LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF
EDUCATION

NATIONAL SENIOR CERTIFICATE

GRADE 12



MATHEMATICAL LITERACY P2

SEPTEMBER 2023

MARKS: 150

TIME: 3 hours

Stanmorephysics

EMLITP2

This question paper consists of 13 pages, 2-paged answer sheet and a 5-paged addendum with 4 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:

   2.1 ANNEXURE A for QUESTION 2.1
   ANNEXURE B for QUESTION 2.2
   ANNEXURE C for QUESTION 5.1
   ANNEXURE D for QUESTION 5.2

   2.2 Answer QUESTION 4.2.1 and 5.1.2 on the attached ANSWER SHEETS.

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 Sinky is baking a cake for her birthday using the following recipe.
She will start baking at 1: 20 pm.

Ingredients (Serving: 12)

4 large eggs	1 cup whole buttermilk
$1\frac{1}{2}$ cups granulated sugar	$2\frac{3}{4}$ cups all - purpose flour
1 teaspoons baking powder	1cup unsalted butter
2 teaspoons vanilla extract	$\frac{1}{2}$ kosher teaspoon salt

Prep. Time: 15 minutes **Cook Time: 30 minutes**

TABLE 1: NUTRITIONAL VALUE FOR THE CAKE

Description	Quantity
Total carbohydrates	51g
Total Sugar	31g
Protein	5g
Calcium	82mg
Potassium	78mg

PLEASE NOTE:
1 cup = 250 mℓ 1 cup flour = 150 g 1 teaspoon = 5 mℓ

[Adapted from myrecipes.com/classic-birthday-cake]

Use TABLE 1 and the information above to answer the questions that follow.

1.1.1 Sinky bought 2 000 g of flour.
Calculate 15% of the flour. (2)

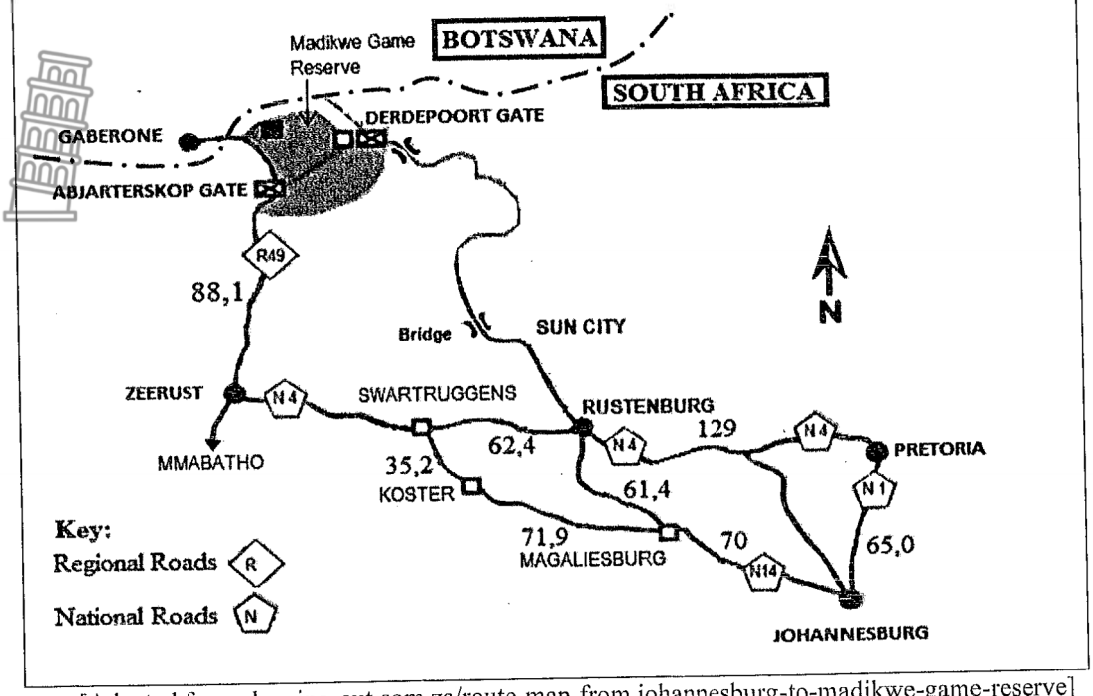
1.1.2 Write the teaspoons of salt required for the cake to the teaspoons of vanilla extract required for the cake as a ratio in simplified form. (3)

1.1.3 Sinky bought 1 ℓ of whole buttermilk.
Determine the number of cakes can be baked with 1ℓ of whole buttermilk (2)

1.1.4 Write 1: 20 pm in 24 – hour format. (2)

1.1.5 Convert the total carbohydrate intake to milligrams. (2)

1.2 Sinky used the map below to travel from Johannesburg to Madikwe game reserve to celebrate her birthday.



[Adapted from sleeping-out.com.za/route-map-from.johannesburg-to-madikwe-game-reserve]

Use the map and the information above to answer the questions that follow.

