KWAZULU-NATAL PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

MATHEMATICAL LITERACY P2

PREPARATORY EXAMINATION

SEPTEMBER 2021

MARKS: 150

TIME: 3 hours

This question paper consists of 13 pages and an Addendum with 5 Annexures.

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INSTRUCTIONS AND INFORMATION

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

2 Use the ANNEXURES in the ADDENDUM to answer the following questions.

- ANNEXURE A for QUESTION 1.1
- ANNEXURE B for QUESTION 2.1
- ANNEXURE C for QUESTION 2.2
- ANNEXURE D for QUESTION 4.1
- ANNEXURE E for QUESTION 5.1

3. Number the answers correctly according to the numbering system used in this question paper.

4. Start EACH question on a NEW page.

5. You may use an approved calculator (non-programmable and non-graphical), unless stated otherwise.

6. Show ALL calculations clearly.

7. Round off ALL final answers appropriately according to the given context, unless stated otherwise.

8. Indicate units of measurement, where applicable.

9. Diagrams are NOT necessarily drawn to scale, unless stated otherwise.

10. Write neatly and legibly.

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QUESTION 1

1.1

Avela is a teacher who is relocating to Durban. She is trying to find her way around the city. ANNEXURE A shows the map of Durban.

Use the information in ANNEXURE A to answer the following questions.

1.1.1 Identify the type of map shown in Annexure A. (2)

1.1.2 Name the Nature Reserve shown on the map. (2)

1.1.3 Identify the 3 types of roads found on this map. (3)

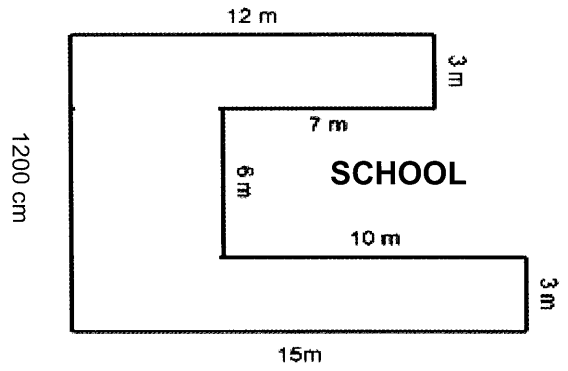
1.1.4 Name the road that joins Durban Central to Pietermaritzburg. (2)

1.1.5 Explain what the number scale of 1: 25 000 represents on the map. (2)

1.2

Avela wants to create a safe space for children to play. The U shaped diagram below shows the playground at school.

DIAGRAM OF PLAYGROUND AT SCHOOL



[Source: www.owlcation.com]

Use the information above to answer the following questions.

