education

Department of
Education
FREE STATE PROVINCE

NOVEMBER EXAMINATION

GRADE 11

MATHEMATICAL LITERACY P2

MARKS: 100

TIME: 2 HOURS

This question paper consists of 13 pages including 3 ANNEXURES.

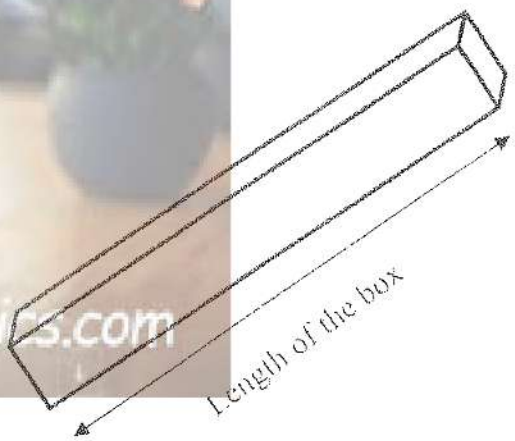
INSTRUCTIONS AND INFORMATION

1. This question paper consists of FOUR questions. Answer ALL the questions.
2. Use the ANNEXURES to answer the following questions:
   - **ANNEXURE A** to answer question 1.2.
   - **ANNEXURE B** to answer question 2.1.
   - **ANNEXURE C** to answer question 2.2.
3. Number the questions correctly according to the numbering system used in this question paper.
4. An approved calculator (non-programmable and non-graphical) may be used unless stated otherwise.
5. Show ALL calculations clearly.
6. Round off ALL final answers appropriately according to the given context, unless stated otherwise.
7. Indicate units of measurement, where applicable.
8. Start EACH question on a NEW page.
9. Write neatly and legibly.

QUESTION 1

1.1 Joan wants to buy a Christmas tree for her family's Christmas celebrations. The tree is packaged in a box.

DIAGRAM 1: CHRISTMAS TREE AND BOX WITH DIMENSIONS

CHRISTMAS TREE	BOX
	
DIMENSIONS OF CHRISTMAS TREE: HEIGHT = 2 000 cm MAXIMUM WIDTH = 1,2 m	

Use the information above to answer the questions that follow.

1.1.1 Convert the maximum width of the tree to mm. (2)

1.1.2 The box to package the tree is 20 cm longer than the height of the tree. Calculate the length of the box. (2)

1.1.3 Which one of the definitions below best describe the *volume* of a box?

	Definitions
A	The amount of space within the box.
B	The line going around the face of one of the sides of the box.
C	The total space taken up by a flat (2-D) shape or side of the box.

(2)

1.1.4 Which one of the following formulae can be used to calculate the area of one of the sides of a box?

A: Area = length × width × height
B: Area = length + width
C. Area = 2 × (length + width)
D. Area = length × width (2)

1.1.5 Joan decorates the tree with 28 balls of different colours. She uses 8 silver balls, 6 green balls, 5 gold balls and 9 red balls. Determine the probability of randomly selecting a red ball from all the balls?

(2)

1.2 Thandile uses the map of South Africa on **ANNEXURE A** to plan her trips between different national parks.

Note: Coast means "at the seaside".

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

1.2.1 Give the grid reference for Bloemfontein. (2)

1.2.2 Is the following statement true or false?

There is an airport at East London. (2)

1.2.3 Explain the meaning of the scale found on the map. (2)

1.2.4 Name two cities in the Eastern Cape that appear on the map which are at the coast. (2)

1.2.5 What is the probability of finding a national park in KwaZulu Natal?

(2)
[20]

QUESTION 2

2.1 Joan stays in Colesburg in the Northern Cape province. She regularly travels to Beaufort West in the Western Cape. She also visits her mother regularly in Middelburg. A map of the Northern Cape is shown on **ANNEXURE B.**

Use **ANNEXURE B** and the information above to answer the following questions:

2.1.1 Which national road will Joan use if she travels from Colesberg to Beaufort West via Hanover? (2)

2.1.2 In which general direction is Beaufort West from Colesburg? (2)

2.1.3 Identify the type of scale shown on the map. (2)

2.1.4 In which province is Middelburg? (2)

2.1.5 Joan claims that the distance as the crow flies (direct) between Beaufort West and Colesburg is more than 300 km. Is Joan correct? Use the scale provided and accurate measurement to verify your answer. (6)

2.2 Joan will be taking an office chair to Colesburg. To make transportation easier, the chair is packaged in a box and will be assembled when she arrives in Colesburg. Assembly instructions for the chair are given on **ANNEXURE C.**

Use **ANNEXURE C** to answer the following questions.

