basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

MATHEMATICAL LITERACY P2

NOVEMBER 2025

MARKS: 150

TIME: 3 hours

This question paper consists of 15 pages and a SPECIAL ANSWER BOOK of 17 pages.

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INSTRUCTIONS AND INFORMATION

1. This question paper consists of FIVE questions.
2. Answer ALL the questions ONLY in the SPECIAL ANSWER BOOK provided.
3. You may use an approved calculator (non-programmable and non-graphical), 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. Maps and diagrams are NOT necessarily drawn to scale, unless stated otherwise.
8. Write neatly and legibly.

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QUESTION 1

1.1 TABLE 1 below contains a list of statements and definitions of concepts used in Mathematical Literacy.

TABLE 1: STATEMENTS AND DEFINITIONS OF CONCEPTS

LETTER	DEFINITIONS
A	The three-dimensional space that is occupied by a gas, liquid or solid substance
B	Visual representation of the exterior sides of a building
C	Diagram of a real-life object drawn to scale
D	The region covered by the shape or object
E	The result of speed, in km/h, multiplied by the time, in hours
F	Distance around the outside of a shape
G	Scale where one unit on the map represents 50 000 units in reality
H	Shows the design and dimensions of the inside of a building, viewed from the top
I	The area of all the faces of an object added together
J	The result of speed, in km/h, divided by the time, in hours

Use TABLE 1 above and match an explanation or a definition with EACH of the concepts below. Write only the letter (A–J) next to the question numbers (1.1.1 to 1.1.5), e.g. 1.1.6 K.

1.1.1 Elevation plan (2)

1.1.2 Number scale (2)

1.1.3 Volume (2)

1.1.4 Distance (2)

1.1.5 Perimeter (2)

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1.2 Shown below is the information regarding a South African Airways flight from Cape Town to Johannesburg.

South African Airways
Wednesday 8 January 2025

Distance	**Aircraft**	**Codeshare**
1 278 km	Boeing 737-800	NZ 3120

Flight number: SA332

Maximum number of passengers: 189

Departure	**Arrival**
12:15 Cape Town	14:15 Johannesburg

[Adapted from https://www.flysaa.com]

Use the information above to answer the questions that follow.

1.2.1 State, in words, the arrival time of the flight using the 12-hour format. (2)

1.2.2 Only $33\frac{1}{3}$ % of the maximum number of passengers were on board this flight.

Calculate the number of passengers on this flight. (2)

1.2.3 Write down which ONE of the methods below is the CORRECT method to calculate the speed in km/h of the aircraft.

Write only the letter (A–C) next to the question number (1.2.3).

A $\frac{1\,278}{14:15}$

B $\frac{1\,278}{2}$

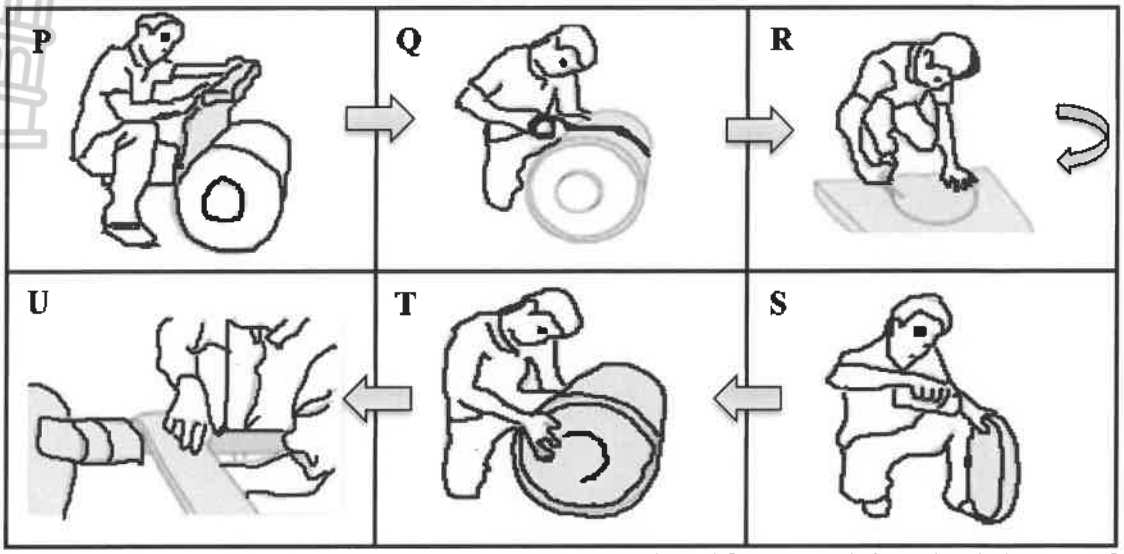
C $\frac{2}{1\,278}$ (2)