1.2.1 Convert the side in centimetres to metres. (2)

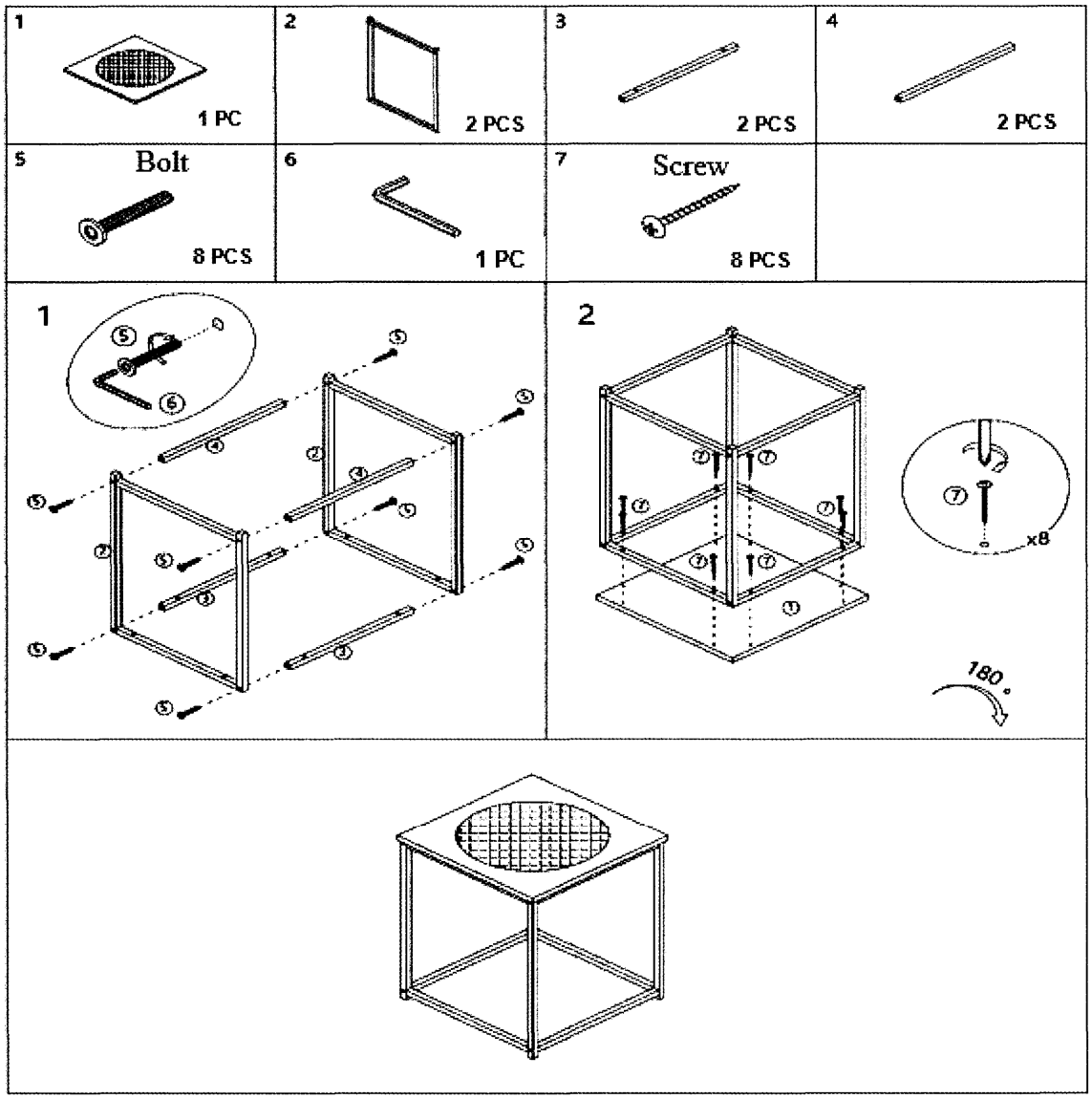
1.2.2 Write the two longest sides of the playground as a simplified ratio. (3)

1.2.3 Explain the term "*perimeter*" in context of the playground. (2)

1.2.4 Determine the length of fencing required to fence the playground. (2)

1.3

Avela bought a piece of furniture that needs to be assembled. It is made up of a wooden top and wooden frame and metal screws and bolts. The diagram below shows the part numbers and the assembly instructions using the part numbers.



[Source:www.sparkdeco.com]

Use the diagram above to answer the following questions.

1.3.1 Determine the quantity of wooden parts. (2)

1.3.2 Determine the total number of bolts and screws. (2)

1.3.3 Identify the part number that can be used to tighten the bolts. (2)

1.3.4 Must the screws be turned in a clockwise or anti clockwise direction? (2)

1.3.5 Name the piece of furniture Avela assembled. (2)

[30]

QUESTION 2

2.1 Kyle is travelling from Durban to Port Elizabeth to visit family. ANNEXURE B shows the map of Durban to Port Elizabeth.

Use the map in ANNEXURE B to answer the following questions.

2.1.1 Identify the type of map found in ANNEXURE B. (2)

2.1.2 Use the strip map to determine the distance from Durban to Port Elizabeth and identify which road is the most direct route from Durban to Port Elizabeth. (3)

2.1.3 Kyle is picking up a friend in East London and dropping him off in Grahamstown. Calculate the distance between these two towns. (4)

2.2 Kyle will be staying with family. The floorplan and elevation plan of Kyles family home is given in ANNEXURE C.

Use the information in ANNEXURE C to answer the following questions.

2.2.1 Identify one difference between a floorplan and an elevation plan. (2)

2.2.2 Name the rooms that can be seen on the elevation plan. (3)

2.2.3 Give the compass direction of the elevation shown on ANNEXURE C. (2)

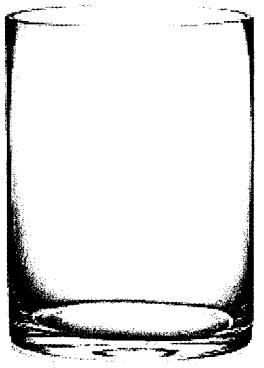
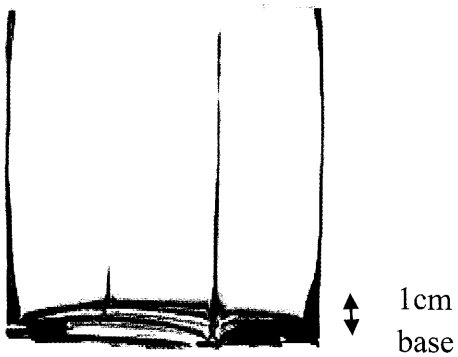
2.2.4 Determine which room of the house will receive the late afternoon sun. (2)

[18]

QUESTION 3

3.1 Kwenze is a florist and uses the vases below for her flower arrangements. TABLE 1 below shows the diagram of two vases. Both vases have a solid glass base of 1cm in height.

