education

Department of Education
FREE STATE PROVINCE

# MID-YEAR EXAMINATION

## GRADE 12

# MATHEMATICAL LITERACY P2




## JUNE 2023

## MARKS: 100

## TIME: 2 HOURS

**This question paper consists of 09 pages and an addendum with 3 ANNEXURES.**

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## INSTRUCTIONS AND INFORMATION

1. This question paper consists of FOUR questions. Answer ALL the questions.

2. The ANNEXURE pages are provided in the ADDENDUM. Use it to answer the relevant questions.
   - ANNEXURE A is for QUESTION 1.1
   - ANNEXURE B is for QUESTION 2.
   - ANNEXURE C is for QUESTION 4.

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.

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## QUESTION 1

1.1 Reamorata is a student at Nelson Mandela Metropolitan University (NMMU) Vista Campus in Port Elizabeth. ANNEXURE A shows a map/plan of the layout of the campus where he attends classes.

Use ANNEXURE A to answer the questions that follow.

1.1.1 Identify the type of map/plan used and write it down. (2)

1.1.2 Give one purpose of the building marked as number 15. (2)

1.1.3 Name the province where Port Elizabeth is situated. (2)

1.1.4 What symbol is used to show parking on the campus? (2)

1.1.5 How many lecture halls are shown on the map/plan. (2)

1.2 In picture 1 and picture 2 two clocks are shown.

| PICTURE 1 | PICTURE 2 |
|---|---|
|  |  |

Use the information above to answer the questions that follow.

1.2.1 Name the two time formats used to display the time on the clocks. (2)

1.2.2 Write down, in words, the time displayed on the clock in picture 2. (2)

1.2.3 Convert 13 hours 57 minutes to hours. (2)

1.3 The picture below shows a standard 330mℓ can of cooldrink with dimensions used in South Africa.

| PICTURE OF A 330 mℓ CAN | DIMENSIONS OF THE CAN |
|---|---|
|  | Diameter = 6,6 cm<br><br>Height = 11,5 cm<br><br>$\pi$ = 3,142 |

Use the information above to answer the questions that follow.

1.3.1 Define the term diameter according to the given context. (2)

1.3.2 State which formulae (A, B or C) below can be used to calculate the circumference of the circular bottom of the given can.

A. Circumference = $\pi \times \text{radius}^2$

B. Circumference = $2 \times \pi \times \text{radius}$

C. Circumference = $2\times \pi \times \text{radius}^2$ (2)

**[20]**

## QUESTION 2

Study the map of South Africa on **ANNEXURE B** and answer the questions that follow.

2.1 Name the two towns on the Garden Route nearest to Cape town. (4)

2.2 Determine the probability of finding a coastal town in the North West province. Write your answer as a percentage. (2)

2.3 State the number of provinces in South Africa. (2)

2.4 Identify the scale that is used on the map. (2)

2.5 Jenny states that the most eastern town in the Free State on the map is Bethlehem. Is Jenny correct? Give a reason for your answer. (3)

2.6 Write down the given scale on the map of South Africa in the form 1: ……. (5)

2.7 Give the general direction of Bloemfontein to Cape Town. (2)

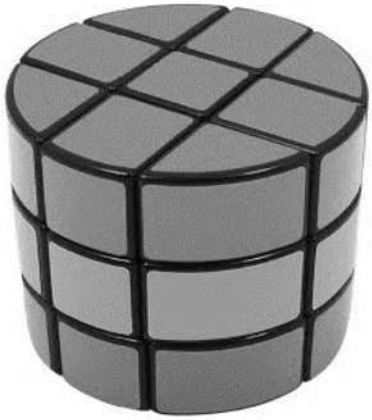
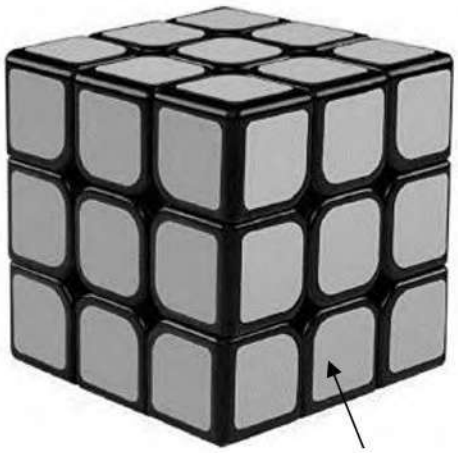
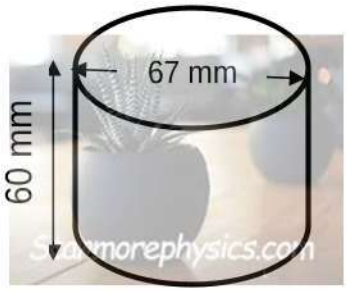
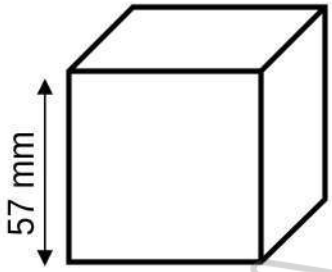
2.8 Identify a neighbouring country of South Africa where all the borders are provinces of South Africa. (2)

