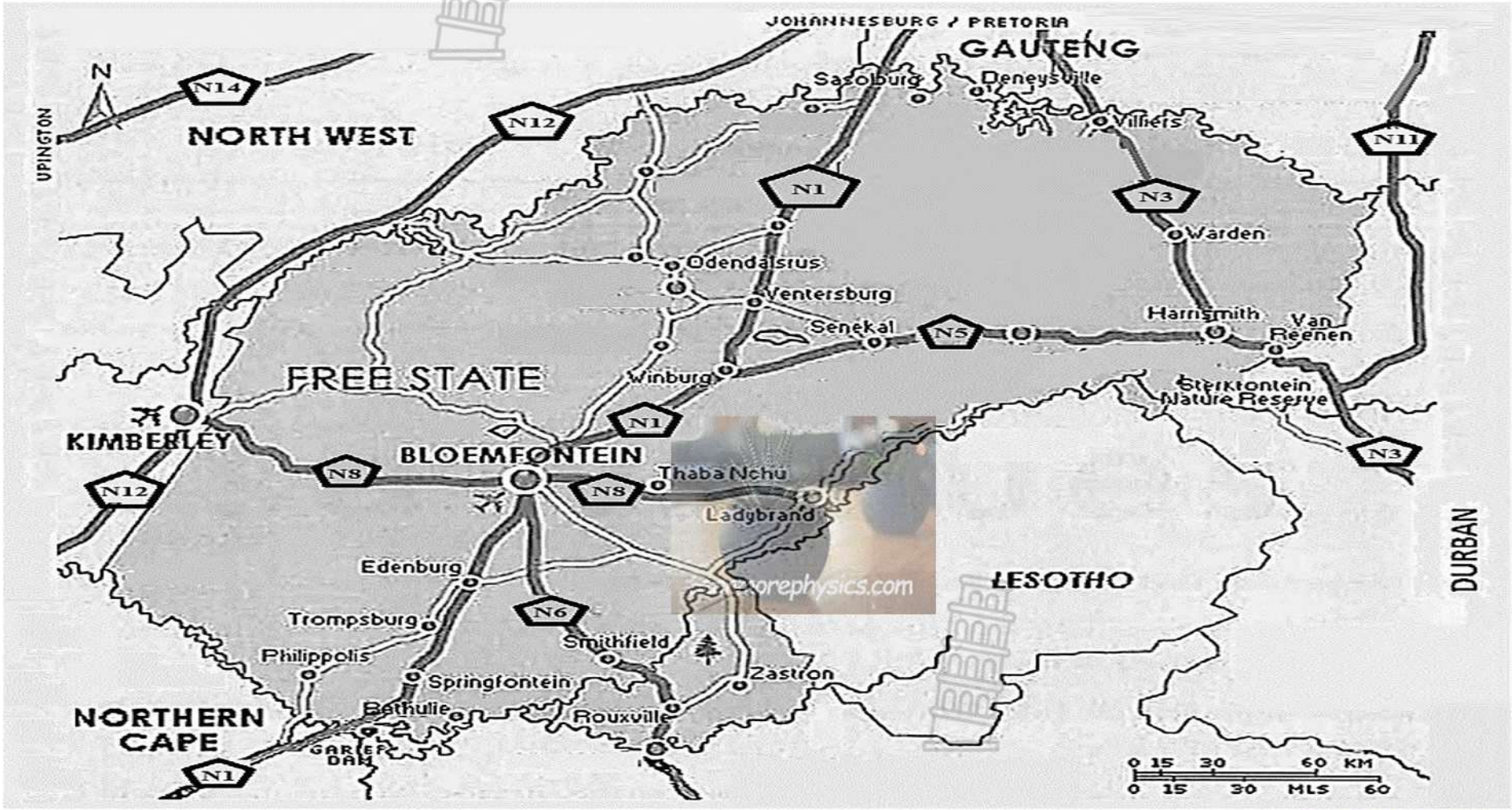
MATHEMATICAL LITERACY P2 ADDENDUM

This addendum consists of 4 pages with 3 annexures.

