



O.R.TAMBO INLAND DISTRICT

SENIOR PHASE

GRADE 9

NOVEMBER 2023

MATHEMATICS

PAPER 2

MARKS: 75

TIME : 2 hours

This question paper consists of 10 pages including annexure

November 2023 November 2023 Mathematics Grade 9 Paper 2 O.R.T.I.District**INSTRUCTIONS AND INFORMATION FOR LEARNERS**

1. Read the instructions for each question carefully.
2. Answer all the questions.
3. Number your work exactly as questions are numbered.
4. Clearly show **ALL** the calculations, diagrams and graphs you have used in determining your answers
5. Your calculations must include reasons
6. You may use an approved scientific calculator (non-programmable and non-graphical).
7. Diagrams are **NOT** necessarily drawn to scale.

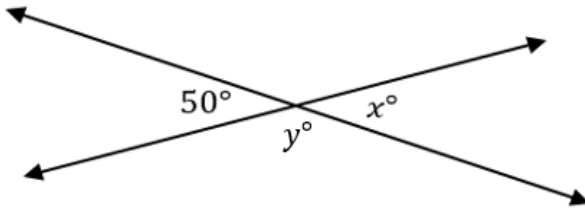
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QUESTION 1

1. In this question, 4 possible answers are given. Write only the correct answer next to the corresponding number.

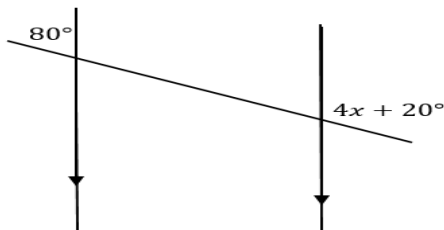
EXAMPLE: If the correct answer for 1.1 is A, write only answer as 1.1 A.

- 1.1 In the figure below $x^\circ = 50^\circ$ because they are (1)



- A. Alternate angles
- B. Corresponding angles
- C. Adjacent angles
- D. Vertically opposite angles

- 1.2 The value of x in the figure below is (1)

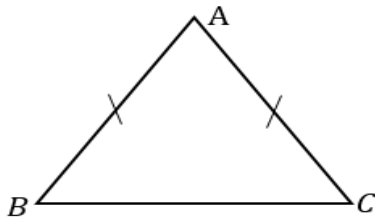


- A. 15
- B. 20
- C. 30
- D. 60

- 1.3 When parallel lines are cut by a transversal, (1)

- A. All pairs of angles formed are always equal.
- B. Pairs of corresponding angles lie on opposite of a transversal.
- C. Pairs of co-interior angles are supplementary.
- D. Pairs of angles that lie above the parallel lines are acute angles.

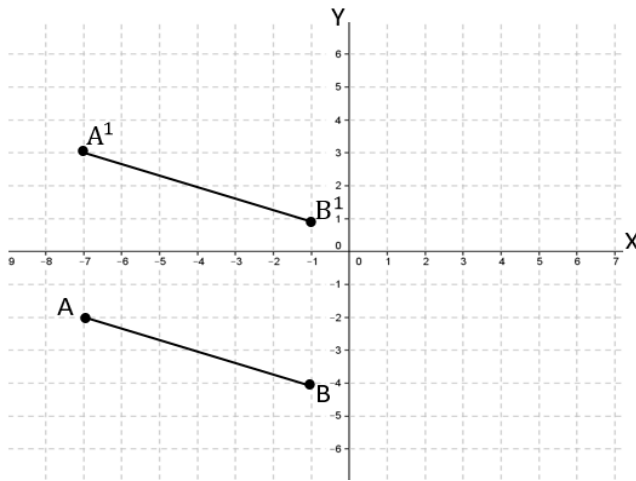
- 1.4 $\triangle ABC$ drawn below is (1)



- A. A scalene triangle
- B. An equilateral triangle
- C. An isosceles triangle
- D. An obtuse angled triangle

