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Department of Education, Southern Province

YEAR END EVALUATION 2022 (2023)

Grade 9

MATHEMATICS

2 hours

Name/ Index number :

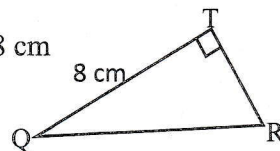
PART I

- Write down the answers for all the questions in the paper itself.
- Each question carries 2 marks.

1. Write 4.278×10^4 in general form.

2. If $a + b = x$, $b + c = x$, show that $a = c$

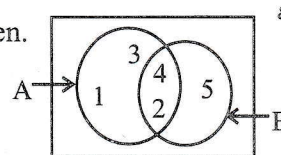
3. The area of the square drawn on the side QR is 100 cm^2 . If $QT = 8 \text{ cm}$ find the length TR



4. place ✓ or ✗ in front of the statements according to the Venn diagram given.

i. $4 \in A$

ii. $B \subset A$

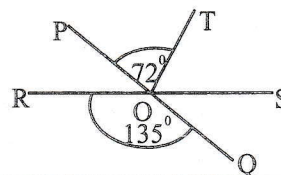


5. If a machine in a cement factory produces 1200 bags of cement in 5 hours, how many bags of cement will the machine produce in 8 hours?

6. Find the value of $10101_{\text{two}} + 101_{\text{two}}$

7. The area of the base of a cubical shaped fuel tank is 480 cm^2 . If the volume of the tank is 7200 cm^3 , find the height of the fuel in the tank in centimetres.

8. Straight lines PQ and RS intersect at O. If $\angle ROQ = 135^\circ$, $\angle POT = 72^\circ$, find the magnitude of $\angle TOS$



9. Find the value of $(1^5)^0 + x^0$

10. Find the circumference of circular ground of radius 21 cm

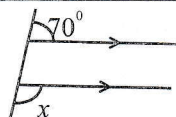
11. Simplify $\frac{4}{2a+1} - \frac{1}{2a+1}$

12. In the number pattern 90, 84, 78, 72,...

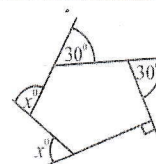
i. What is the common difference?

ii. What is the 10th term?

13. Find the magnitude of x using the given information.



14. Find the magnitude of x using the given information.



15. Below is the time taken in seconds of 11 athletes taken to complete a race.

13, 14, 15, 15, 16, 16, 16, 17, 17, 18, 18

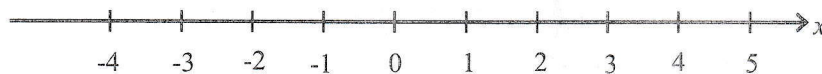
i. Find the range of the data

ii. Mode of the data

16. In a bag, there are 12 black beads and 3 white beads which are identical. A bead is drawing from the bag randomly, what is the probability of not drawing a white bead?

17. Make R subject of the formulae $E = V - IR$

18. Solve the inequality $x - 1 > 1$ and represent all the solutions on the number line.

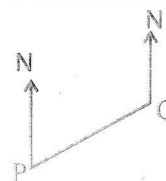


19. Factorize $6y - 3 + 2ya - a$

20. Using the data given in the diagram

i. The bearing of Q from P is 075° . Mark it on the diagram

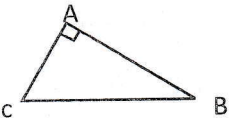
ii. Find the bearing of P from Q



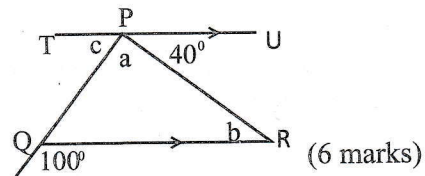
MATHEMATICS - PART II

- Answer 5 questions only.
- Each question carries 12 marks.

