Department of Education, Southern Province

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YEAR END EVALUATION 2022 (2023)

| Grade 9 | **MATHEMATICS** | **2 hours** |

Name/ Index number : ....

PART I

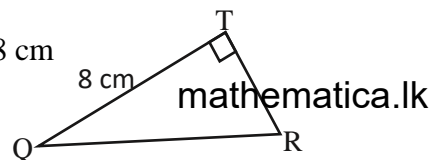- **Write down the answers for all the questions in the paper itself.**
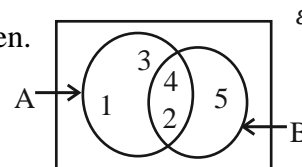- **Each question carries 2 marks.**

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 cm². If QT = 8 cm find the length TR

8 cm

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4. place ✓ or ✗ infront 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 $10101_{two} + 101_{two}$

7. The area of the base of a cubical shaped fuel tank is 480 cm². If the volume of the tank is 7 200 cm³, find the height of the fuel in the tank in centimetres.

8. Straight lines PQ and RS intersect at O. If $R\hat{O}Q = 135^\circ$ $P\hat{O}T = 72^\circ$, find the magnitude of $T\hat{O}S$

72⁰
135⁰
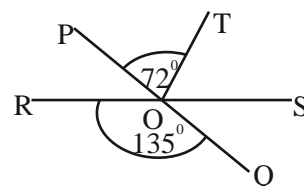
9. ' Find the value of $(1^5)^0 + x^0$

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

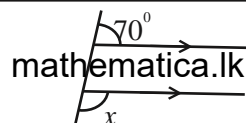11. Simplify . $\dfrac{4}{2a+1} - \dfrac{1}{2a+1}$

12. In the number pattern 90, 84, 78, 72,..
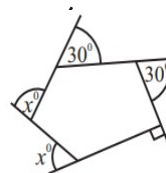   i. What is the common difference?

    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
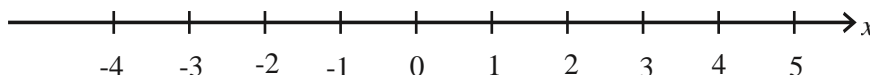
    ii. Mode of the data

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

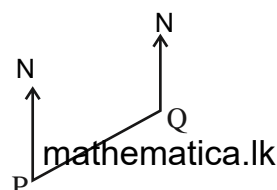18. Solve the inequality $x − 1 > 1$ and represent all the solutions on the number line.

19. Factorize $6y − 3 + 2ya − a$

20. Using the data given in the diagram
    i. The bearing of Q from P is 075^0. Mark it on the diagram
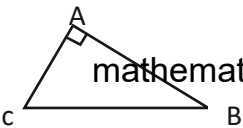   ii. Find the bearing of P from Q

MATHEMATICS - PART II

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

1. (a) ε = {1, 2, 3, 4, 5, 6, 7, 8, 9, 10 }, A = {1, 2, 3, 4, 5, 6, 7} , B = { 2, 3, 5 }
   - i. Represent the above information in a Venn diagram. (4 marks)
   - ii. Write the elements of these sets.
     - (a) (A ∩ B)   (1 mark)   (b) 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.
   - i. Write the sample space of all possible outcomes of this experiment. (1 mark)
   - ii. 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.

   i. Find the part of the land given to his son and daughter as a fraction of the land. (2 marks)
   ii. Find the part of the land donated to the community hall as a fraction of the land   (1 mark)

2. (a) $\hat{A} = 90^{0}$ 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.
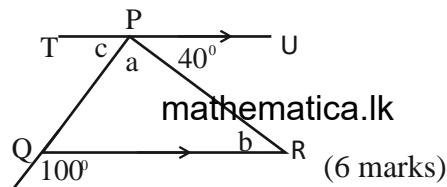
   (6 marks)

   (c) The exterior angle of a regular polygon is 45^{0}. 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%.

   - i. What is the price at which the seller decides to sell the item. (3 marks)
   - ii. 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 sells their products.
   - i. 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)
   - ii. 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

    i. Find the mode   (1 mark)

   ii. 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	....
	$\sum f$ = ...	$\sum fx$= ....

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  iii. Find the mean time spent for exercises by the group members to the nearest whole number value   (2 marks)

  iv. Find the time spent for exercises by the group members within a month   (2 marks)

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5. I) Draw a straight line segment of length 8 cm and name it as AB   (2 marks)
ii) Construct the perpendicular bisector of AB and name the intersection point of AB and the perpendicular bisector as X   (3 marks)
iii) Mark the point C on the perpendicular bisector such that AC = 5cm   (1 mark)
iv) Mesure and write the length XC. Prove that the length is correct by using pythogeron relation.   (4 marks)

v) Mark the midpoint of AC as O. Construct a circle by taking OA as the radius.   (2 marks)

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6. A wheel of diameter 28cm is cut-out from a thin square shaped wooden board of side length 40 cm
  i. How far does the wheel travel in one rotation?   (2 marks)
  ii. Find the number of rotations of the wheel when rolling a distance of 8.8 m   (2 marks)
  iii. What is the area of one side of the wheel?   (2 marks)
  iv. A right angled triangle whose area is 400 cm² cut off from the rest of the board. Calculate the length BE   (3 marks)
  v. Find the area of the remaining board when the above two parts are cut away.   (3 marks)]

40 cm

A   B

28 cm

E

D   C

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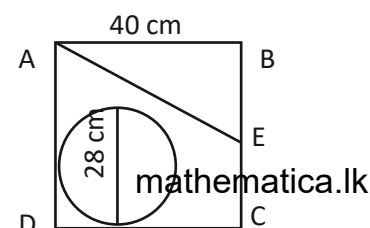
7. A table prepared to draw the graph of the function $y = 3x + 2$ is given below.

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

   i. Find the value of y when $x = 1$ (2 marks)
  ii. Draw the graph of the above function using a suitable coordinate plane   (6 marks)
  iii. Write the (a) gradient   (1 mark)
         (b) Intercept of the graph   (1 mark)
  iv. 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)