MATHEMATICS MOCK TEST

Class: VIII | Set: 25

Time: 2 Hours | Written Marks: 35 | Viva: 5 | Total: 40 Marks

NAME: _____   ROLL NO: _____

SECTION A   (1 Mark Each)

1. Solve the inequation $\frac{x}{2} < 2$ for $x \in \{1, 2, 3, 4, 5\}$.

2. Find the area of a circle whose radius is 3.5 cm. (Take $\pi = 22/7$)

3. Find the distance of the point $P(4, 3)$ from the y-axis.

4. Find the lateral surface area of a cuboid of dimensions 10 cm $\times$ 8 cm $\times$ 5 cm.

5. A die is thrown once. What is the probability of getting a number less than 1?

SECTION B   (2 Marks Each)

6. Solve the inequation $2(3 - x) \geq 4$ and represent the solution on a number line for $x \in \mathbb{W}$ (Whole numbers).

7. If the area of a circle is 616 cm^2, find its diameter. (Take $\pi = 22/7$)

8. Find the coordinates of the midpoint of the line segment joining points $A(0, 5)$ and $B(0, -5)$.

9. The total surface area of a cube is 600 cm^2. Find the volume of the cube.

10. A die is thrown once. Find the probability of getting a multiple of 3.

SECTION C   (3 Marks Each)

11. Solve the linear inequation $\frac{x - 1}{2} + 3 \leq \frac{x + 2}{3}$ and list the solution set if x is a natural number ($x \in \mathbb{N}$).

12. A circular flower bed of radius 7 m has a path of width 3.5 m running around it on the outside. Find the area of the path.

13. Draw the graph of the linear equation $y = 3x - 2$ by finding at least three solutions.

14. A solid metallic cube of edge 6 cm is melted and recast into a cuboid whose base measures 9 cm $\times$ 8 cm. Find the height of the cuboid.

SECTION D

Case Study 1: The Probability of Coin Tosses
A student conducts an experiment by tossing two fair coins simultaneously for 50 times. The outcomes recorded are: Two Heads (12 times), One Head (26 times), and No Head (12 times).

  (i) Based on the experimental data, find the probability of getting "Exactly one head". (2 Marks)

  (ii) What is the theoretical probability of getting "At least one head" when two coins are tossed once? (2 Marks)

Case Study 2: Painting an Open Water Tank
An open rectangular water tank is 5 m long, 3 m wide, and 2 m deep. The internal surface (four walls and the base) needs to be painted with a waterproof coating.

  (i) Calculate the total surface area to be painted in square metres. (2 Marks)

  (ii) If the cost of painting is ₹80 per m^2, find the total cost of painting the tank. (2 Marks)

VIVA VOCE

(5 Marks)

- **Inequations:** Explain why the inequality sign reverses when we divide both sides of an inequation by -2.

- **Circles:** Define the 'Segment' of a circle and how it is formed.

- **Graphs:** What is the name of the x-coordinate of a point in a coordinate system?

- **Solids:** What is the formula for the Total Surface Area of a solid cylinder?

- **Probability:** What is the sum of the probabilities of an event happening and the same event not happening?