1.2.4 State which day of the week was 26 December 2024. (2)

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1.3 One way to save money during winter is to wrap the geyser and waterpipes with a geyser blanket. A geyser blanket is made of aerolite which can easily be cut.

The pictures below show the steps to wrap the geyser in aerolite.



[Adapted from www.21homeinsulations.co.za]

NOTE: Aerolite is insulating material that allows heat to stay in an object.

Use the information above to answer the questions that follow.

1.3.1 Write down the letter (P–U) of the picture that matches EACH of the following statements:

(a) Cut out circles of the aerolite to be placed on both ends of the geyser.

(b) Apply glue to the circular pieces of the aerolite.

(c) The strips of aerolite are wrapped around the pipes.

(d) Roll the aerolite around the lateral surface of the geyser.

(e) Use duct tape to secure the aerolite around the lateral surface.

(f) Attach the circular pieces of the aerolite to the geyser. (6)

1.3.2 Choose ONE of the following formulae that can be used to calculate how much aerolite is needed for the total surface area of the geyser only.

Write only the letter (A–D) next to the question number (1.3.2).

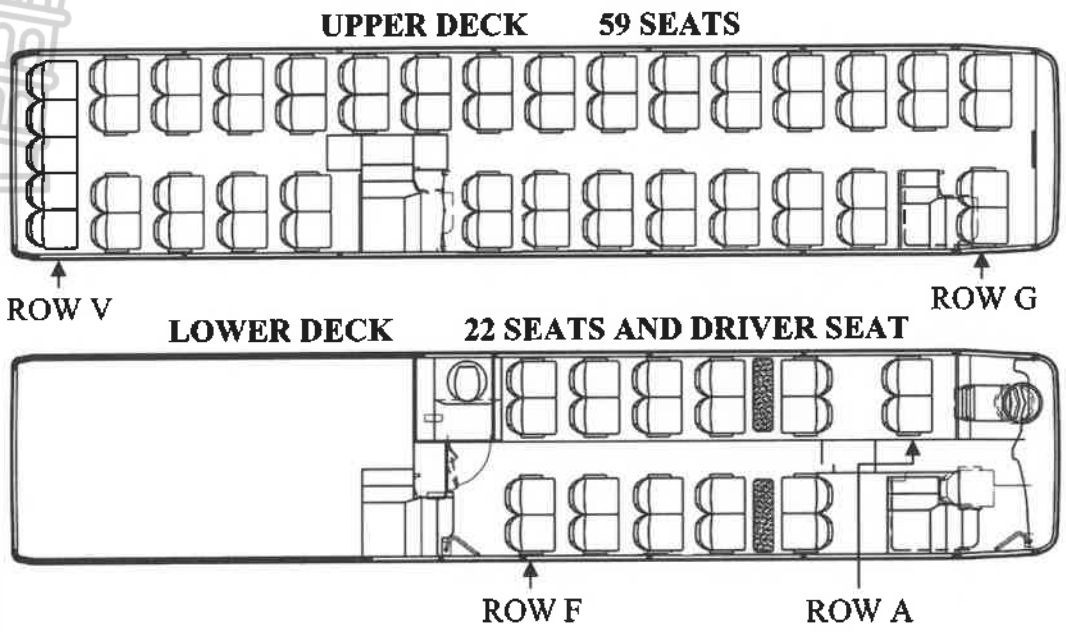
A $\pi \times \text{radius}^2 \times \text{height} + 2 \times \pi \times \text{radius}$
B $\pi \times \text{radius} \times \text{height} + \text{length} \times \text{width}$
C $2 \times \pi \times \text{radius} \times \text{height} + 2 \times \pi \times \text{radius}^2$
D $\frac{1}{2}\text{base} \times \text{height}$ (2)