TABLE 1 CYLINDRICAL AND RECTANGULAR BASE VASES

OPTION 1	**OPTION 2**
CYLINDRICAL VASE	**RECTANGULAR BASE VASE**
	
• Radius of vase 2,65 cm • Base height 1 cm • Total Height of vase 15 cm	• Length 9 cm • Breadth 4,75 cm • Base height 1 cm • Total Height of vase 15 cm

Use the information in TABLE 1 above to answer the following questions.

3.1.1 Determine the height of the water in the vase for Option 1, if it is filled right to the top. (3)

3.1.2 Kwenze stated that Option 2 has exactly two times the capacity of Option 1.

Verify, with calculations, if her statement is **CORRECT**.

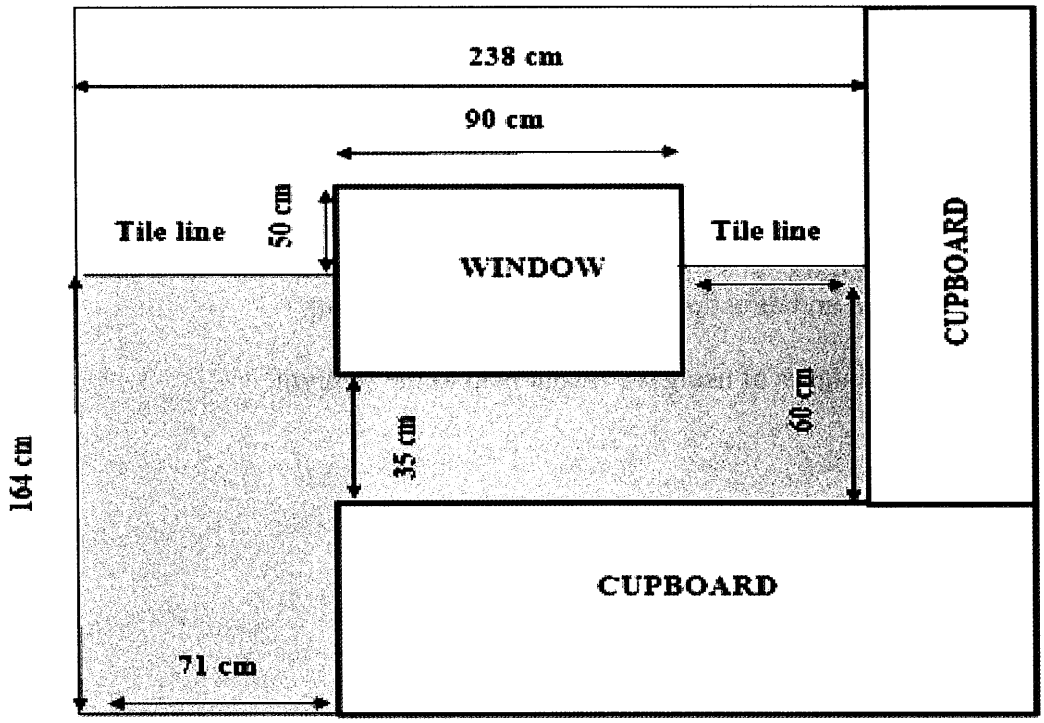
You may use the formula:

Volume of a rectangle = Length × breadth × height

Volume of a Cylinder = 3,142 × radius ^{2} × height (7)

3.2 Kwenze wants to tile the grey area of the wall in the diagram below and paint the wall above the tile line in her office. The height of the wall is 2,94 metres. The diagram of the wall is given below.

DIAGRAM OF OFFICE WALL



NOTE: The tile line indicates that tiling must be done below the line.

Use the information in the diagram above to answer the following questions.