**[22]**

## QUESTION 3

3.1 Jessamé's mom Ms Kasselman bought her two Rubik's puzzles. The one Rubik's puzzle has a cylindrical shape while the other one has a cubical shape.

The dimensions and the shape of the two Rubik's puzzles are shown below.

| RUBIK'S CYLINDER | RUBIK'S CUBE |
|---|---|
|  |   |
| **Dimensions of Rubik's cylinder** | **Dimensions of Rubik's cube** |
|   **Diameter = 67 mm**<br>**Height = 60mm** |   **Side = 57 mm** |

[Source: www.google.com]

Use the information above to answer the questions that follow.

3.1.1 On each of the square faces of the Rubik's cube are 9 coloured stickers. How many stickers are on the whole Rubik's cube? (2)

3.1.2 Calculate the perimeter of the square face of Rubik's cube.

You may use this formula: **Perimeter = Side + Side + Side + Side**

(2)

3.1.3 Ms Kasselman states that the volume of the Rubik's cylinder is 211,56657 $cm^3$. Verify, showing ALL calculations, whether her statement is CORRECT.

You may use this formula:
**Volume of the cylinder = 3,142 × radius² × height** (5)

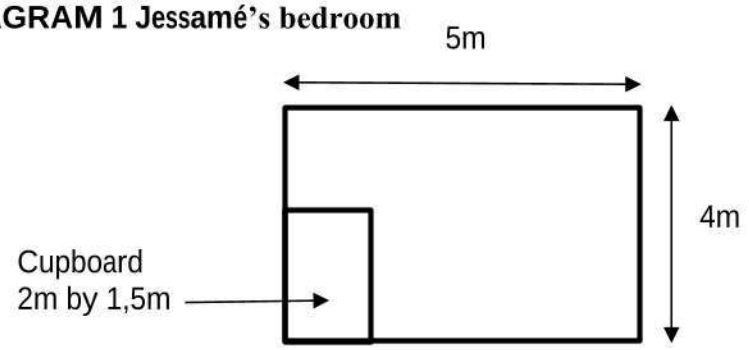
3.1.4 Calculate the total surface area of the Rubik's cube.

You may use this formula: **Total surface area of the cube = 6 (Side × Side)** (3)

3.2 Ms Kasselman decided to take out the carpet in Jessamé's bedroom and replace it with ceramic tiles. The room has an immovable cupboard. The cupboard will not be tiled inside.

The dimensions of Jessamé's bedroom are 4 m by 5 m and for the immovable cupboard it is 2 m by 1,5 m.

**DIAGRAM 1 Jessamé's bedroom**




**Information:**

- She intends using ceramic tiles that are 60 cm by 60 cm.
- There are 4 tiles in one box.
- The price of 1 box of tiles are R199,90.

Use the information above to answer the questions that follow.

3.2.1 Show that the total floor area to be tiled is 17 $m^2$.

You may use: **Area of a rectangle = length × breadth** (4)

3.2.2 Determine how many boxes of tiles Ms Kasselman will need if an extra 10 % of the number of tiles must be added for cutting of tiles and breakages. (9)

3.2.3 Determine the cost to buy the tiles. (2)
**[27]**

## QUESTION 4

4.1 Rethabile studied a strip chart connecting Durban with Port Elizabeth (lately known as Gqeberha).

On ANNEXURE C is a strip chart showing the road distance in kilometres from Durban to Port Elizabeth.

Use ANNEXURE C to answer the questions that follow.