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ANNEXURE A: QUESTION 1.2

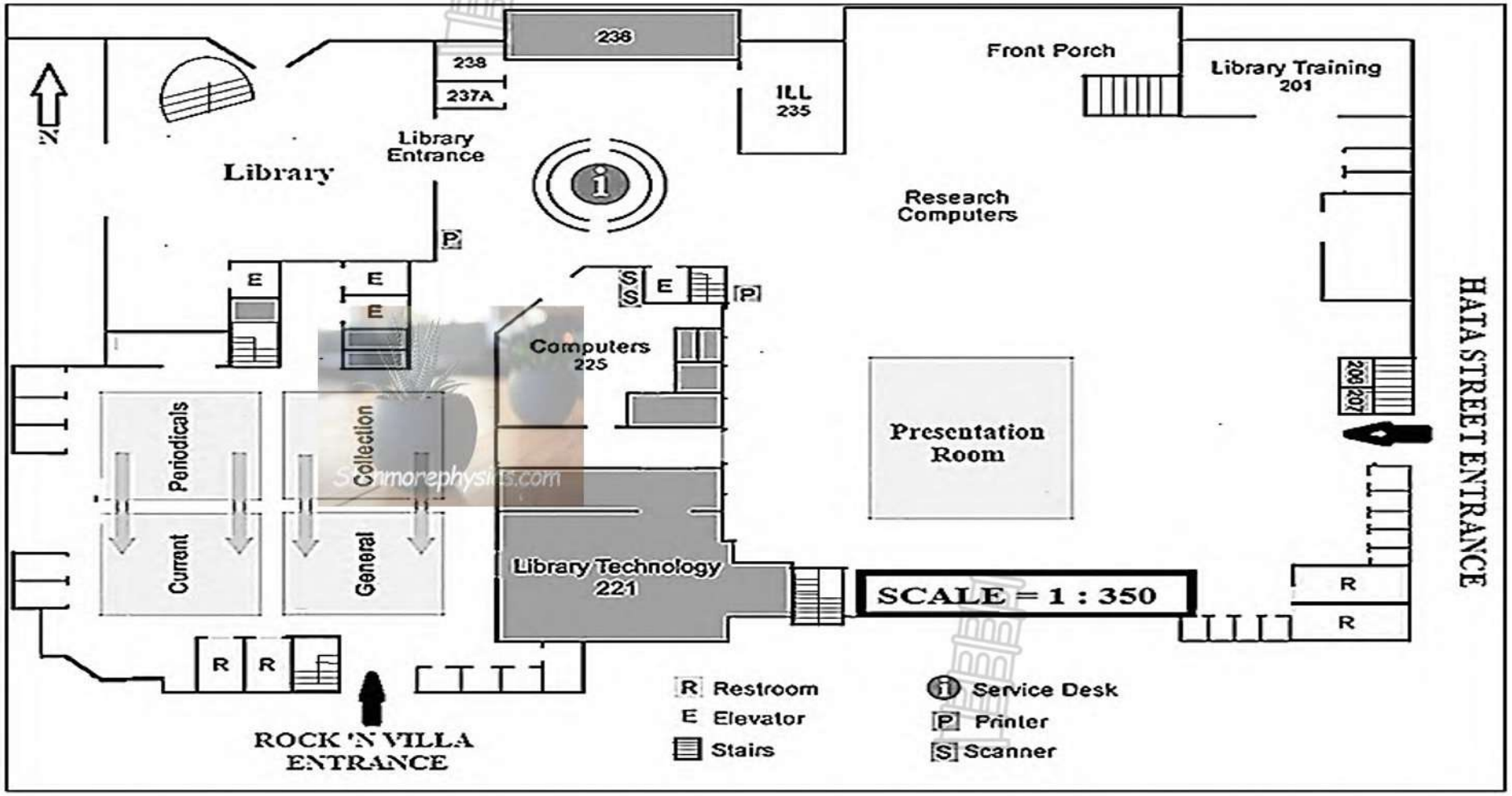
MAP SHOWING NATIONAL ROADS OF SOUTH AFRICA



[Source: www.googlemaps.com]

ANNEXURE B: QUESTION 2.3

THE LAYOUT PLAN OF THE SECOND FLOOR OF THE TERTIARY INSTITUTION



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ANNEXURE C: QUESTION 4.3

THE STRUCTURE OF A GREENHOUSE AND ALL THE RELATED INFORMATION.

STRUCTURE OF A GREENHOUSE



Measurements of greenhouse:
10 m × 7 m × 2,1 m

Construction:

- 11 arches places 2 metres apart to form the tunnel effect
- Each arch is anchored with 5 steel rods

Package includes:

- Greenhouse frame and coverage (net)
- Drip irrigation kit
- Water tank
- Free fertiliser for first cycle of production
- Seeds for first vegetable plantation
- Chemical mask

[Adapted from www.google.com/greenhouses]

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