3.2.1 Determine, in cm^2, the total area of the wall to be tiled.

You may use the formula:

Area = length × breadth (5)

3.2.2 Determine the number of boxes of tiles that must be bought, if one box of tiles covers 1 m^2. (4)

3.2.3 An area of 2,65 m^2 of the wall needs to be painted with 2 coats of paint. Calculate the number of litres of paint that must be bought if 1 litre covers 3 m^2. (5)

3.2.4 Determine the total cost of tiling and painting the wall including VAT if:

- Tiles cost R105,99 per m^2
- 2 bags of tile adhesive cost R85,99 each
- 3 bags of grouting cost R39,99 each
- 1 litre paint costs R99,99
- Labour costs R250 per day for 2 days (8)

[32]

QUESTION 4

4.1 Qiniso and Ziyanda are spectators at the Comrades Marathon ending at Moses Mabhida Stadium. The layout map of the stadium is given in ANNEXURE D.

Use the information above and ANNEXURE D to answer the following questions.

4.1.1 Write down the name of the road that the ambulance can exit into. (2)

4.1.2 Qiniso, Ziyanda and friends are seated directly opposite the medical box. Which stand are they seated in? (2)

4.1.3 Give a runner directions from Masabalala Yengwa Avenue into the entrance of the stadium and directions on how to exit the stadium. (4)

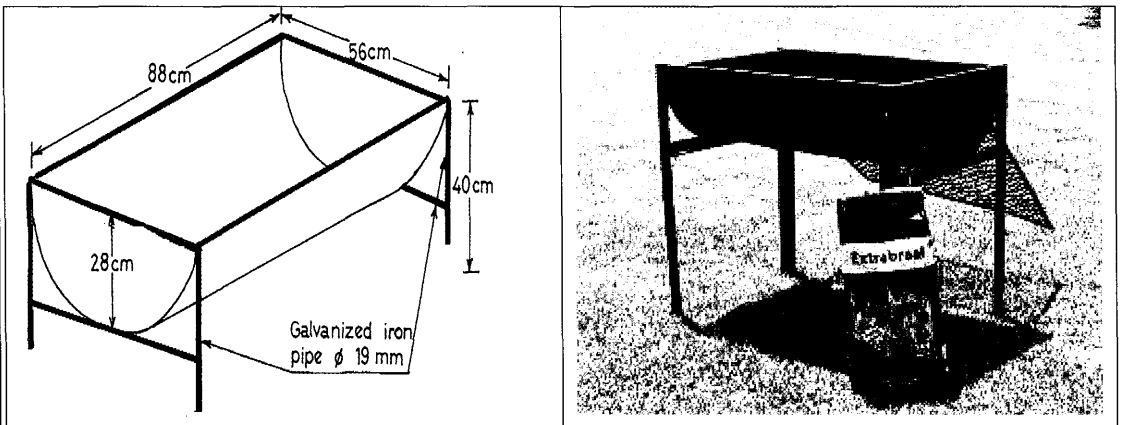
4.1.4 List two advantages of using the layout map to the stadium. (2)

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4.2

Qiniso and Ziyanda invite their friends over for a braai. Ziyanda's Dad made a braai stand by cutting a 210 litre oil drum in half. A metal frame made from a 19 mm galvanised iron pipe supports the braai stand.

DIAGRAM OF BRAAI STAND



DIMENSIONS OF THE OIL DRUM

Height of drum = 88 cm

Diameter of drum = 56 cm

Height of galvanised iron pipe leg = 40 cm

You may use the formulae:

Area of a rectangle = Length × breadth

Surface Area of a Cylinder = 2 × 3,142 × radius^2 + 2 × 3,142 × radius × height

[Adapted source: pinterest.com]

Use the information above to answer the following questions.

4.2.1 Determine the volume (in litres) of the braai drum. (2)

4.2.2 Calculate the surface area of the outside of the braai drum. (3)

4.2.3 Calculate the area of the grid that will sit on top of the drum to braai the meat. (3)

4.2.4 Determine the total length of the galvanised iron pipe in metres. (4)

4.3

Moses Mabhida offers many attractions to locals and tourists. One of the attractions is the Big Rush Big Swing and the SkyCar. Qiniso and Ziyanda want to try both with their 15 and 9-year-old cousins.

TABLE 2 below shows the prices and opening and closing times of the attractions.

PRICES		OPERATING TIMES
Big Rush Big Swing Adults No children under 10	 R595	10:00 to 16:00 daily (duration 30 minutes)
SkyCar Adults Children under 12 Under 6 is free	 R55 R30	09: 00 to 17:00 daily (last car leaves 16:30)

[Source: www.travelground.com]

Use the information in TABLE 2 above to answer the following questions.

