DELHI PUBLIC SCHOOL NEWTOWN
SESSION 2023-24
MONDAY TEST

CLASS: IX **FULL MARKS: 40**
SUBJECT: MATHEMATICS **DATE: 04.12.23**

Instructions:

- **This paper consists of two printed pages.**
- **All questions are compulsory.**
- **Copy the question number carefully before answering the questions.**

SECTION: A

1. Choose the correct option **[1× 5 = 5]**

i) The area of an equilateral triangle is $16\sqrt{3}$ m^2, the length of its side is:

a) 12 m **b) 16 m** **c) 14 m** **d) 8 m**

ii) The total surface area of a cube with edge 5 cm will be:

a) 30 cm^2 **b) 35cm^2** **c) 150 cm^2** **d) 180 cm^2**

iii) The area of the rhombus with diagonals (a + b) cm and (a – b) cm will be:

a) $(a + b)^2$ **b) $(a - b)^2$** **c) $\frac{1}{2}(a^2 – b^2)$** **d) $\frac{1}{2}(a^2 + b^2)$**

iv) In a right-angled triangle, if sum of the squares of the sides making right angle is 289 cm^2, then the length of the hypotenuse is:

a) 17 cm **b) 16 cm** **c) $13\sqrt{3}$ cm** **d) $12\sqrt{2}$ cm**

v) Assertion (A): In a parallelogram each diagonal always bisects the parallelogram into two equilateral triangles.

Reason (R): ABCD is rhombus, in which $\angle DAB = 110°$, then the measure of $\angle BDC$ is 35°.

a) (A) is true but (R) is false **b) (A) is false but (R) is true**
c) Both (A) and (R) are true **d) Both (A) and (R) are false**

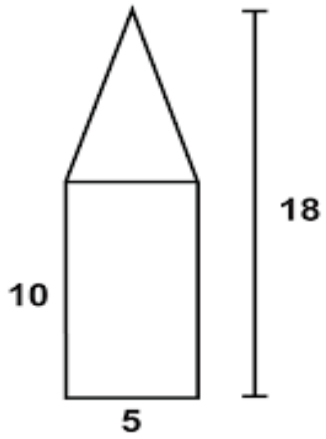
SECTION: B

2. In an isosceles triangle ABC with AB = AC, BD is perpendicular from B to the side AC. Prove that $BD^2 – CD^2 = 2CD \times AD$. **[4]**

3. PQRS is a parallelogram. If the bisector of ∠P and ∠R meet the diagonal QS at M and N respectively, prove that the quadrilateral PMRN is a parallelogram. [4]

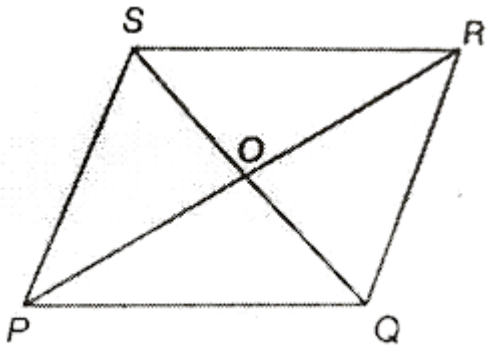
4. The adjacent sides of a parallelogram are 24 cm and 10 cm. If the distance between the larger side is 8 cm find the distance between the shorter sides. Give the answer in nearest cm. [4]

5. The cross section of a water tank consists of a rectangle and an isosceles triangle as shown in the figure. If the tank is 20 m deep, find the volume of water it can hold when full. [all dimensions in m] [4]



6.Three solid cubes, each of volume 216 cm^3 are joined end to end, find the total surface area of the cuboid so formed. [4]

7. In the given figure PQRS is a rhombus, in which PO = 3x + 7, OR = 5x – 3 and OQ = 4 unit. Find the value of x and also perimeter of the rhombus. [use $\sqrt{5}$ = 2.24] [5]



8. The perimeter of a triangle is 48 cm and the ratio of its sides are 13: 12: 5. Find the area of the triangle. [5]

9. The external dimensions of a closed wooden box are 18 cm, 15 cm and 13 cm. If the thickness of the used wood is 2 cm and it costs ₹1.50 per cubic cm, find the total cost of the wood required to make the box. [5]