education

Department of
Education
FREE STATE PROVINCE

PREPARATORY EXAMINATION

GRADE 12

MATHEMATICAL LITERACY P2

SEPTEMBER 2025

MARKS: 150

TIME: 3 HOURS

This question paper consists of 11 pages and a 17-page SPECIAL ANSWER BOOK.

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INSTRUCTIONS AND INFORMATION

1. This question paper consists of FIVE questions.
2. Answer ALL the questions in the SPECIAL ANSWER BOOK provided.
3. Number the answers correctly according to the numbering system used in this question paper.
4. You may use an approved calculator (non-programmable and non-graphical) 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. Maps and diagrams are NOT drawn to scale unless stated otherwise.
9. Write neatly and legibly.

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QUESTION 1

1.1 Below is a list of explanations or definitions of concepts used in Mathematical Literacy.

TABLE 1: EXPLANATIONS AND DEFINITIONS OF CONCEPTS

A	The amount of space occupied by a 3-D object.
B	The base unit of mass in the metric system is equal to 100 grams.
C	A plan that shows the length and width of an object.
D	The amount of matter or material in an object.
E	The length of the space between two places or points.
F	The total length of the boundary that encloses a geometric shape.
G	The base unit of mass in the metric system is equal to 1 000 grams.
H	The maximum amount that a container can hold.

Use the information above to write down the letter of the explanation or definition (A to H) of EACH of the following concepts:

1.1.1 Two-dimensional plan (2)

1.1.2 Capacity (2)

1.1.3 Kilogram (2)

1.1.4 Mass (2)

1.1.5 Distance (2)

1.2 Campuskey is one of the accommodations used by some students who study at the University of the Free State (UFS). ANNEXURE A in the ANSWER BOOK shows the plan for the two types of rooms found at this accommodation.

Use ANNEXURE A to answer the questions that follow.

1.2.1 Explain what 22 m^2 written next to type C/D means. (2)

1.2.2 Write down the probability, as a percentage, of getting a bathtub in one of the bathrooms. (2)

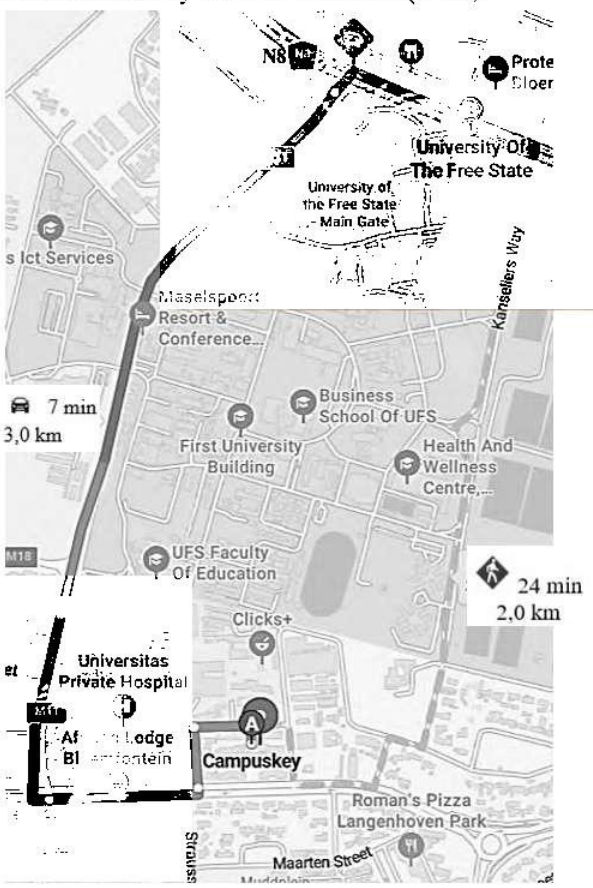
1.2.3 Name the type of plan shown on ANNEXURE A. (2)

1.2.4 Jason's room is number twenty-five on the third floor. Write down the number appearing on his front door. (2)

1.2.5 Write down ONE difference between the two rooms shown in ANNEXURE A. (2)

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1.3 The map below shows the location of the Campuskey student accommodation and the University of the Free State (UFS).