1.3.3 The length of the geyser is 1,2 m. Convert this measurement to mm. (2)

[28]

QUESTION 2

2.1 The seating plan for a tourist bus that travels around Cape Town is shown below.



KEY

Driver seat		Forward-facing seat	
Toilet		Stairs	

[Adapted from www.venturebustours.com/seating]

Study the information above and answer the questions that follow.

2.1.1 Determine the number of forward-facing passenger seats on this bus. (2)

2.1.2 The seats are numbered according to the following numbering system:

- A to F is for the lower deck.
- G to V is for the upper deck.
- The seats are numbered 1 to 4 from right to left if you are facing the back of the bus.

Write down the seat number which has the easiest access to the toilet. (2)

2.1.3 Complete the following paragraph with the directions to move from seat C2 to seat J3 by using the words provided in the list below. Write only the word next to the question numbers (2.1.3(a) to 2.1.3(d)).

aisle; second; left; right; first

Move forward towards the front set of stairs on your (a) … Use this set of stairs to get to the upper deck. Once on the upper deck, turn (b) … and you will find your seat on the (c) … in the (d) … row from the stairs. (4)

2.2 ANNEXURE A in the ANSWER BOOK shows a route map of a round trip and the 18 stops made by a tour bus.

Use ANNEXURE A to answer the questions that follow.

2.2.1 Write down the name of the southern-most stop on this route. (2)

2.2.2 Name the type of scale used on this map. (2)

2.2.3 State whether the bus will be driving in a clockwise or an anticlockwise direction from stop 11 to stop 18. (2)

2.2.4 The distance of a round trip is 19,2 km.

Use the given scale on the map to determine the map distance. (5)

2.3 John lives in a flat in Cape Town. ANNEXURE B in the ANSWER BOOK shows the floor plans of two flats in John's block of flats. Flat 1 is on the ground floor and Flat 2 is on the first floor, which forms part of a block of flats.

Use ANNEXURE B to answer the questions that follow.

2.3.1 State whether the bathroom door opens to the (left/right) as you enter the bathroom. (2)

2.3.2 Convert the longer dimension of the living room to centimetres. (5)

2.3.3 Write down TWO differences between Flat 1 and Flat 2. (4)

2.3.4 Give ONE possible reason why Flat 1 does not have a balcony. (2)

2.3.5 Explain why there are no windows in the north- and south-facing walls of both plans. (2)

[34]

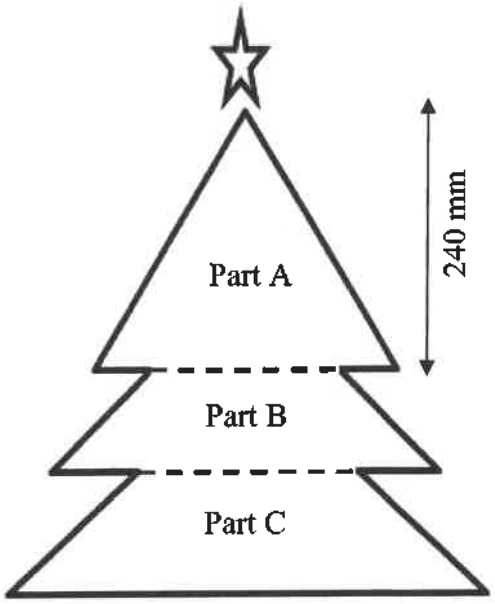
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QUESTION 3

3.1 Mrs Xulu used different recycled materials to make a tree decoration to hang on the wall, as shown in the picture below. She cut out different coloured circles to form the tree pattern.

