education

Department of Education
FREE STATE PROVINCE

MID-YEAR EXAMINATION

GRADE 12

MATHEMATICAL LITERACY P2

JUNE 2022

MARKS: 100

TIME: 2 HOURS

This question paper consists of 8 pages and an addendum with 2 ANNEXURES.

INSTRUCTIONS AND INFORMATION

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

Grade 12 Mid-year Exam.

QUESTION 1

1.1 To keep his body healthy, Mr Kayzer has joined a team of people who usually jog every day in the morning. He recorded the information below during one of his morning jogs.

	Duration	00:49:36
	Distance	8,71 km
	Average Speed	05:41 min/km

Use information above to answer the following questions:

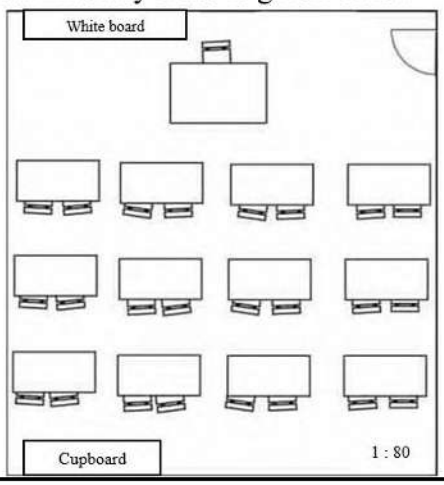
1.1.1 Write down the time that Mr Kayzer started jogging. (2)

1.1.2 Convert the distance of 8,71 km to meters. (2)

1.1.3 Explain the term *average speed* using the context given above. (2)

1.1.4 Identify the name of the regional road that appears on the map. (2)

1.2 Mr Kayzer is a teacher at PT Sanders Combined School. The arrangement of his Mathematical Literacy class is given below



Use the information above to answer the following questions:

1.2.1 Determine the number of learners in Mr Kayzer's class if all the desks are occupied. (2)

1.2.2 Explain the meaning of the scale 1:80. (2)

1.2.3 When entering the classroom, does the door open to the left or to the right? (2)

1.3 Mrs Dyani sells shoes at her shop. Each pair of shoes is packed in a rectangular box shown in the picture below

1.3.1 Write down the longest length of the shoe box. (2)

1.3.2 Which of the following formulae is used to calculate the perimeter of the front face of the shoe box?

A. Perimeter = length × width
B. Perimeter = length + length + width
C. Perimeter = 2 × (Length + Breadth)

(2)

1.3.3 Mrs Dyani calculated the volume of each box and she wrote her answer as 8 160 000 mm^2. Identify which part of her answer is incorrect. (2)

[20]

QUESTION 2

Due to covid-19, the principal of Reikaeletse secondary school, Mr Morweng decides to buy two water tanks in order to comply with the covid-19 regulations.

The tanks are shown below: a cylindrical and rectangular tank with their dimensions. The cylindrical tank will be placed on the circular concrete bed, the diameter of the concrete bed will be 100 mm more than the diameter of the cylindrical tank.

CYLINDRICAL TANK		RECTANGULAR TANK	
			
Diameter	1420 mm	Length	1210 mm
Height	1450 mm	Width	1100 mm
		Height	1200 mm

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

2.1 Determine the radius (in meter) of the cylindrical tank. (3)

2.2 Calculate the circumference of the concrete bed in meter.

You may use the formula:
Circumference = 2 × π × radius (5)

2.3 The SGB decides to paint the rectangular tank to avoid rusting. Determine the surface area (SA) in m^2 that need to be painted.

You may use the formula:
SA = 2(length × width) + 2(length × height) + 2(width × height) (5)

2.4 If 5 litres of paint cover an area of 13 m^2 and the rectangular tank needs 3 coats of painting, calculate the number of litres of paint needed to paint the tank as well as the number of 5 litre tins needed. (5)

2.5 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 (6)

2.6 For installation of the cylindrical water tank, Mr Morweng received the following quotation:

Labour: R200 basic fee plus R150 per hour.
Building material for concrete bed is R300.