KEY

	Driving distance/time to UFS
	Walking distance/time to UFS

[Source:www.bing.com]

Use the map above to answer the questions that follow.

1.3.1 Convert the walking distance from the student accommodation to the university into meters. (2)

1.3.2 State whether the statement below is TRUE or FALSE.

The road passing by the university through point B is a national road. (2)

1.3.3 Mofenyi's last class ended at 07:25 in the evening. He walked back to the student accommodation and arrived at 07:49.

Write down his arrival time in a 24-hour format. (2)

1.3.4 Calculate how many more minutes a person will take to walk from Campuskey to the university than someone who drives. (2)

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QUESTION 2

2.1 Pulane and her family planned a trip to Lydenrust Guest Farm near Lydenburg. They will travel from Johannesburg to meet other family members at Machadodorp, and from there, they will continue to their destination. ANNEXURE B in the ANSWER BOOK shows the route they will take to the guest farm.

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

2.1.1 Write down the number of provinces that can be seen on the map. (2)

2.1.2 Other family members will travel from the first town situated in the north-easterly direction from Machadodorp along the N4. Write down the name of this town. (2)

2.1.3 The distance from Machadodorp to the T-junction next to Bambi is 28 km. The family will take the R36 from the T-junction to the farm's turnoff. Calculate the distance from Machadodorp to the guest farm. (3)

2.1.4 Write down the name of the toll plaza along the N4 on the map. (2)

2.1.5 Write down the TWO provincial roads they will be travelling on to get to the guest farm. (2)

2.2 The farm owner has four houses that he uses to accommodate guests. The plan for one of the houses is shown in ANNEXURE C in the ANSWER BOOK.

Use the plan shown in ANNEXURE C to answer the following questions.

2.2.1 Write down the number of windows shown on the northern side of the house. (2)

2.2.2 One of the guests claimed that both bedrooms would receive sun in the morning. Is the claim true or false? (2)

2.2.3 Use the actual length shown on the map to determine the scale of the plan in the format 1 : ...
Round your answer to the nearest whole number. (4)

2.2.4 Pulane states that this is an open-plan design. Explain why she is correct. (2)

2.2.5 Possible elevation plans for the house are also shown in ANNEXURE C in the ANSWER BOOK.

(a) Explain the term *elevation plan.* (2)

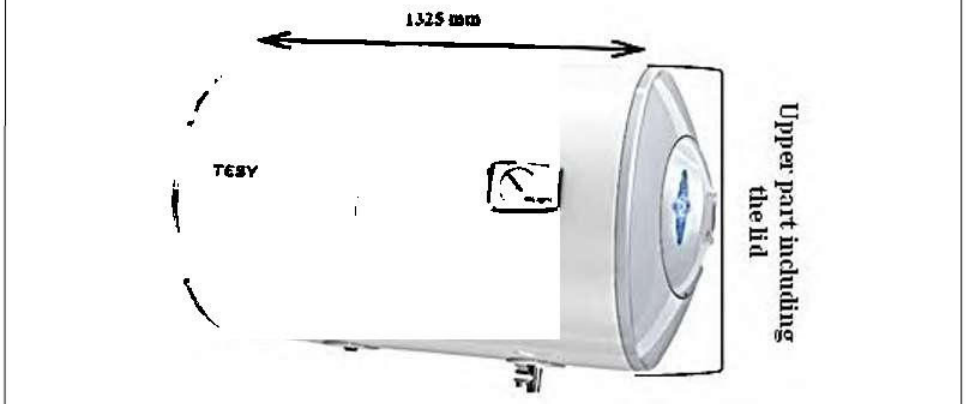
(b) The elevations are indicated using letters A and B. Write down the elevation for letter A. (2)

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QUESTION 3

3.1 Maureen, the owner of Khwezi Guest House, installed an electric geyser to save electricity. The horizontal electric geyser is shown in the picture below.