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- 1.5 Which of the statements below defines a trapezium? (1)
- A. Pairs of opposite sides are parallel
 - B. One pair of opposite sides is parallel
 - C. All its angles are right angles
 - D. Diagonals have always the same lengths
- 1.6 One of the statements below is **not** a property of a right angled triangle. (1)
- A. Has one angle a right angle
 - B. The side that lies opposite the right angle is the hypotenuse.
 - C. The line segment that bisects the right angle forms an acute angle on the hypotenuse.
 - D. The two sides adjacent to the right angle are perpendicular
- 1.7 When two triangles are congruent, one of the conditions is **incorrect** (1)
- A. Two corresponding sides and an included angle are equal.
 - B. Two corresponding angles and a corresponding side are equal.
 - C. Corresponding angles are equal and corresponding sides are proportional.
 - D. A right angle, hypotenuse and one other corresponding side are equal.
- 1.8 Which statement describes the transformation of line segment?



- A. Translated 5 units up
 - B. Reflected in the Y- axis
 - C. Translated 5 units down
 - D. Reflected in the X- axis
- 1.9 The area of a circle with the radius of 2 cm is
- A. 5cm^2
 - B. $12,56\text{cm}^2$
 - C. $7,8\text{cm}^2$
 - D. 10cm^2

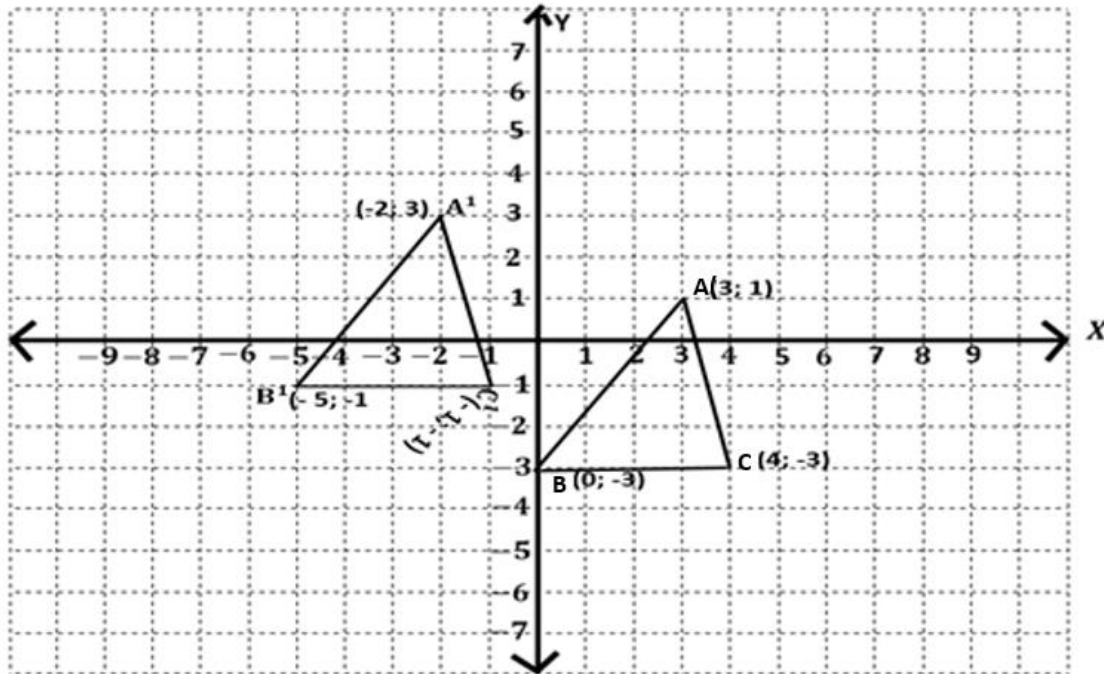
- A. 15 cm^3
B. 60 cm^3
C. 96 cm^3
D. 68 cm^3

QUESTION 2

- 2.1.1 Calculate the size of x° ? Give reasons for your answer. (2)
- 2.1.2 Determine with reasons the value of y . (4)
- 2.1.3 Hence, find the size of $\widehat{DAB}$ (2)
- 2.1.4 What the relationship is between $\widehat{DAC}$ and angle D? Give a reason for your answer. (2)
- 2.1.5 $\widehat{FAB} = \widehat{ADE}$ (Reason..... (..... ;)) (2)