1.2.1 Identify the type of map given above. (2)

1.2.2 Name the regional road indicated on the map. (2)

1.2.3 Determine the distance from Johannesburg to Koster. (2)

1.2.4 Write down the number of national roads shown on the map. (2)

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1.3 The year 2020 was a leap year. A leap year occurs every 4 years.

The calendar of February 2020 is given below.

FEBRUARY 2020

SUN	MON	TUES	WED	THURS	FRI	SAT
						1
2	**3**	**4**	**5**	**6**	**7**	**8**
9	**10**	**11**	**12**	**13**	**14**	**15**
16	**17**	**18**	**19**	**20**	**21**	**22**
23	**24**	**25**	**26**	**27**	**28**	**29**

[Adapted from www.calendarpedia.com]

NOTE:
A leap year is a year in which February has 29 days.

Use the calendar above to answer the questions that follow

1.3.1 Write down the number of Saturdays in February 2020, (2)

1.3.2 On which day was the 1st of March 2020? (2)

1.3.3 Determine the number of days in the month of March. (2)

1.3.4 Write the date in full on the second Thursday of this month. (2)

1.3.5 Determine the year which will be the next leap year after 2020. (2)

[29]

QUESTION 2

2.1 Handy lives in Mossel Bay.
The map showing part of Mossel is given in ANNEXURE A.

Use ANNEXURE A to answer the questions that follow

2.1.1 Write down the grid reference for the Bay View Hospital. (2)

2.1.2 Name two streets on either side of the City Hall Complex (4)

2.1.3 Handy lives in Bruns Street. He wants to go to the police station.

Describe ONE of the routes from his home to the police station. (4)

2.1.4 Handy covers 2,4 km in 0,16 hours

Calculate the average speed in km/h at which he cycles.

You may use the following formula:

$$\textbf{Average speed} = \frac{\textbf{Distance (km)}}{\textbf{Time (h)}}$$ (2)

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2.2 Handy visited his grandmother in Mokopane.
He first went to Mookgopong to collect his jacket from his friend.

He uses the map in ANNEXURE B to plan his trip.

Use ANNEXURE B to answer the questions that follow.

2.2.1 Identify the type of scale used on the map (2)

2.2.2 Determine the scale of the map in the form 1:-----, if the measured length on the scale is 32 mm. (3)

2.2.3 Give the general direction of Mookgopong from Mokopane. (2)

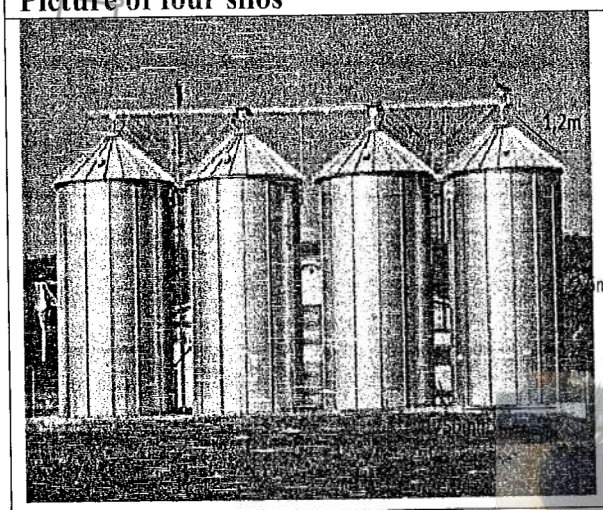
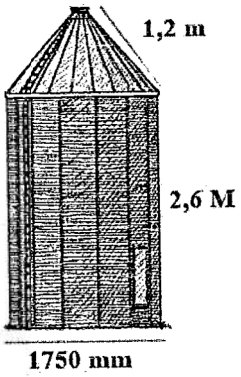
2.2.4 Calculate the actual distance, to the nearest km, between Mokopane and Mookgopong using the given scale. (5)

2.2.5 The distance calculator indicates that the distance between Mokopane and Mookgopong is 52,5km.

Give one possible reason why this distance is not exactly the same as the distance calculated in 2.2.4 above. (2)
[26]

QUESTION 3

3.1 Mr. Masutha stores his maize in the four cylindrical silos before taking them for processing.
Each silo has a diameter of 1750 mm, the slanting height of 1,2 m and a height of 2,6 m.
Each silo can carry 15 000 tons of raw maize

Picture of four silos	Picture of one silo with dimensions
	

[Adapted from content://media/external/download] [Adapted from dreamstime.com/drawing-of-silo]

Use the information above to answer the questions that follow.