ELECTRIC HOT GEYSER (CYLINDER)



[Source: modernheat.co.za]

INFORMATION

- All dimensions shown are outer measurements
- The steel used to make the cylinder is 4 mm thick all around and at the bottom, but not the upper part.
- $1\ m^3 = 1\ 000\ \ell$
- The geyser cylinder can only be filled up to 98% of its capacity.

Use the information above to answer the questions that follow.

3.1.1 Complete the sentence below.

A … is an instrument used to measure the temperature of the water. (2)

3.1.2 The diameter of the cylinder, including the steel used to make it is 440 mm. Calculate the inner diameter of the cylinder. (2)

3.1.3 One of the employees at the guest house filled the cylinder up to 185 ℓ and claimed it was full as per the requirements. Show, through calculations, whether his claim is correct.

You may use the formula:

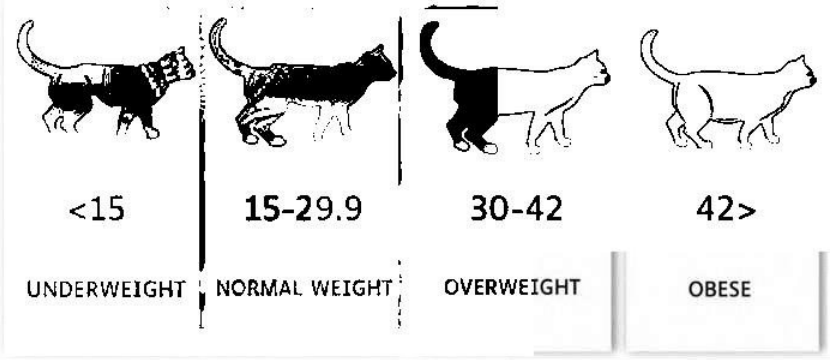
Volume of a cylinder = 3,142 × (radius)^2 × height (9)

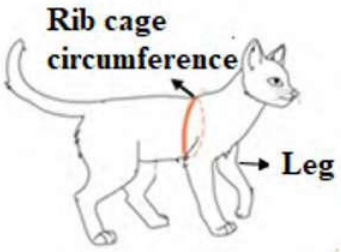
3.1.4 Tourists from the United States of America, accommodated at the Khwezi Guest House, told Maureen that she should keep the geyser's temperature at 140° F to save electricity. Determine the temperature in degrees Celsius.
You may use the formula: **°F – 32° = (1,8 × °C)** (3)

3.2 As for humans, maintaining a healthy weight for our pets is crucial and leads to happy and active lives. The body mass index can be used to determine a cat's weight status.

Below is a cat's BODY MASS INDEX status and the relevant formula for calculation.

WEIGHT STATUS



FORMULA	MEASUREMENTS
Body mass index of a cat = $\frac{\text{circumference}}{0{,}6466} - \frac{\text{leg length}}{0{,}9156} - \text{leg length}$	

NOTE:

- **Circumference = rib cage circumference of a cat**
- **All measurements are in cm**

[Source: worldanimalfoundation.org]

Use the information above to answer the questions that follow.