Mr Morweng claim that the school will spend more than R1000 for the installation. Verify with calculations if statement is valid. The installer worked for three hours. (4)

2.7 Give two advantages of installing a water tank at a school. (4)

2.8 Determine the probability, as a percentage, of randomly picking a rectangular water tank from the tanks mentioned above. (3)

[35]

QUESTION 3

3 Mrs Heins and her husband are residing in Prince Albert. They plan to visit Cape Town for a week. On **ANNEXURE A** is the map that they use to plan their journey.

Use **ANNEXURE A** to answer the questions that follow.

3.1 Identify the type of a map that is indicated on ANNEXURE A. (2)

3.2 How many regional (provincial) roads are shown on the map? (2)

3.3 Write down the probability (as a common fraction) of randomly selecting Tsitsikamma National Park from the National Parks on a map? (2)

3.4 Calculate the total distance if the family travel via Ladismith and Riversdale, then follow the N2. The family also pick up one relative in Hermanus. (3)

3.5 The family is travelling at an average speed of 100 km/h, if they left Prince Albert at 13:15, what time will the family arrive in Cape Town, after picking a family member in Hermanus. The total stopping time is 30 minutes.

The following formula may be used:

$$\textbf{Speed} = \frac{\textbf{Distance}}{\textbf{time}}$$ (5)

3.6 The distance from George to Oudtshoorn on the map is bigger than the distance from Oudtshoorn to Prince Albert but the kilometres that are indicated on the map from George to Oudtshoorn are smaller than kilometres from Oudtshoorn to Prince Albert. Give a reason for this. (2)

3.7 Write down all the roads that the family will use to travel on from their hometown following the route described in **Question 3.4** to Cape Town. (4)

3.8 The petrol consumption of Mrs Heins's car is 5,9 ℓ per 100 km. Mrs Heins claims that for a single trip, it will cost her less than R800 for fuel if petrol cost is R19,79/ℓ.

Verify, with calculations whether her statement is valid. (5)

[25]

QUESTION 4

4.1 Mr Ntema is an educator who resides in Winburg. He must attend a Mathematical Literacy workshop at Trompsburg. He uses a map on **ANNEXURE B** to determine how far he needs to travel.

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

4.1.1 Give the name the province where Mr Ntema resides. (2)

4.1.2 Write the bar scale measurements of the map in the form 1:….. (4)

4.1.3 Use the answer in **Question 4.1.2** to calculate the actual distance (in km) between Winburg and Trompsburg if the distance measured on the map is 6,5 cm. (3)

4.2 Mr Ntema is a rugby player and he is concerned about his weight. He weighs himself before joining a gymnasium and calculates that his BMI is 25,1 kg/m^2. He has a height of 175 cm. The table below shows the weight status versus the BMI range.

Table 1: WEIGHT STATUS ACCORDING TO BMI

BMI Range (Kg/m^2)	WEIGHT STATUS
Less than 18,5	Underweight
From 18,5 – 24,9	Normal weight
From 25 - 30	Overweight
More than 30	Obese

Refer to the table provided above and answer the questions that follow.

4.2.1 Write the acronym **BMI** in full. (2)

4.2.2 Use the information above to calculate his current weight (mass).

You may use the formula below:

$$\text{BMI} = \frac{\textbf{mass in kilograms}}{(\textbf{height in metres})^2}$$ (5)