2.2.1 Identify a part on the parts list that comes in quantities of five. Also, state the function of this part(s) once the chair is assembled. (4)

2.2.2 Write down the number of different parts shown on the diagram. (2)

2.2.3 Match each of the following descriptions A – C with the correct steps as shown on **ANNEXURE C.**

A. Fitting the seat marked A onto the base.
B. Insert B, the seat post into C, the base and push D into the ends of C.
C. Put the chair upsright and check that all parts are well mounted.

(3)

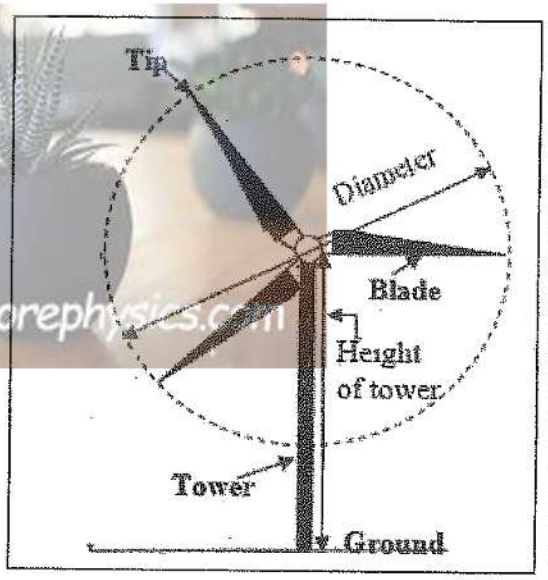
[23]

QUESTION 3

3.1 A wind turbine is a source of generating electricity using rotating blades as shown in the picture and diagram below. Thabo is looking at the possibility of installing such a wind turbine on his farm.

PICTURE OF WIND TURBINE (as seen from the ground)

DIAGRAM OF WIND TURBINE



The wind turbine is mounted on the top of a high tower.
The DIAMETER of the circle formed when the blades rotate is 62 m.

Use the information above to answer the questions that follow.

3.1.1 Define the term diameter as used in the given context. (2)

3.1.2 The diameter of the circle formed by the blades when rotating is 124% bigger than the height of the tower. Determine the height of the tower. (4)

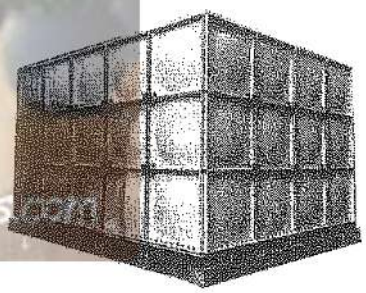
3.1.3 Thabo states that the maximum height from the ground to the tip of a blade will be 81m. Is Thabo correct? Do calculations to verify your answer. (5)

3.1.4 Calculate the area (in m^2) of the circle made by the blades when they rotate.

Area $= \pi \times$ **(radius)**^{2}, using $\pi = 3{,}142$ (3)

3.2 Thabo needs water on his farm. He would like to install some tanks for the purpose of storing water. Thabo calculates that he needs to store at least 12 000 litres of water. He can choose between two tanks:

Below the two tanks are shown: a cylindrical and rectangular tank with their dimensions.

CYLINDRICAL TANK		RECTANGULAR TANK	
			
Radius	0,71 m	Length	1,21 m
Height	1,45 m	Width	1,10 m
		Height	12,0 m

NB: $1m^3 = 1000l$
Use $\pi = 3,142$

Use the information above to answer the following questions:

3.2.1 Which tank can hold more water? Show your calculations in terms of litres.

You may use the following formulae:
Volume of a cylinder = π × radius² × height
Volume of rectangular block = length × breadth × height (7)