3.2.1 Explain the term circumference using the context given above. (2)

3.2.2 Write down the acronym for the term *BODY MASS INDEX*. (2)

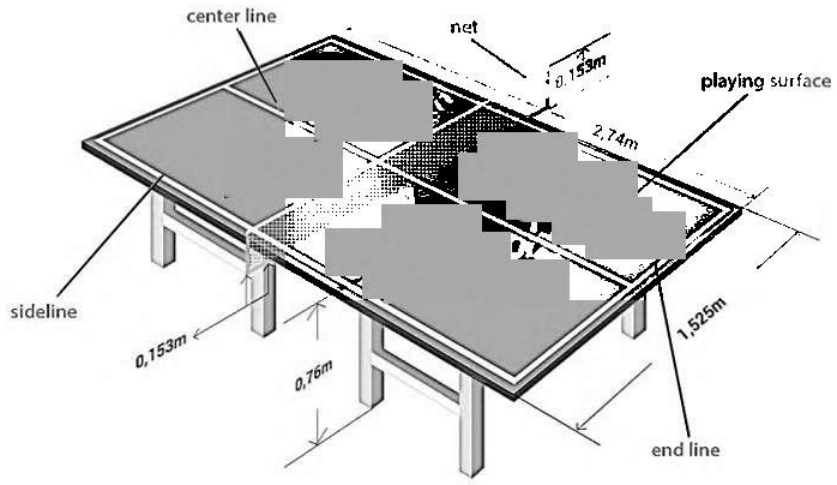
3.2.3 Maureen's cat has a rib cage circumference of 35,2 cm and a leg length of 5,1 cm. Calculate the body mass index of her cat and write down its weight status. (4)

3.2.4 Suggest ONE way for Maureen to help her cat achieve and maintain a healthy normal weight. (2)

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QUESTION 4

4.1 Below is a picture of a table tennis table with all the measurements.



[Source: freesportparks.hu]

NOTE: The net stretches 0,153 m beyond the table's width on both sides.

Use the information above to answer the questions that follow.

4.1.1 Calculate, in m, the perimeter of the table tennis table.

You may use the following formula

Perimeter = 2 × (length + width) (3)

4.1.2 Determine the total length of the net. (3)

4.1.3 Write down the ratio of the height of the table tennis table to the height of the net. Give your answer in the format 1: … (3)

4.1.4 The height of the table tennis table must be reduced by 100 mm for boys aged 7 to 8 to be able to play table tennis. Calculate the new table height in meters (m). (3)

4.1.5 The table below shows the number of boys and girls from one school participating in a table tennis competition.

	Grade 9A	**Grade 9B**	**Grade 9C**
Boys	4	5	3
Girls	3	2	4

(a) Calculate how many more boy players than girl players participated in the competition. (3)

(b) Determine the probability, as a decimal number, of randomly selecting a grade 9 B-girl who participated in the competition. (3)

4.2 The company that manufactures balls to play table tennis uses the containers below to package them for delivery.

CONTAINER 1	CONTAINER 2
	 Diameter of container = 5 inches

NOTE in = inches

Use the information above to answer the questions that follow.

4.2.1 Determine, with calculations, which container has the biggest volume.

Use the following formulae:

Volume of a rectangular prism = length × width × height

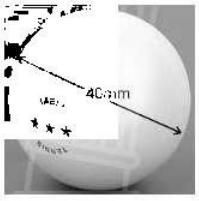
Volume of a cylinder = π × radius^2 × height where **π = 3, 142** (6)

4.2.2 Show that the surface area of CONTAINER 2 is 168,8825 in^2.

You may use the formula:

SA = 2 × π × radius × height + π × radius^2 **where π = 3, 142** (3)