4.1.1 How many National Roads are on the strip chart? (2)

4.1.2 State one difference between a strip chart and a normal road map. (2)

4.1.3 Determine the distance between Port Elizabeth and Pietermaritzburg. (3)

4.1.4 Write down the probability, as a percentage of randomly selecting Addo Elephant NP from the places of interest on the strip chart. (3)

4.1.5 What is the name of the town nearest to the place where the R63 crosses the N6? (2)

4.2 Rethabile is a student at Durban Westville University. She decided to drive from Durban to Port Elizabeth to visit her brother Reamorata.

- On her way Rethabile stopped at Port Shepstone for 30 minutes to stretch her legs.
- Her next stop was at Umtata for 45 min to have lunch.
- Then later she stopped at King William's town for 25 minutes.
- The trip from Durban to Port Elizabeth took her 11 hours 35 minutes in total.

Stanmorephysics.com

Rethabile stated that she did not exceed on average the maximum speed limit of 120km/h on national roads.

Verify, with calculations, whether Rethabile's statement is CORRECT.

You may use this formula: **Distance = speed × time** (8)

4.3 The fuel consumption of Rethabile's car is 7,9 $\ell/100$ km.

Use the information above to answer the questions that follow.

4.3.1 Calculate the total litres of fuel to be used from Durban to Port Elizabeth. Give your answer rounder to one decimal place. (3)

4.3.2 Determine (rounded to the nearest thousand) the cost of petrol to drive from Durban to Nelson Mandela Metropolitan University Vista Campus, if the petrol price is R22,95 per litre. (3)

4.4 Rethabile states that the distance from Durban to Port Shepstone using the N2 is 15 km longer than the distance from Port Shepstone to Port St. Johns using the R61. Is Rethabile correct? Do calculations to verify your answer. (5)

**[31]**

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# ADDENDUM

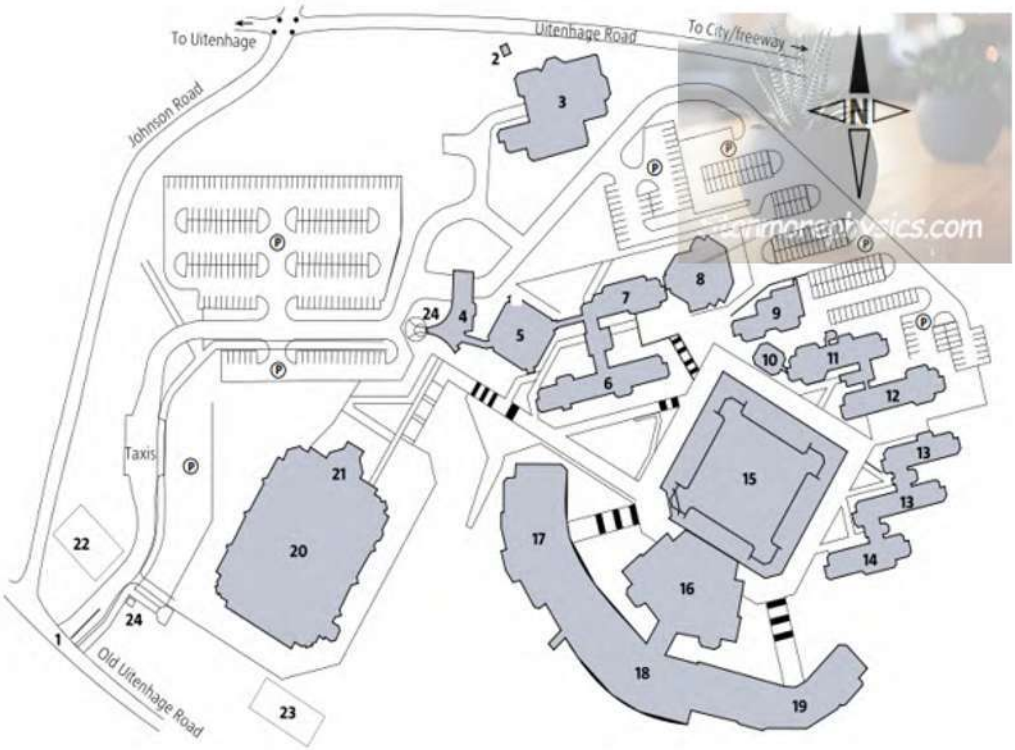
**This addendum consists of 4 pages with 3 annexures.**