3.1.1 Calculate the radius, in mm, of one silo. (2)

3.1.2 Determine the volume of the 4 silos in m^3.

You may use the following formula:

Volume of a cylinder = $\pi r^2 h$, where $\pi = 3{,}142$ (5)

3.1.3 Mr. Masutha will paint the outside of the silos.
He bought a paint with a spread rate of 6 m^2/ℓ per coat.
Two coats will be applied.

Calculate to the nearest litre the minimum number of litres of paint required to paint the four silos.

You may use the following formula:
Surface Area of a silo = $\pi rs + 2\pi rh$, where $\pi = 3{,}142$ (7)

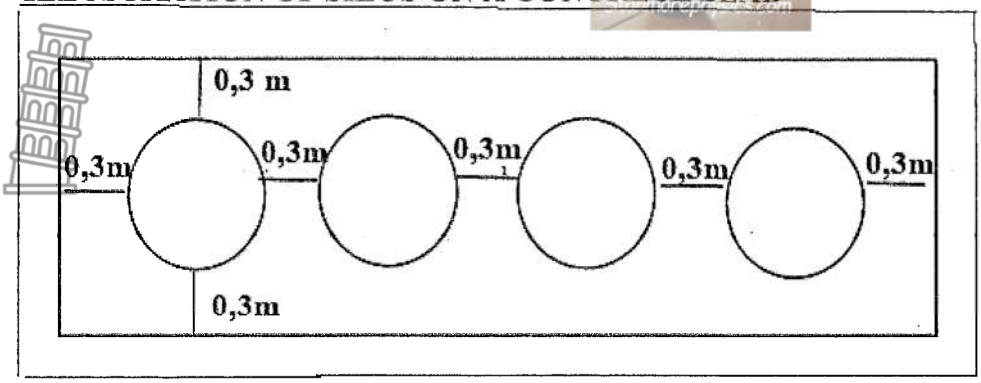
3.1.4 Calculate the number of 5 litre tins Mr. Masutha will buy if the paint is sold in 5 litre tins only. (3)

3.1.5 Give one possible reason for Mr. Masutha to paint the silos. (2)

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3.2 Mr. Masutha will place the four silos on a concrete slab. The space between the silos is 0,3 m. The drawing that illustrates the concrete slab and the silos is given below.

ILLUSTRATION OF SILOS ON A CONCRETE SLAB



NOTE:
Diameter of each Silo is 1750 mm.
1 Silo can carry 15 000 tons of raw maize.

Use the information above to answer the questions that follow.

3.2.1 The volume of the concrete slab is given as 9,9 m^3.
Show that the thickness of the concrete slab is 0,5 m.

You may use the following formula:

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

3.2.2 Mr. Masutha will erect a fence 1,5m from the concrete slab all round to fence in the silos.

Calculate the length of the fence required.

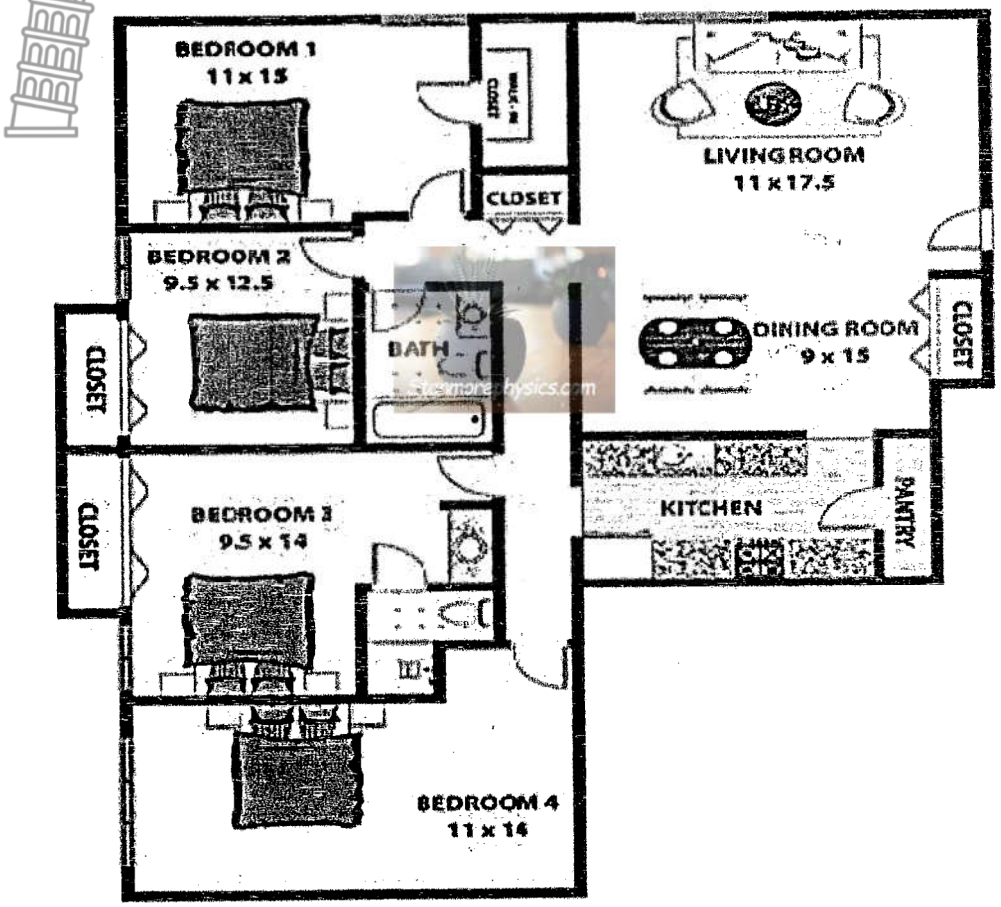
You may use the following formula:

Perimeter = 2 × (length + width) (5)

3.2.3 4 Bags of 80 kg raw maize can make 3 bags of 80 kg processed maize meal.
Determine the total number of processed maize meal that can be made from the four silos. (6)
[34]

QUESTION 4

4.1 Mavis bought a house in Kimberly. The floor plan of the house is given below.



NOTE:
Dimensions given in feet.
1 FOOT= 0,305 m


= Door

[Adapted from https://floorplanforrealestate.com]

Use the floorplan and the information above to answer the questions that follow.

4.1.1 Define the term floor plan in the given context. (2)

4.1.2 Determine the number of doors in the floor plan. (2)

4.1.3 Calculate the area of bedroom 2 to the nearest m^2.

You may use the following formula:

Area of a rectangle = length × width (4)

4.2 Mavis wants to tile the living room. She must choose from three different types of tiles.
The ceramic tile (C), porcelain tile (P) and Marble tile (M).
Each tile comes in two shapes, a square (S) and a rectangle shape (R).

[www.chntile.com]

Use the information above to answer the questions that follow.

4.2.1 Complete the tree diagram on ANSWER SHEET 1 to determine the probability of using each type and shape of tile. (3)

4.2.2 Write down the total number of outcomes of tiling the living room using the three tiles and shapes. (2)

4.2.3. Determine the probability, as a fraction in simplified form, that Mavis will use a ceramic tile or marble tile. (3)

4.3 Mavis decided to tile the living room using a marble tile.
The dimensions of the tiles are given below.

TABLE 2: DIMENSIONS OF TILES

Tile type	Length	Width
Rectangular	900 mm	600 mm
Square	0,5 m	0,5 m

[www.chntile.com]

Use TABLE 2 to answer the questions that follow.

4.3.1 Mavis claims that she will need a minimum of 30 rectangular tiles to tile the living room only.

Verify, showing ALL calculations whether her statement is valid. (8)

4.3.2 It takes tilers 45 minutes to lay 15 tiles and 25 minutes to grout the whole living room.

Mavis claims that the tilers will finish tiling the living room at 9:28 if they started at 8:15 in the morning.

Verify, showing ALL calculations, whether her statement is valid. (6)
[30]

QUESTION 5

5.1 Judy bought the chair. She was given a box with pieces inside and the assembly guide.

The assembly guide in ANNEXURE C and help Judy to assemble the chair.

Use ANNEXURE C to answer the questions that follow.

5.1.1 Calculate the total number of parts in the box including the additional parts. (2)

5.1.2 Match the steps and the pictures in ANNEXURE C to assemble the chair. Write your answers on ANSWER SHEET 2.

Steps
1 ----------
2 ----------
3 ----------
4 B
5 ----------
6 ----------

(5)

5.1.3 Part 12 is used in two steps. Identify the steps. (2)

5.1.4 State ONE advantage of packaging the chair as dismantled pieces rather than a full assembled chair. (2)

5.2 Judy is a serjeant at arms in the Australian parliament.
The layout plan of the Australian parliament is indicated in ANNEXURE D.

NOTE:
A serjeant at arms is an official of the legislative assembly whose duty is to maintain order and security in the parliament.

Use ANNEXURE D and the information above to answer the questions that follow.

5.2.1 Determine the number of seats reserved for advisors in this parliament. (2)

5.2.2 Explain why the seat of the speaker faces all the seats in the parliament (2)

5.2.3 Give one reason why is it necessary to maintain order and security in a parliament. (2)

5.3 Serjeant at arms are required to maintain a healthy status by maintaining a normal weight status.
Judy and her friend Thulani are also required to maintain a healthy status as serjeant at arms.