4.3.1 They live $\frac{3}{4}$ hours' drive away from the stadium. They want to be on the last SkyCar for the day. Determine what is the latest time that they can leave their home and still do all the activities. (6)

4.3.2 The Big Rush Big Swing has an arc of 721,784 feet. Convert this to metres.

3 feet = 0,914m. (2)

4.3.3 Determine the cost of the activities for Qiniso, Ziyanda and their 15 and 9-year-old cousins. (3)

[33]

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QUESTION 5

5.1

Jodie and her family went to Mauritius during the April holidays. They visited Pamplemousses Botanical Gardens, which is a popular tourist site. Refer to the map of Mauritius in ANNEXURE E.

Use the information above and ANNEXURE E to answer the following questions.

5.1.1 Jodie states that the gardens should be 30km from Flic en Flac.

Verify this statement, using the line scale on the map to calculate the actual distance to the Pamplemousses gardens. (5)

5.1.2 The family travelled the 37,9 km from Flic en Flac and reached the Pamplemouses Garden in 53 minutes. Determine the speed the driver was travelling at.

You may use the formula $\textbf{Time} = \frac{\textbf{distance}}{\textbf{speed}}$ (4)

5.1.3 Calculate the number of litres of petrol required for this trip, if the car has a petrol consumption of 7,5 litres per 100km and the cost of petrol is 2,64 Mauritian Rupees per litre. Jodie's mum thinks it should cost 5 Mauritian Rupees.

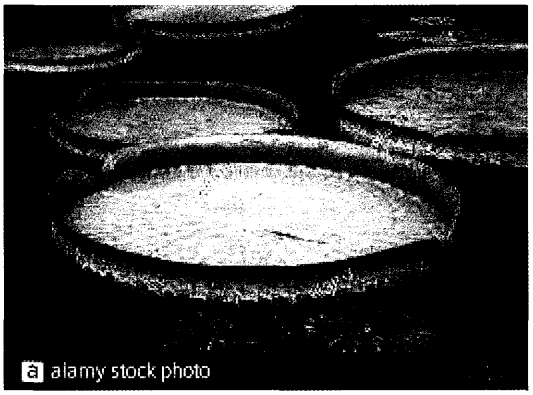
Verify, using calculations, if this CORRECT. (5)

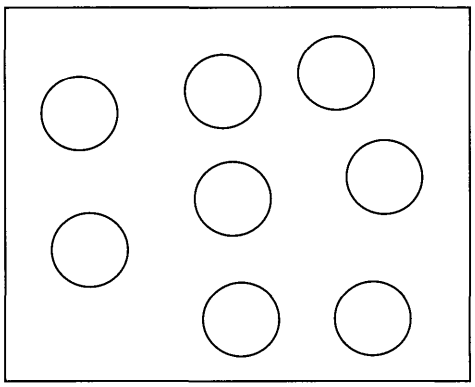
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5.2

Pamplemousses Botanical Gardens are known for the giant water lilies that grow in a circular shape in the ponds. Each water lily has an approximate radius of 1,25 metres and can support a weight of up to 45kg. The diagram below shows a picture of the waterlily and dimensions of the pond.

DIAGRAM OF WATER LILIES AND POND





DIMENSIONS OF THE POND

Length = 100 metres

Breadth = 25 metres

NOTE: $1m^3 = 1000$ litres

[Adapted source: Wikipedia.com]

Use the information above to answer the following questions.

5.2.1 Jodie states that the depth of the pond should be less than one metre for the water lilies to grow. Determine the depth of the pond in metres, if it has a capacity of 2 285 000 litres of water to verify Jodie's statement.

You may use the formula:

Volume = L × B × H (7)

5.2.2 Assume that each water lily leaf has the same radius.

a) Determine the number of water lilies leaves that will fit along the length of the pond. (3)

b) Determine the number of water lilies leaves that will fit along the breadth. (2)

c) Calculate the total number of water lilies leaves needed to cover the water surface of the pond. (2)

5.2.3 Determine how many leaves would support 1,8 tonnes if the each leaf supports 45kg. (3)

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5.3

Minimum and maximum temperatures in April for Mauritius are shown in the TABLE 3 below.

TABLE 3: 7 DAY WEATHER FORECAST

Tue	Wed	Thu	Fri	Sat	Sun	Mon
Afternoon and night rain showers	Localised afternoon rain showers	Partly cloudy	Few rain showers	Partly cloudy	Morning and afternoon rain showers	Few rain showers
						
20° 34°	20° 34°	21° 34°	20° 33°	20° 33°	21° 31°	20° 32°

Use the information in TABLE 3 above to answer the following questions.

5.3.1 Determine the probability as a percentage of the temperature exceeding 33°C (4)

5.3.2 Determine the probability of it not raining during the week. (2)

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TOTAL MARKS: 150

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