4.2.3 Write down Mr Ntema's current weight status. (2)

4.2.4 Provide an advice to him on how to improve his BMI status. (2)

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ADDENDUM

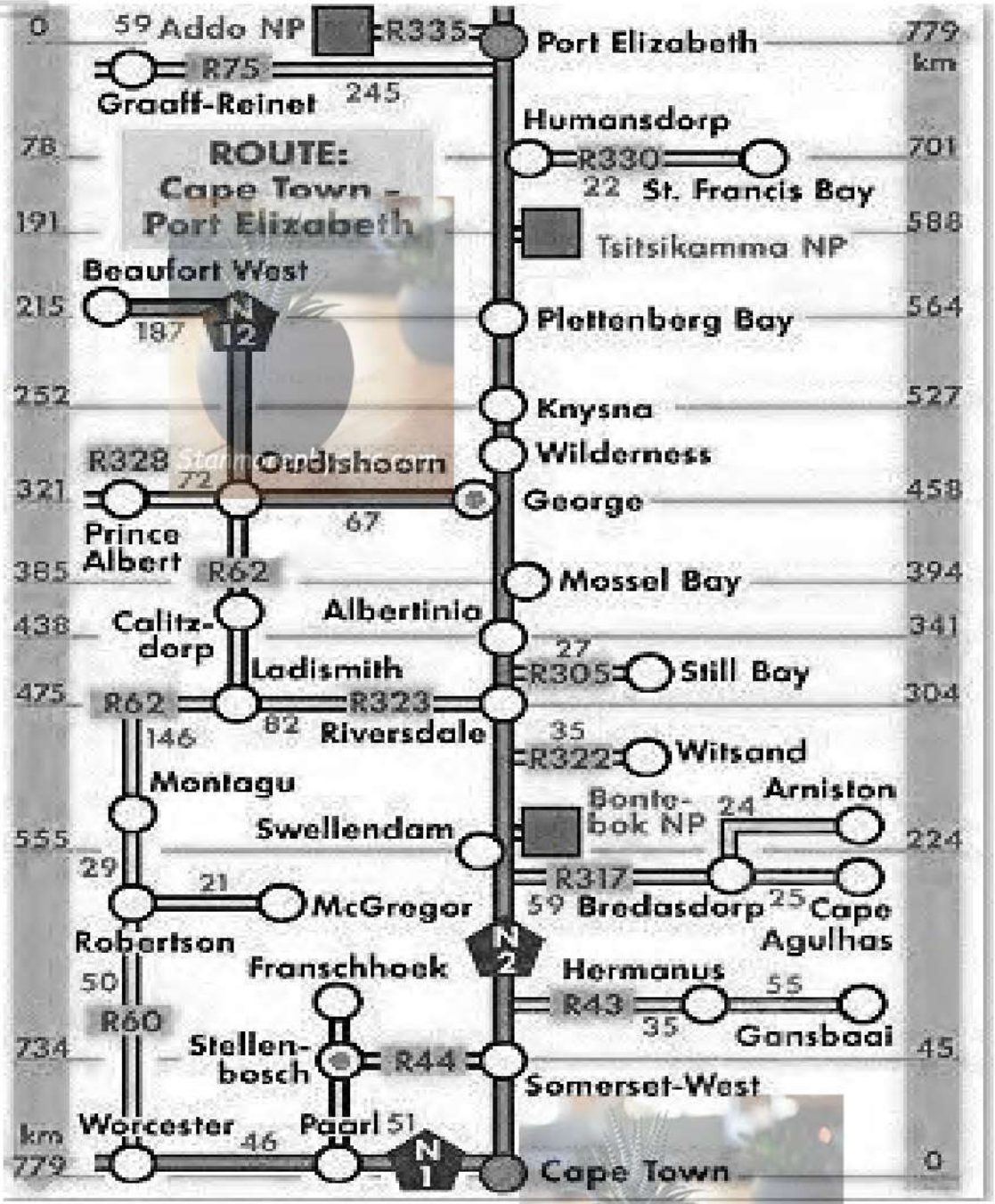
JUNE 2022

This addendum consists of 3 pages with 2 ANNEXURES.