She made a tree-shaped template using cardboard to form the backing for the coloured circles to be pasted on.

The template was made up of three sections: Part A, Part B and Part C.

PICTURE OF TREE DECORATION	MEASUREMENTS OF CARDBOARD TEMPLATE
	

[Adapted from www.pinterest.com]

NOTE: Dimension of the base of the triangle in Part A = 28 cm

Use the information above to answer the questions that follow.

3.1.1 Mrs Xulu took 3 hours and 27 minutes without any break to cut out the circles. She finished at 13:12.

Determine the time at which Mrs Xulu started cutting out the circles. (2)

3.1.2 In Part A, there are seven rows of circles. The first row consists of one circle at the top and thereafter, each successive row has an additional circle added to complete the rest of the rows.

Calculate the total number of circles in Part A. (3)

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3.1.3 Calculate, in cm^2, the area of Part A.

You may use the following formula:

Area of triangle $= \frac{1}{2}$ **base** $\times$ **height** (4)

3.1.4 The area of Part B is 30 240 mm^2. The area of Part C is 1,6 times the area of Part B.

Calculate, in mm^2, the total area of the cardboard template. (5)

3.1.5 Mrs Xulu placed all the coloured circles in a container as she cut them out.

TABLE 2 below shows the number of circles and the specific colours that Mrs Xulu cut out.

TABLE 2: NUMBER OF CIRCLES PER COLOUR

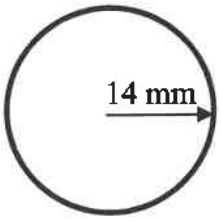
COLOUR OF CIRCLE	NUMBER OF CIRCLES
Red	9
Green	7
Gold	28
Dark denim	8
Mixed colour	22

Determine, as a percentage, the probability of randomly choosing a green circle or a red circle from the container. (4)

3.2 Amanda Xulu, Mrs Xulu's daughter, makes circular-shaped earrings. She sells these earrings at the local flea market.

The radius of the large circle in the picture below is 14 mm.

Shown below is a picture of a pair of earrings and a diagram showing the circles of one earring.

PICTURE OF A PAIR OF EARRINGS	**DIAGRAM OF THE CIRCLES OF ONE EARRING**
 **NOTE:** Synthetic – not real	**SMALL CIRCLE**  **LARGE CIRCLE**  [Adapted from www.pinterest.com]

Use the information above to answer the questions that follow.

3.2.1 Determine, in mm, the radius of the small circle if it is $\frac{4}{7}$ of the radius of the large circle. (2)

3.2.2 Calculate, rounded to the nearest mm, the circumference of the large circle.

You may use the following formula:

Circumference of circle = 3,142 × 2 × radius (3)

3.2.3 Amanda decides to make 48 pairs of earrings using flower-patterned synthetic leather for the large circles. Both sides of the large circle are covered using synthetic leather, while the small circle is painted black.

The radius of one large circle is 1,4 cm.

The synthetic leather is sold in rolls with a width of 1,37 m. Amanda buys 30 cm of the synthetic leather.

She states that after cutting the leather for ALL the large circles, the remaining synthetic leather will have an area of less than 3 000 cm².

Verify her statement, showing ALL calculations.

You may use the following formulae:

Area of rectangle = length × width

Area of circle = 3,142 × radius² (9)

[32]

QUESTION 4

4.1

A flamingo (bird) was fitted with a Global Positioning System (GPS) tracking device.

ANNEXURE C in the ANSWER BOOK shows the map with the tracked flight of the flamingo, starting at point A and ending at point E.

FLAMINGO



Use ANNEXURE C to answer the questions that follow.

4.1.1 Name the closest town directly west of Colesberg. (2)

4.1.2 (a) National roads are indicated with a number enclosed in a pentagon, e.g. .