3.2.2 If Thabo decides to install the tank which can hold more water, how many tanks must he install? (3)

3.2.3 Give one use for stored water on a farm. (2)

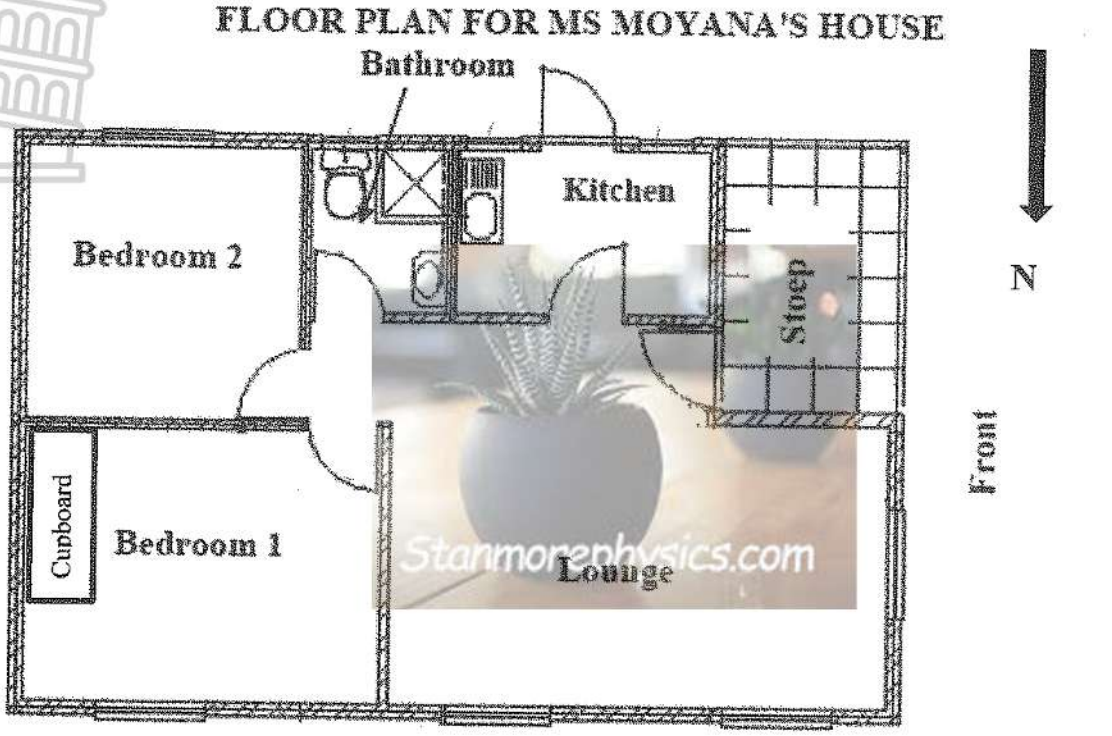
3.3 The temperature on a specific day on the farm is 32°C. Thabo states that this is equivalent to 88,6°F. Is Thabo correct? Do calculations to verify your answer. You may use the following formula:

$$°F = \frac{9}{5}°C + 32$$

(3)
[29]

QUESTION 4

The following is a floor plan of Ms. Moyana's house:



Scale: 1: 80

Note: The stoep does not form part of the inside of the house.

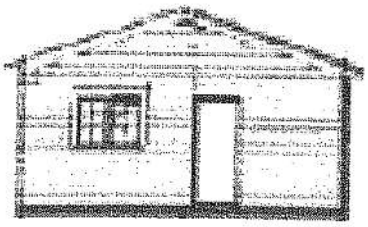
Use the information above to answer the following questions:

4.1 How many windows are at the back of the house? (2)

4.2 Write down the ratio of the interior doors to the exterior doors in simplest form. (3)

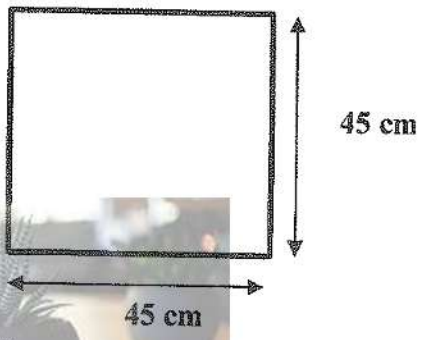
4.3 When Ms Moyana enters bedroom 1, on which side will the cupboard be? (2)

4.4 Identify the following elevation of the house:



(2)

4.5 Ms Moyana wants to put tiles into bedroom 2. The total area for bedroom 2 is 7,1424 m^2. The tile that Ms Moyana wants to use is a square tile as shown below:



Note:

- 10% more tiles will be needed to accommodate cutting and breakage.
- There are 5 tiles in a box.

You may use the following formulae: **Area = side × side**

4.5.1 Determine the number of boxes of tiles that Ms Moyana must buy.

You may use the following formula:

$$\text{Number of tiles} = \frac{\text{Area of the room}}{\text{Area of one tile}}$$

(10)

4.5.2 Calculate the total cost of tiles if one box of tiles cost R169,99? (2)

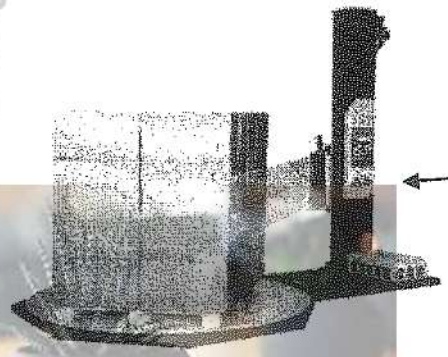
4.5.3 On the box of tiles that Ms Moyana buys, the following notice is found: .