TABLE 3: BMI WEIGHT STATUS

BMI	WEIGHT STATUS	HEALTH RISK
40 and above	Morbidity Obese	Severe
30 – 39,9	Obese	High
25 – 29,9	Overweight	Moderate
18,5 – 24,9	Normal	Low
Below 18,5	Underweight	Moderate

[Source: Myfitnessroad.com]

Use TABLE 3 and the information above to answer the questions that follow.

5.3.1 (a) Calculate Judy's BMI to the nearest ten if she is 1,8 m tall and weighs 75 kg.

You may use the formula

$$\textbf{BMI} = \frac{\textbf{Weight (kg)}}{\textbf{Height (m}^2\textbf{)}}$$ (4)

5.3.1 (b) Hence, determine Judy's weight status. (2)

5.3.2 Write down the weight status of Thulani if she is 1,6m tall and has a BMI of 26. (2)

5.3.3 Thulani is 1,6 m tall and has a BMI of 26.
Judy's weight is 75 kg.
Determine the difference in weight between Judy and Thulani. (4)

5.3.4 Suggest one way in which Thulani could maintain a normal weight status. (2)
[31]

TOTAL: 150

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ADDENDUM

SEPTEMBER 2023

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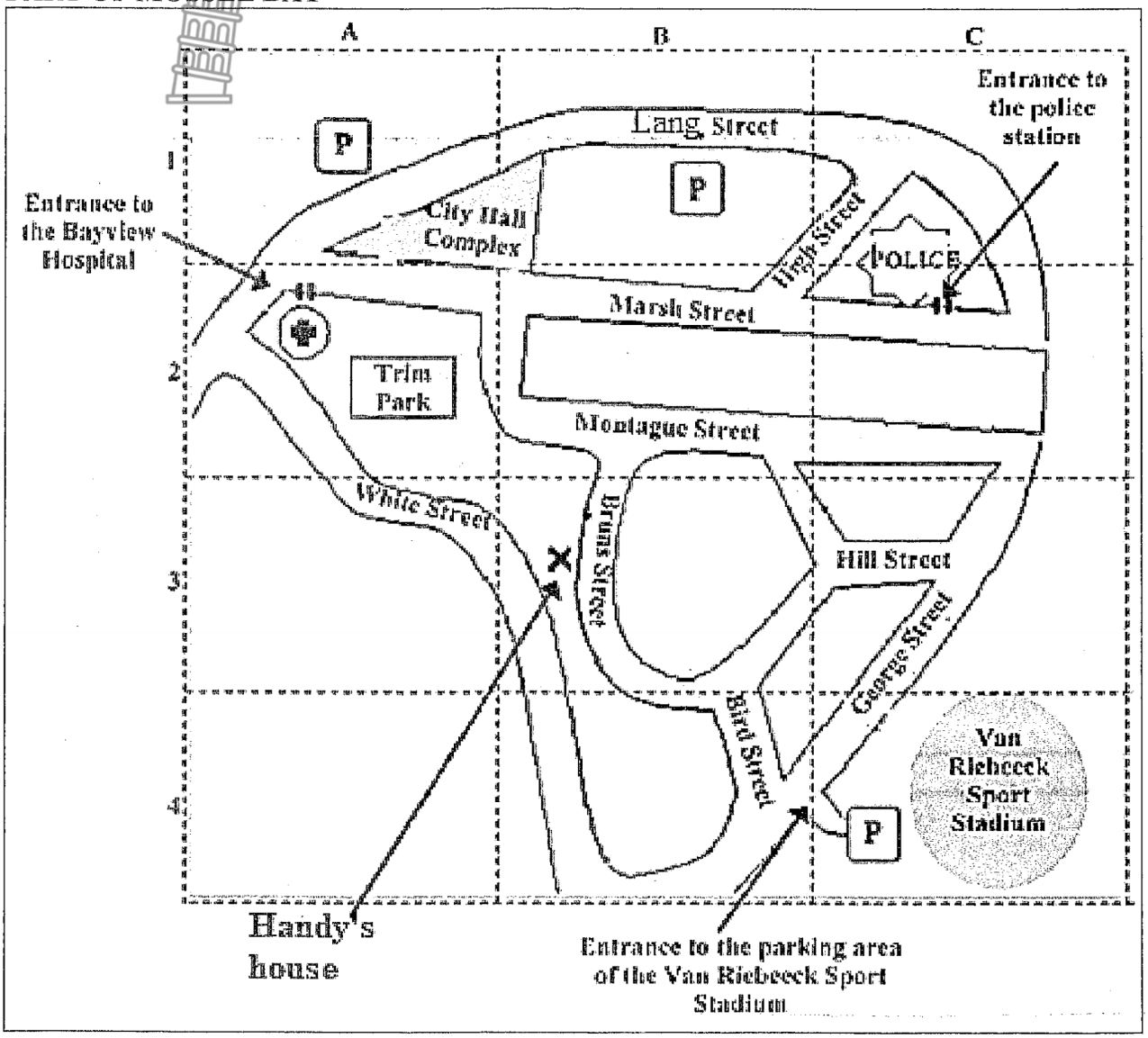
This addendum consists of 5 pages with 4 annexures.