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## ANNEXURE A

## QUESTION 1.1

## LAYOUT PLAN OF THE NELSON MANDELA METROPOLITAN UNIVERSITY VISTA CAMPUS IN PORT ELIZABETH (EASTERN CAPE)




**Key**

Ⓟ Parking

1. Entrance
2. Weather Station
3. Technical Services
4. Main entrance & Clinic
5. Registration
6. Academic Offices
7. Administration
8. Conference Hall
9. Psychology centre
10. Chemical store
11. Chemistry
12. Physics
13. Education
14. Geography
15. Library
16. Study centre
17. Lecture Hall A
18. Lecture Hall B
19. Lecture Hall C
20. Yebo Gogo NMMU indoor Centre
21. Cafeteria
22. Cricket Nets
23. Sports Field
24. Security

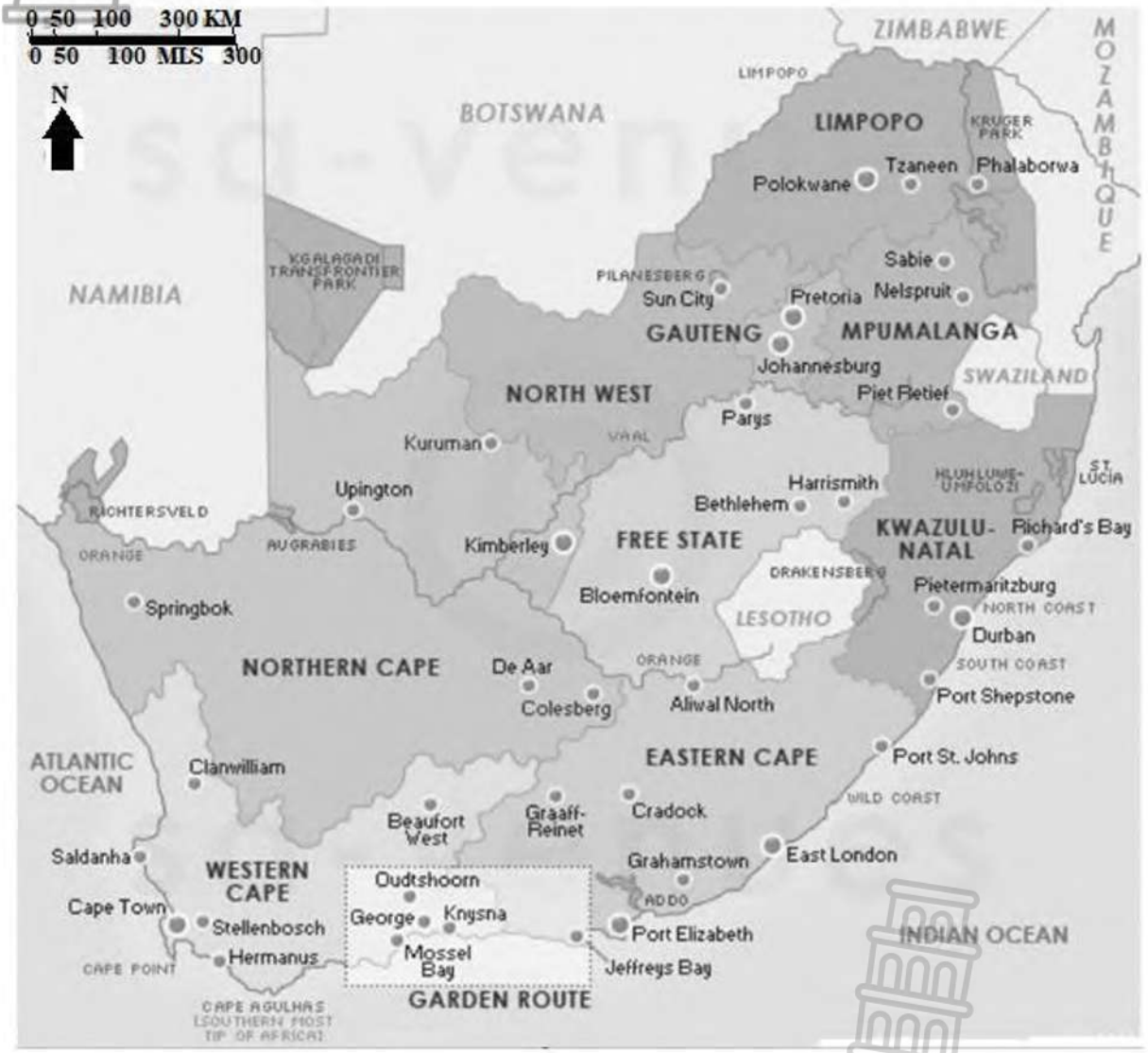
[Adapted from NMMU VISTA Campus map.indd]