Write down how many different national roads are shown on this map. (2)

(b) Name the towns found on the N12. (3)

4.1.3 Hanover is a town in the Northern Cape, while Middelburg is a town in the Eastern Cape.

Describe how the provincial borders are indicated on this map. (2)

4.2

On 13 January 2022, the flamingo was in area A on the map.
On 13 June 2023, it started moving southwards from area A, the starting point of tracking the bird, and followed the following path:

- On 14 June, the flamingo spent the night at a small pan at area B.
- On 15 June at 19:00, it flew non-stop for 14 hours and 25 minutes to arrive at area E, the end point.

[Adapted from https://www.news24.com/news24/community-newspaper/noordkaapbulletin]

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

4.2.1 Write down the number of months the bird spent in area A. (2)

4.2.2 Determine the bird's date and time of arrival at area E. (3)

4.2.3 Write down the probability that the bird flew directly over Queenstown. (2)

4.2.4 The flight from area B to area E is 770 km.

Calculate (in km/h) the average speed of the bird as it flew from area B to area E.

You may use this formula: **Distance = speed × time** (4)

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4.2.5 The direct distance between area B and area E is 311,72 miles.

The person tracking the bird's GPS stated that the bird flew an extra distance of 268,13 km when compared to the direct distance.

1 mile = 1,60934 km

Verify, with calculations, whether this statement is VALID. (5)

4.2.6 The biggest flamingo is 59 inches tall, which is approximately 5 feet.

Some interesting facts about a country where flamingos are common:

- Approximately 10% of this country's women are shorter than 5 feet.
- Women make up 50% of this country's population.
- This country has a total population of 333 million people.
- 78% of this country's population are adults.

Calculate, rounded to the nearest million, the number of adult women shorter than 5 feet in this country. (5)
[30]

QUESTION 5

5.1 Simon is a carpenter. He builds wooden bookcases using wooden pieces for shelves and the frame, and hardboard for the back.

The diagrams on ANNEXURE D in the ANSWER BOOK can be described as follows:

- DIAGRAM 1: Shows wooden pieces for the top, bottom, sides and shelves of a bookcase, with hardboard for the back of the bookcase
- DIAGRAM 2: Shows the hardboard (i.e. the back of the bookcase) and SIX pieces of wood, with dimensions, that will have to be cut out to assemble a single bookcase

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

5.1.1 Choose the letter (A–G) in DIAGRAM 2 that matches the item in DIAGRAM 1 given below. Write down only the letter next to the question numbers (5.1.1(a) to 5.1.1 (b)).

(a) Shelf (2)

(b) Back of bookcase (2)

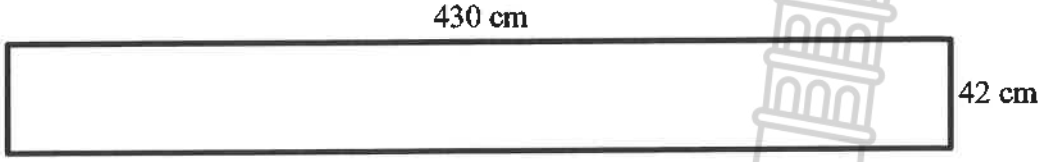
5.1.2 Write down the probability of randomly placing a book on a shelf with a height greater than 30 cm. (2)

5.1.3 The back of the bookcase is made out of hardboard.

(a) Explain why the dimensions of the hardboard is 60 cm by 90 cm. (2)

(b) Draw a scaled diagram of the hardboard according to scale 1 : 20. (6)

5.2 The wooden pieces for two identical bookcases are cut from ONE complete rectangular piece of wood which is 2 cm thick, 42 cm wide and 430 cm long.



Determine the area of the remaining part of the wood after cutting the required material.

You may use the following formula:

Area of rectangle = length × breadth (6)

5.3 The density of the wood is 0,75 g/cm^3.

A volume of approximately 0,4 m^3 unused wood is accumulated each month.

Simon states that it will take more than three months to accumulate one ton of unused wood.

Verify his statement, showing ALL calculations.

You may use the following formula:

$$\textbf{Density} = \frac{\textbf{mass}}{\textbf{volume}}$$

(6)
[26]

TOTAL: 150

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