"Non slippery tiles".

Give one reason why it is a good idea to use non-slippery tiles. (2)

4.6 Ms Moyana's son, Jonathan works at a warehouse for pocket money. He operates the machine that wraps stacked boxes.

Note: The machine takes 4 minutes to wrap 24 boxes.



Machine that Jonathan operates.

Source: http://m.indiamart.com

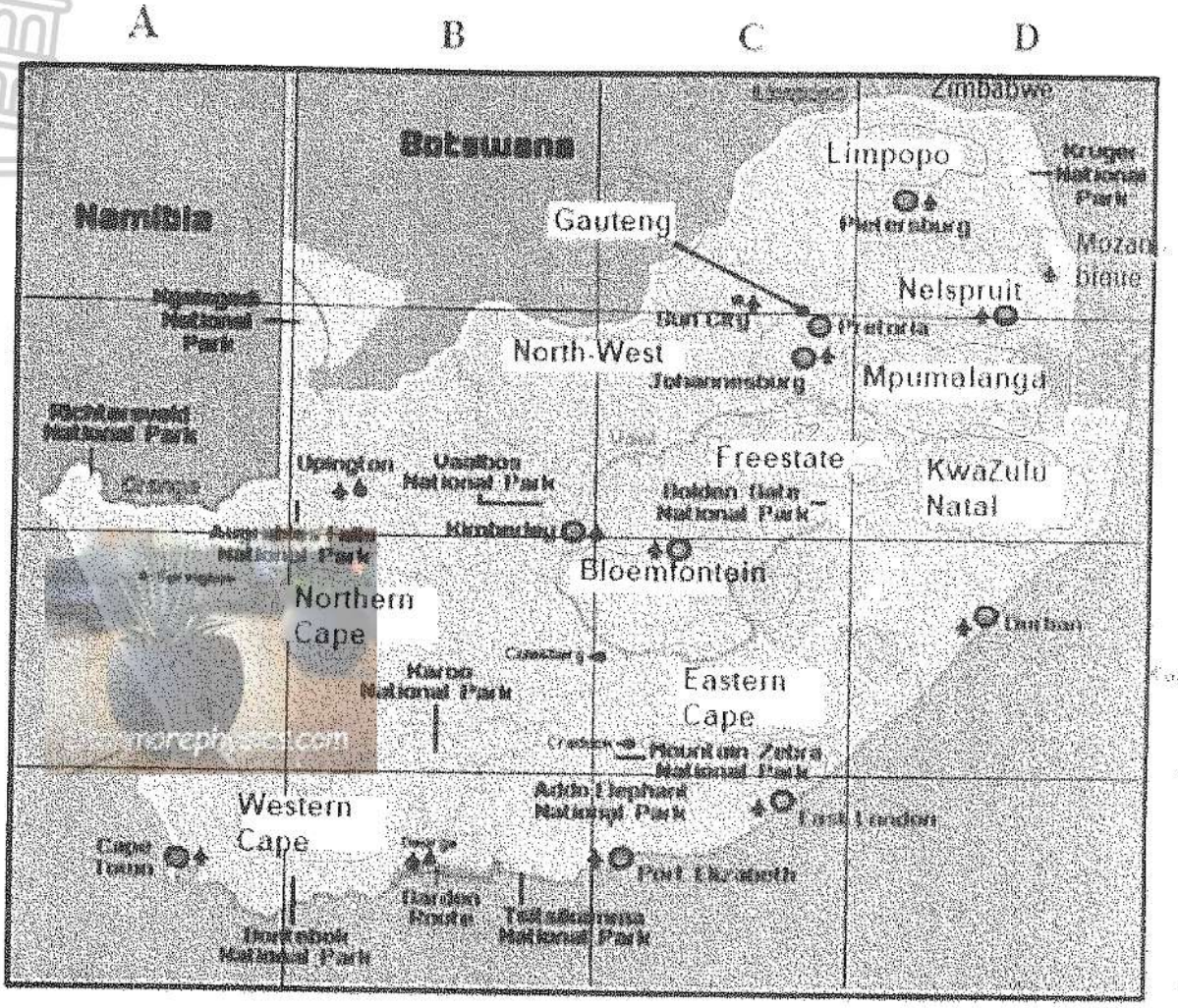
4.6.1 Jonathan needs to wrap 480 boxes using the machine. How long will it take to wrap 480 boxes? Give your answer in hours and minutes. (3)