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**ANNEXURE B**

**QUESTION 2**

## MAP OF SOUTH AFRICA

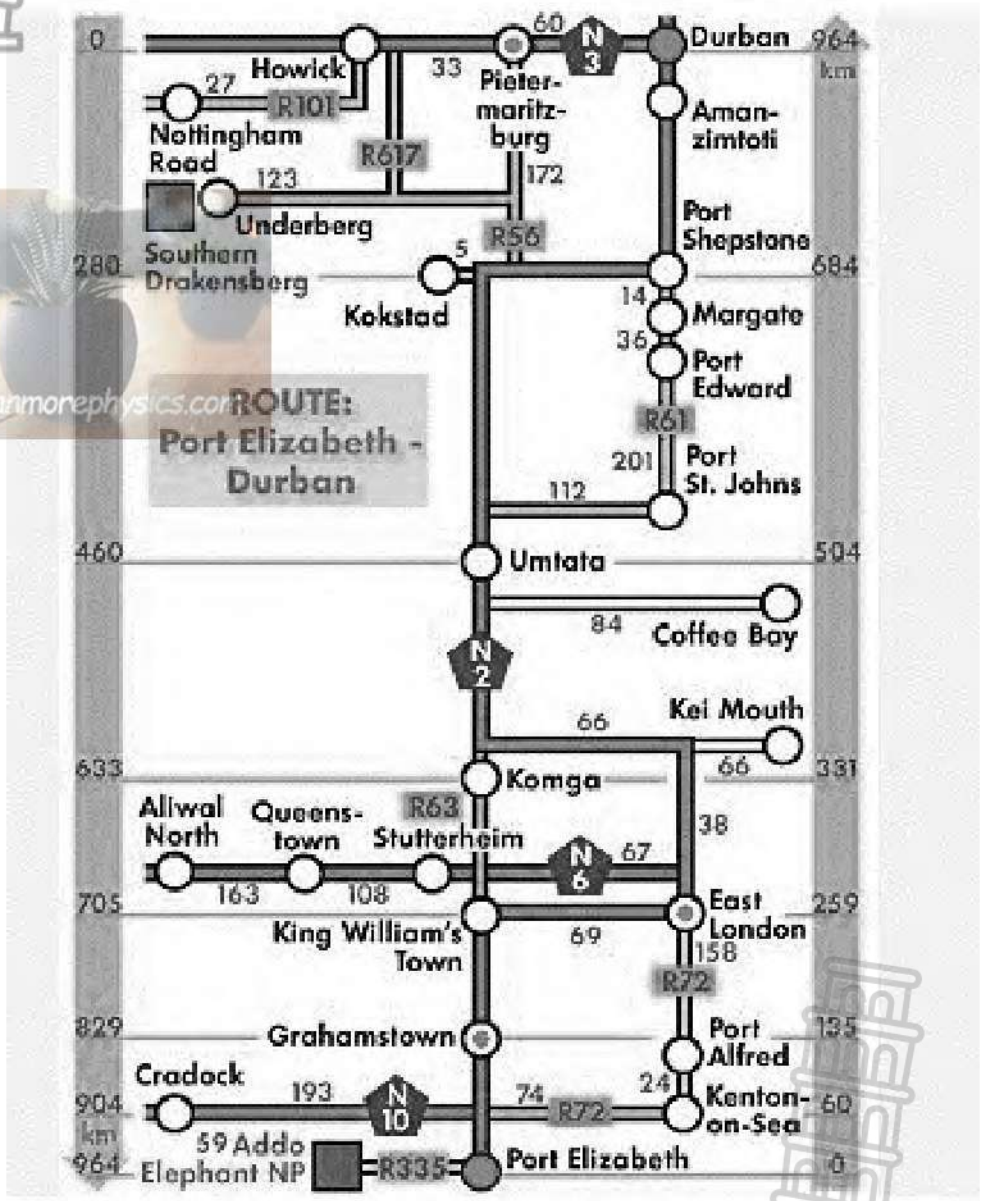



[source: www.sa-venues.com maps]

## ANNEXURE C

## QUESTION 4

**STRIP CHART WITH ROAD DISTANCES IN KILOMETRES (km) FROM DURBAN TO PORT ELIZABETH (GQEBERHA)**




[Source: www.google.com]

**KEY**

| Symbol | | Description |
|---|---|---|
| N | | National road |
| R | | Regional road |
| | | Places of interest |

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