1. (a) $\varepsilon = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$, $A = \{1, 2, 3, 4, 5, 6, 7\}$, $B = \{2, 3, 5\}$
- Represent the above information in a Venn diagram. (4 marks)
 - Write the elements of these sets.
 - $(A \cap B)$ (1 mark)
 - B' (1 mark)
- (b) There are 10 identical cards numbered from 1 to 10 in a box. A card is randomly taking out from the box.
- Write the sample space of all possible outcomes of this experiment. (1 mark)
 - Find the probability of drawing a card with a square number. (2 marks)
- (c) Nimal gave $\frac{1}{3}$ of his land to his daughter and $\frac{1}{4}$ to his son and the rest of the land was donated to a community hall.
- Find the part of the land given to his son and daughter as a fraction of the land. (2 marks)
 - Find the part of the land donated to the community hall as a fraction of the land (1 mark)

2.  (a) $\hat{A} = 90^\circ$ in the triangle ABC. The magnitude of the angle C is twice the magnitude of the angle B. Find the value of the angle C. (4 marks)

- (b) The line TU is drawn through P which is parallel to the side QR of the triangle PQR. Find the angles a, b, c by giving reasons.



- (c) The exterior angle of a regular polygon is 45° . Find the number of sides in the polygon (2 marks)

03. (a) A seller decides to sell an item bought for Rs.3 000 at a profit of 15%.

- What is the price at which the seller decides to sell the item. (3 marks)
 - If the seller decides to give a discount of 5% on the above product. Find the amount that customer had to pay to buy the product. (3 marks)
- (b) A company engaged in mobile trading pays a commission of 10% of the daily sales to the sales agents who sell their products.
- A certain sales agent received a commission of Rs.4 000 in a day. What is the total cost of items he sells on that day. (3 marks)
 - If that sales agent sold Rs. 216 000 worth items in another company and received a commission of Rs. 17 280, calculate the profit percentage received from that company. (3 marks)

4. The time spent on daily exercise by a group of friends is given below.

Time spent for exercises (minutes)	14	15	18	20	24	30
Number of friends	3	6	10	12	7	2

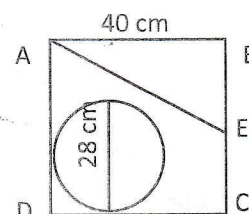
- Find the mode (1 mark)
- Filling the blanks in the following table (7 marks)

Time spent for exercises (x)	Number of friends (f)	fx
14	3	
15	6	
18	10	180
20	12	
24	7	
30	2	
	$\Sigma f =$	$\Sigma fx =$

- Find the mean time spent for exercises by the group members to the nearest whole number value (2 marks)
- Find the time spent for exercises by the group members within a month (2 marks)

- Draw a straight line segment of length 8 cm and name it as AB (2 marks)
 - Construct the perpendicular bisector of AB and name the intersection point of AB and the perpendicular bisector as X (3 marks)
 - Mark the point C on the perpendicular bisector such that AC = 5cm (1 mark)
 - Mesure and write the length XC. Prove that the length is correct by using pythageron relation. (4 marks)
 - Mark the midpoint of AC as O. Construct a circle by taking OA as the radius. (2 marks)

- A wheel of diameter 28cm is cut-out from a thin square shaped wooden board of side length 40 cm
 - How far does the wheel travel in one rotation? (2 marks)
 - Find the number of rotations of the wheel when rolling a distance of 8.8 m (2 marks)
 - What is the area of one side of the wheel? (2 marks)
 - A right angled triangle whose area is 400 cm^2 cut off from the rest of the board. Calculate the length BE (3 marks)
 - Find the area of the remaining board when the above two parts are cut away. (3 marks)]



- A table prepared to draw the graph of the function $y = 3x + 2$ is given below.

x	-2	-1	0	1	2	3
y	-4	-1	2		8	11

- Find the value of y when $x = 1$ (2 marks)
- Draw the graph of the above function using a suitable coordinate plane (6 marks)
- Write the (a) gradient (1 mark)
- (b) Intercept of the graph (1 mark)
- If all the points in the above graph displaced up by one unit, write the equation of the straight line formed by connecting all the points. (2 marks)



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