2.2 Study the form of transformation drawn below and state the rule in the form $(x; y) \longrightarrow (\dots; \dots)$ (2)

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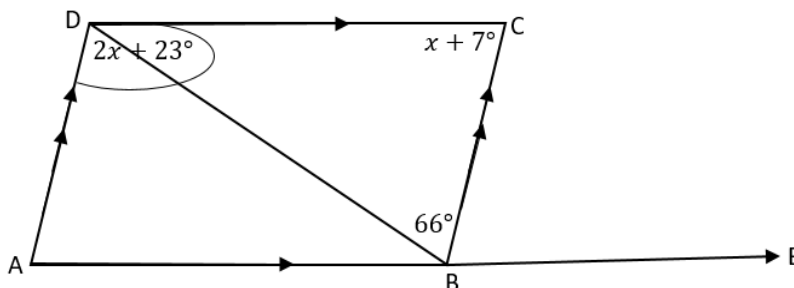
2.3

- 2.3.1 On the cartesian plane provided (ANNEXURE) at the end of the question paper, draw kite SAMP with vertices S(1; -2) ; A(2; -1) ; M(3; -2) ; P(2; -5). Label the vertices and show the coordinates of each point. (3)
- 2.3.2 Reflect the figure (kite) you have drawn along the y-axis and label it as $S^1A^1M^1P^1$. Show the coordinates of each point of the image. (3)
- 2.3.3 What is the relationship between the coordinates of the object and the coordinates of the image? (1)

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QUESTION 3

- 3.1 ABCD is a parallelogram with diagonal BD, AB is extended to E, $\widehat{ADC} = 2x + 23$, $\widehat{DBC} = 66^\circ$, Study the diagram and answer the questions that follow.

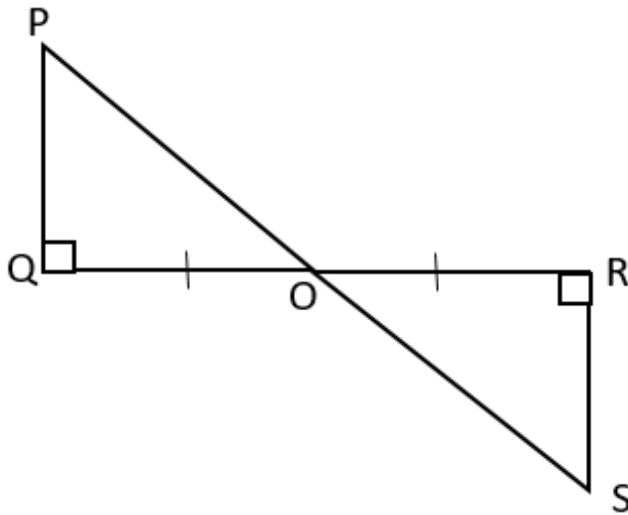


- 3.1.1 The sum of the interior angles of a parallelogram is 360° . Then, calculate the value of x . Give reason(s) where necessary. (2)
- 3.1.2 Give with reasons the size of
 (i) $\widehat{CBE}$ (2)
 (ii) $\widehat{ADB}$ (2)

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3.1.3 Calculate with reasons the size of $\widehat{DBE}$. Showing the relationship with its opposite interior angles of a triangle. (4)

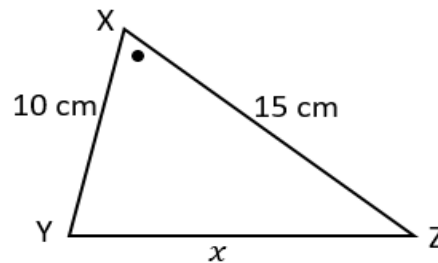
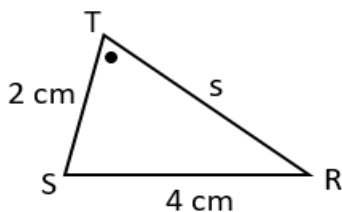
3.2 $\triangle PQO$ and $\triangle SRO$ are right angled triangles with $QO = RO$, $PQ \perp QR$ and $SR \perp RQ$. Copy and complete the table below to show that $\triangle PQO \equiv \triangle SRO$.