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ANNEXURE A

QUESTION 2.1

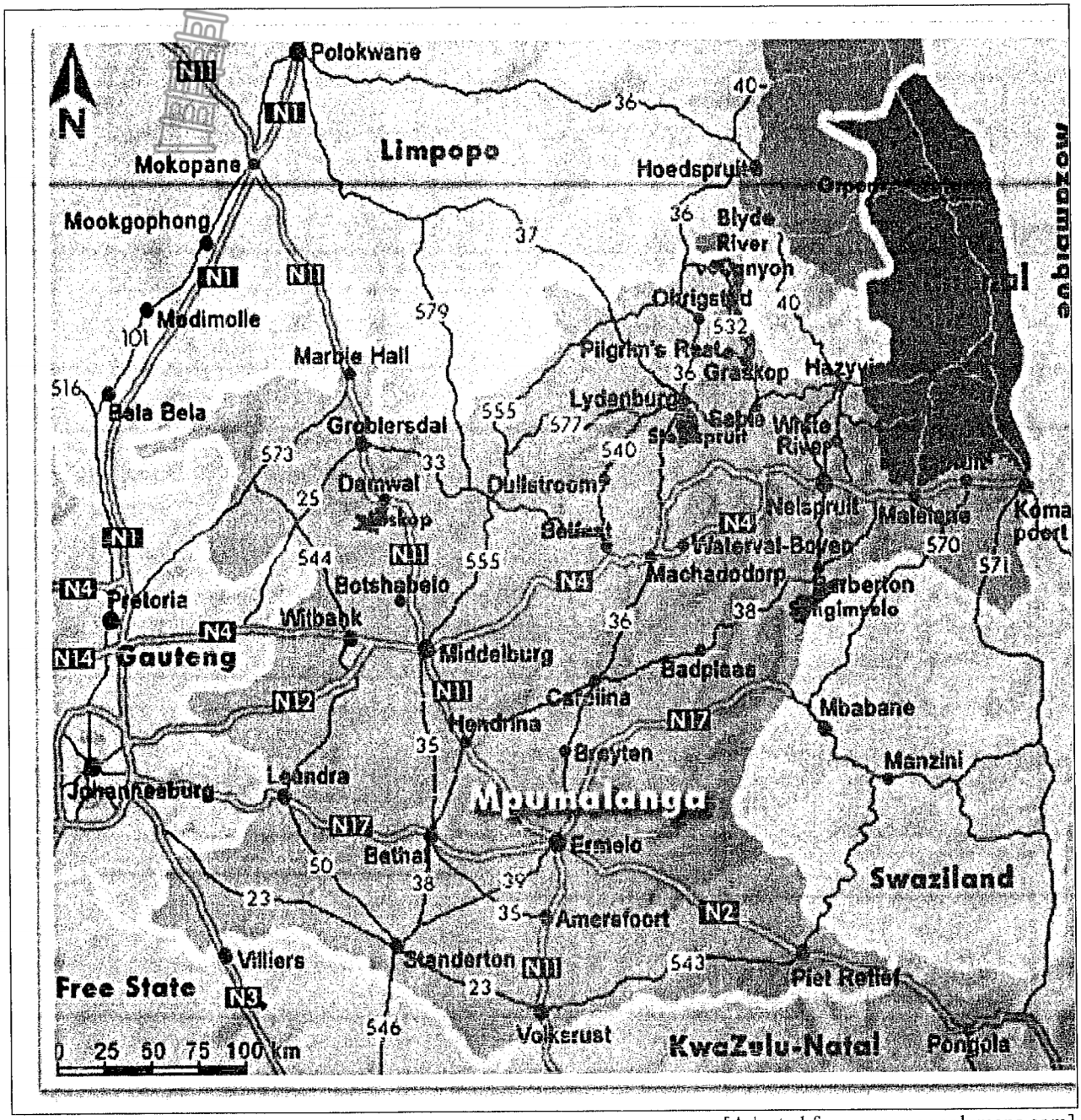
PART OF MOSSEL BAY



[Adapted from www.education.gov.za]