ANNEXURE A

QUESTION 3

THE MAP USED TO PLAN THE TRIP FROM PRINCE ALBERT TO CAPE TOWN



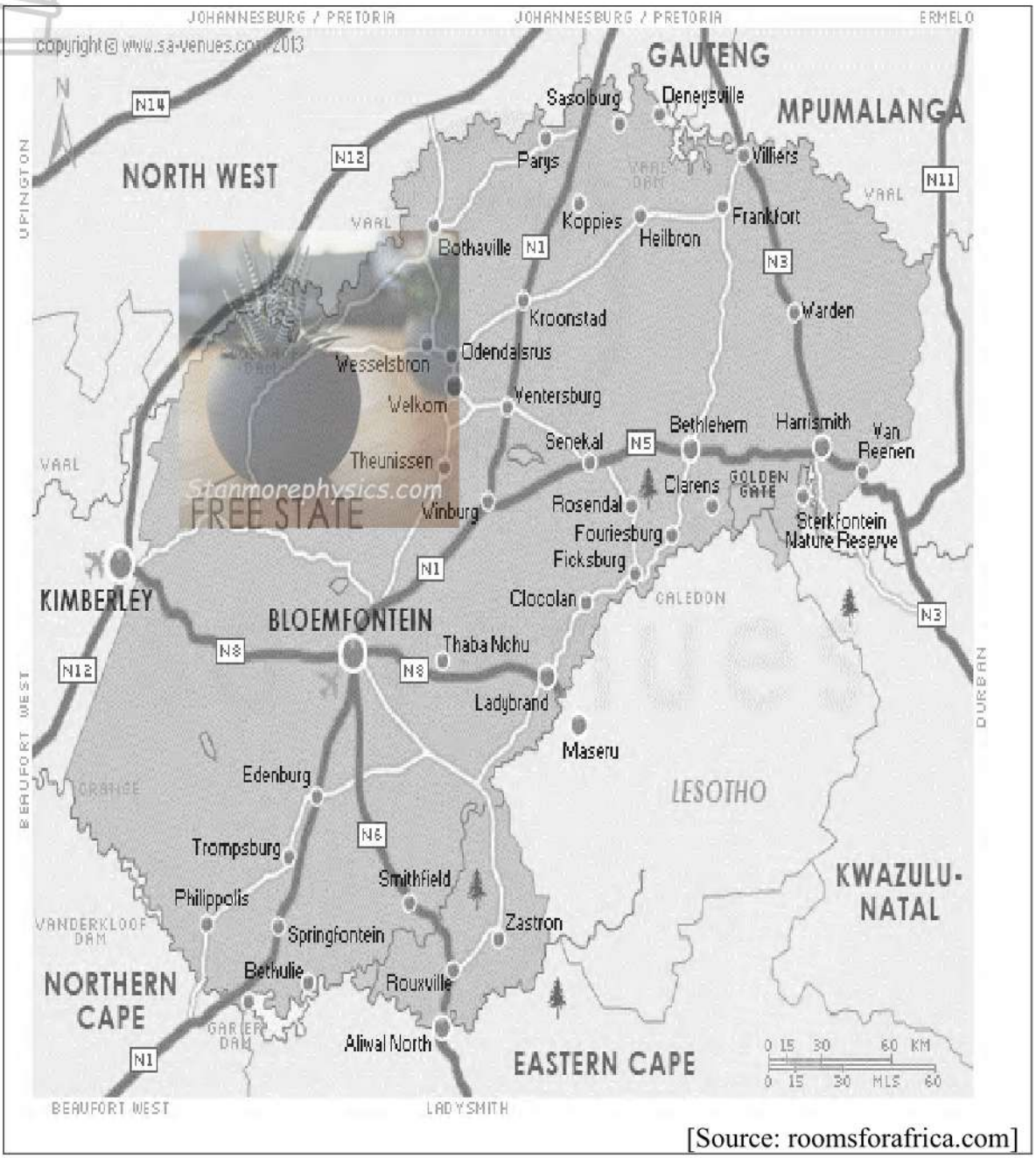
[Source: docplayer.net]

NOTE: NP is a National Park

ANNEXURE B

QUESTION 4.1

PARTIAL MAP OF SOUTH AFRICA



[Source: roomsforafrica.com]