Statement		Reason
In $\triangle PQO$ and $\triangle SRO$		
3.2.1	$\angle PQO = \angle SRO$	
3.2.2	$QO = RO$	given
3.2.3	$\angle POQ = \angle SOR$	
$\therefore$	$\triangle PQO \equiv \triangle SRO$	

(2)
(1)
(1)
(1)

3.3 $\triangle STR$ and $\triangle XYZ$ drawn below are similar triangles.



3.3.1 Copy and complete $\frac{TS}{XY} = \dots = \dots$ (reason) (2)

3.3.2 Hence, calculate the length of side

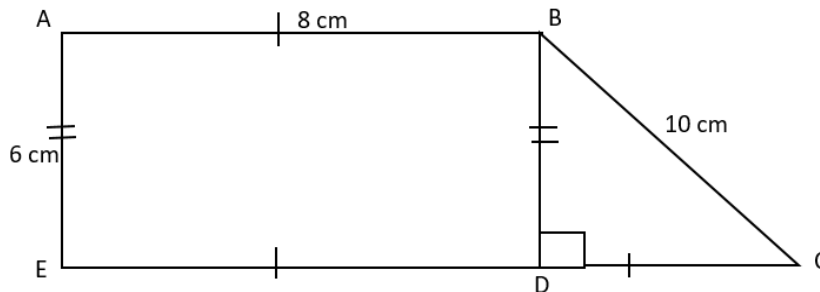
- (i) YZ (2)
(ii) TR (2)

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QUESTION 4

4.1 Study the trapezium ABCDE drawn below and answer the questions that follow.

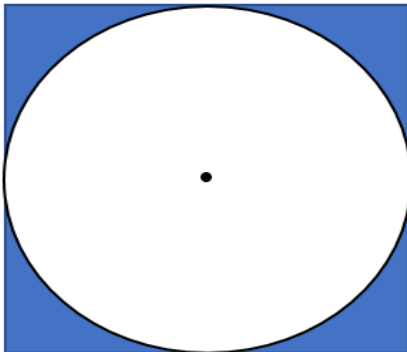


4.1.1 Determine the perimeter of trapezium ABCDE (2)

4.1.2 Calculate the area of
(i) $\triangle BCD$. (3)

(ii) trapezium ABCDE and convert your answer in meters (3)

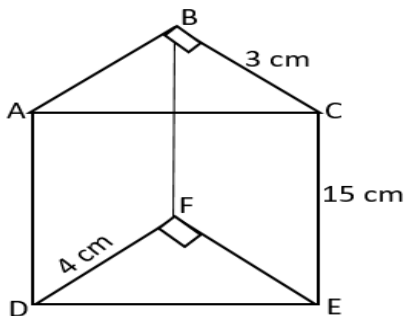
4.2 In the figure below, the circle is enclosed in a shaded square with the length of the side = 6 cm.



Calculate the area of the shaded part. Round off your answer to a whole. (5)

NOTE: Use $\pi = 3,14$

4.3 In the triangular prism drawn below, $DE = 5$ cm, $FE = 4$ cm, $CE = 15$ cm and $DF \perp FE$

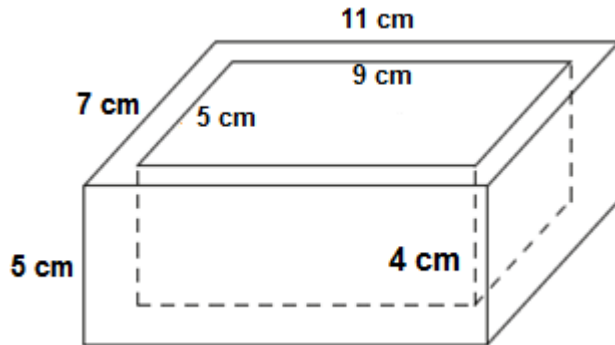


4.3.1 Calculate the volume (3)

4.3.2 Calculate the total surface area (4)

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- 4.4 Read the container drawn below and then calculate the volume of water in ml (3)
that can fill the inside container.



[23]

END

GOOD LUCK - ENJOY THE FESTIVE SEASON.

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NAME: _____

QUESTION 2.3.1
ANNEXURE