ANNEXURE B

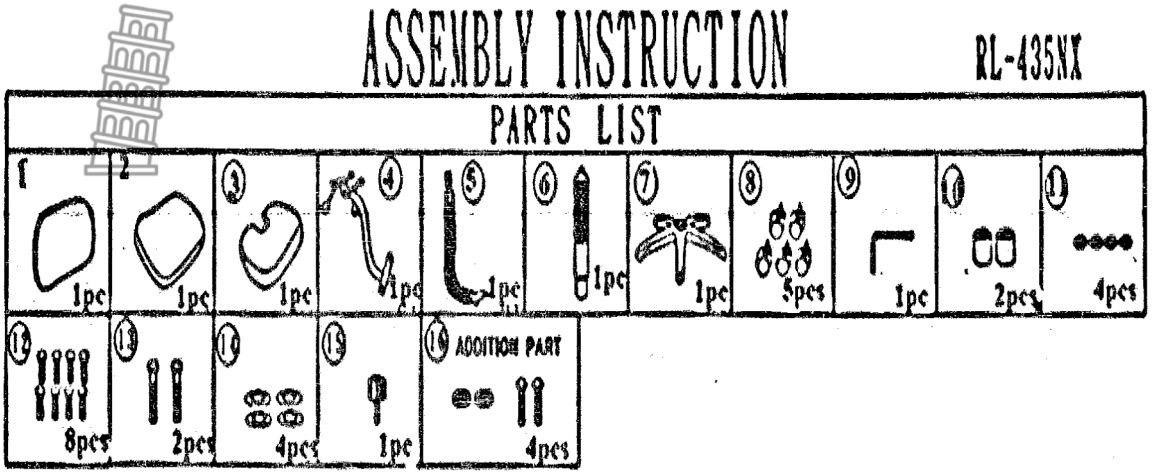
QUESTION 2.2

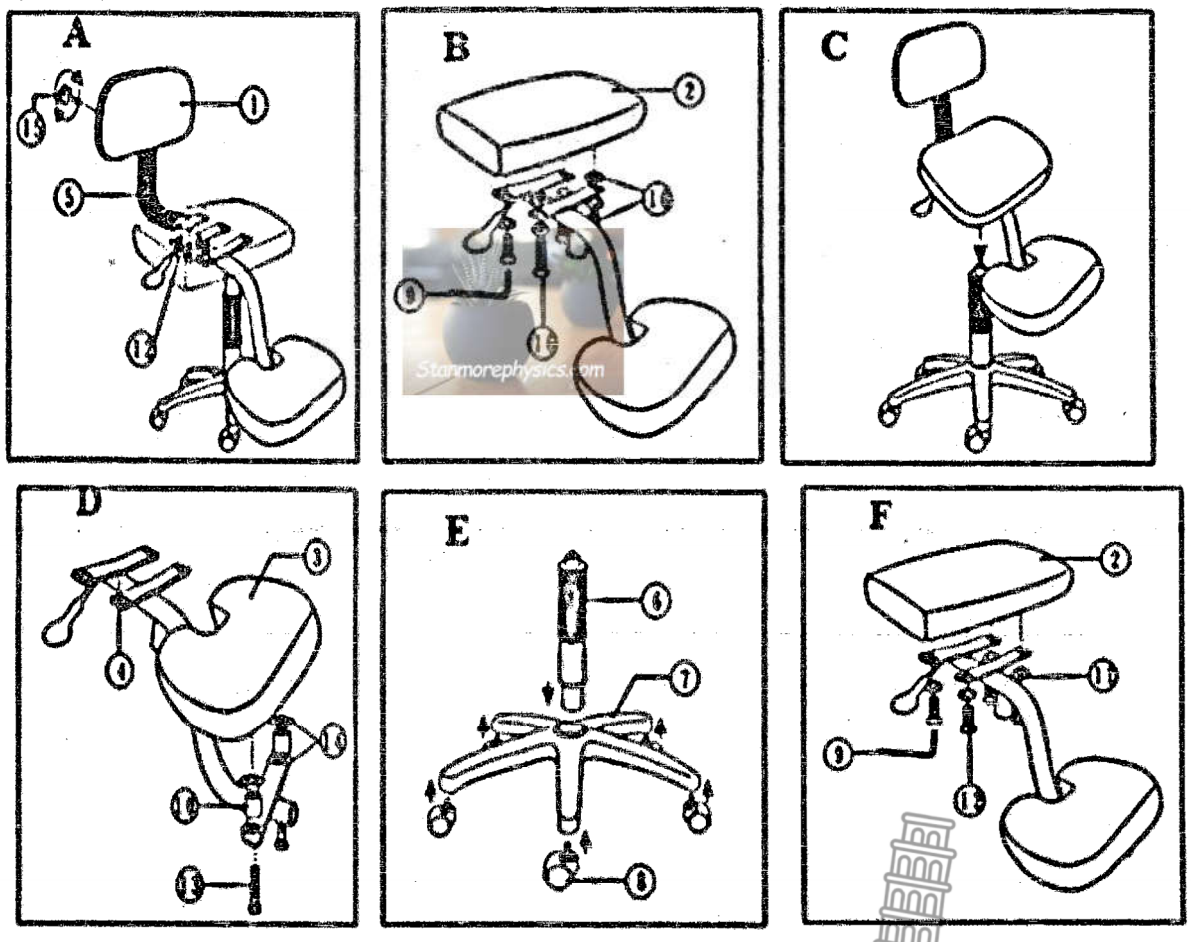


[Adapted from www.googlemaps.com]