4.6.2 Determine the time he will finish wrapping ALL boxes if he starts at 08:15. (2)
[28]

TOTAAL: 100

ANNEXURE A

Question 1.2



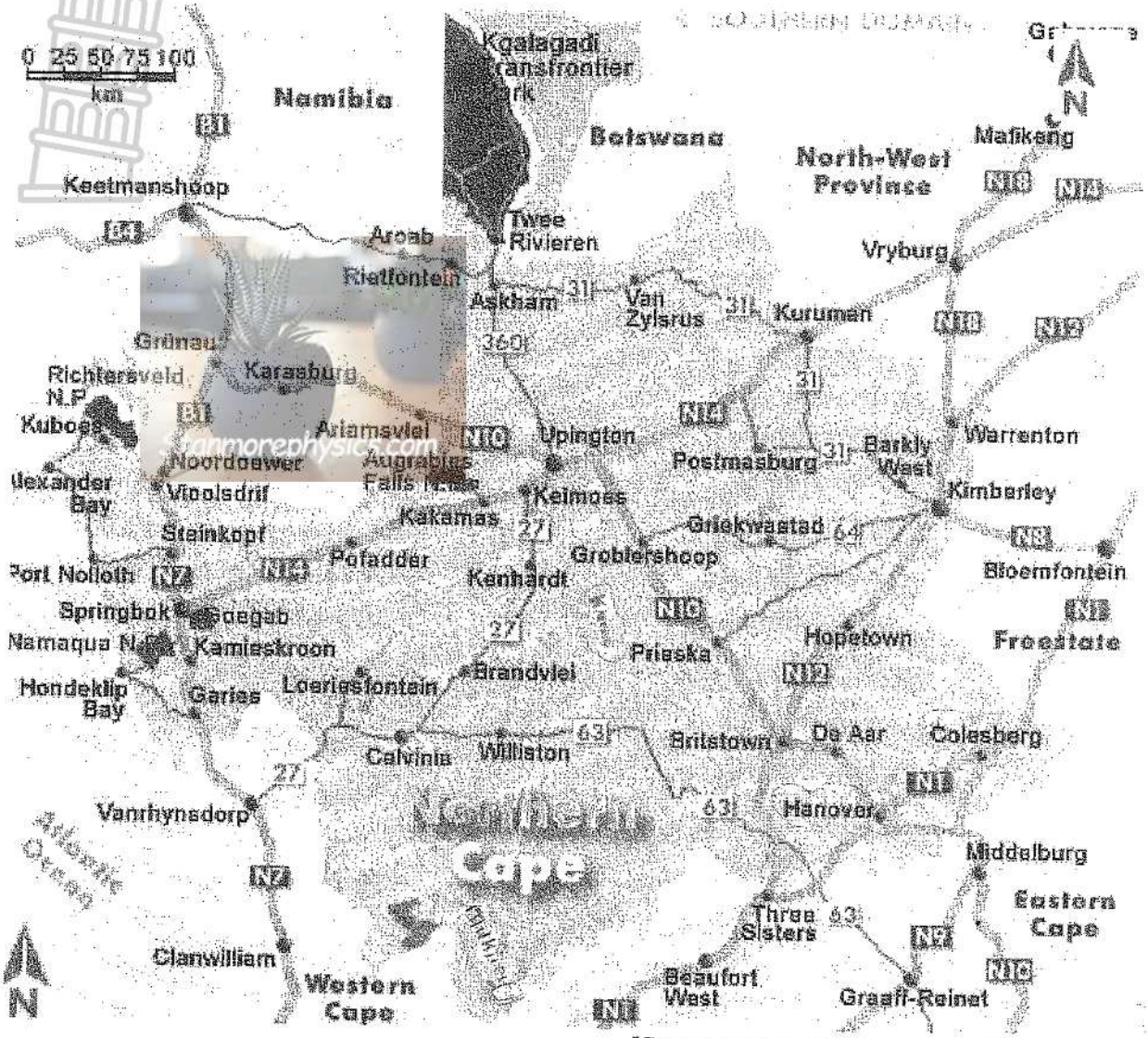
1: 1000 000

Key:

Airport:

ANNEXURE B

Question 2



[Source: www.sa-venues.com]]

ANNEXURE C

QUESTION 2.2