4.2.3 The dimensions of the table tennis ball are given in the picture.



NOTE: 1 inch = 25,4 mm

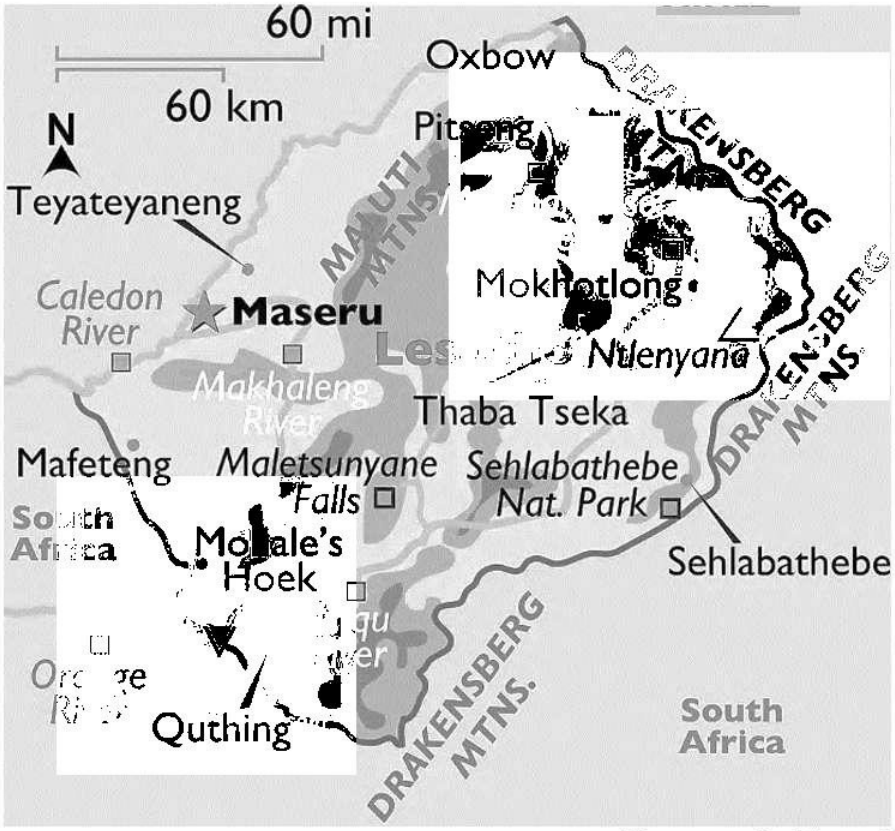
(a) Convert the diameter of the ball to inches. Round your answer to TWO decimal places. (2)

(b) The company manager claimed that CONTAINER 1 will hold more balls than CONTAINER 2. Verify showing ALL calculations whether his statement is CORRECT. (9)

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QUESTION 5

5.1 The map below shows the country surrounded by South Africa (SA). This country has an area of 30 355 km^2 with a series of foothills and plateaus fronting mountains.



[Source: worldatlalas.com]

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

5.1.1 Write down the name of the country surrounded by SA. (2)

5.1.2 Maseru is one of the largest districts which covers 14,1% of the entire country's area. Calculate the area of this district. Round your answer to the nearest whole number. (3)

5.1.3 Write down the name of the scale used to draw the map and give one advantage of this scale. (2)

5.1.4 The total population of Lesotho is 2 125 268. Write down this number in words. (2)

5.1.5 Write down the general direction of Sehlabathebe from Pitseng. (2)

5.1.6 One family travelled from Cape Town in South Africa to visit Lesotho. They left their home at 10:00 a.m. and arrived at Karoo National Park where they stayed overnight. On the second day, they left the Park at 09:00 a.m. and drove 8 hours and 19 minutes to their destination.

(a) Explain the meaning of the abbreviation a.m. (2)

(b) They took 3 breaks of 65 minutes, 45 minutes and 49 minutes each on their way during the second day. Determine their time of arrival on the second day. (6)

5.2 The car they are travelling with has a petrol tank capacity of 80 litres. Fuel prices are shown in the table below.

FUEL COST (in R/ℓ)	
INLAND	**COASTAL**
R22,86	R22,07

Mr Sethole claimed it would cost them 3% more if they filled up the car's tank inland instead of at the coast. Verify whether his claim is valid. (5)

5.3 Lesotho is well known for its beautiful hats and blankets. Lehakwe is a company that manufactures and sells hats and blankets. Mr Maphatsoe, a worker for the company regularly travels from Maseru to Pitseng. The distance between Maseru and Pitseng is 121 km.

LESOTHO HAT	LESOTHO BLANKET
	

NOTE: 2,5% discount is given for a purchase of more than R15 000.

5.3.1 It takes Mr Maphatsoe 2 hours and 20 minutes to travel from Maseru to Pitseng. He stops to rest for 15 min. Calculate the average speed, in km/h, at which Mr Maphatsoe was travelling.

You may use the formula: **Distance = speed × time** (5)

5.3.2 A total payment of R23 887,50 was made for blankets and hats purchased after the discount. Calculate the original amount payable before the discount. (4)

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TOTAL: 150

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