ANNEXURE C

QUESTION 5.1

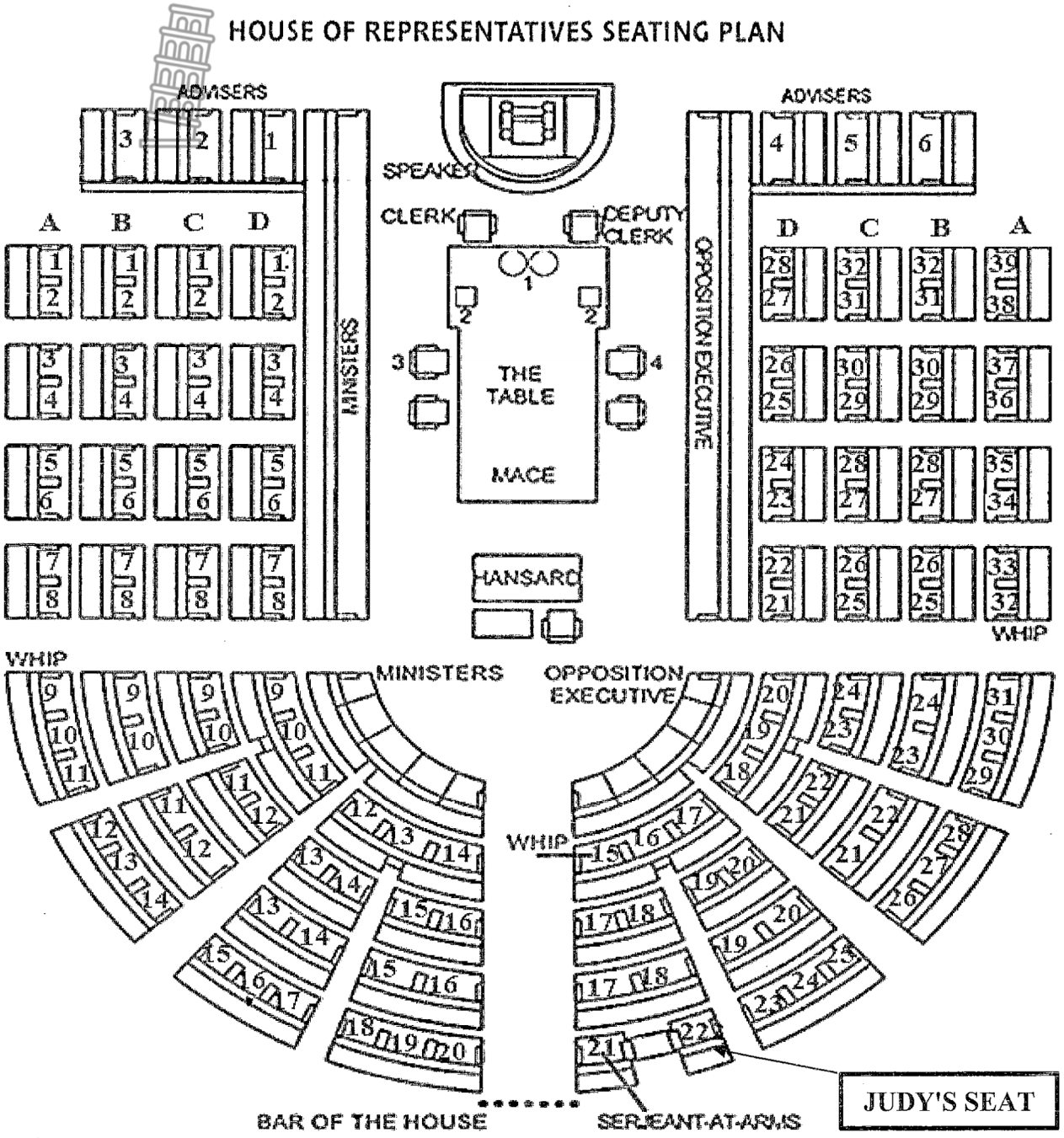




[Adapted from content://media/external/download]

ANNEXURE D

QUESTION 5.2



[Adapted from https:www.aph.gov.au/-/media/05_About_parliament]

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