MATHEMATICS MOCK TEST

Class: VIII | Set: 08

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

NAME: _____ **ROLL NO:** _____

SECTION A

(1 Mark Each)

1. If $A = \{x : x \text{ is a factor of } 12\}$ and $B = \{x : x \text{ is a factor of } 18\}$, find $n(A \cap B)$.
2. Evaluate: $\sqrt[3]{216} \times \sqrt[3]{8}$.
3. Solve for x: $\frac{x}{3} + 5 = 2$.
4. If x and y are in inverse variation and $x = 4$ when $y = 6$, find y when $x = 8$.
5. What is the sum of any two adjacent angles of a parallelogram?

SECTION B

(2 Marks Each)

6. Find the smallest number by which 180 must be multiplied so that the product becomes a perfect square.
7. The students of a class arranged a picnic. Each student contributed as many rupees as the number of students in the class. If the total contribution is ₹1156, find the number of students in the class.
8. Find the smallest number by which 3645 must be divided so that the quotient is a perfect square.
9. Find the least number which must be added to 7348 so that the sum is a perfect square.
10. Two adjacent angles of a parallelogram are in the ratio $4 : 5$. Find the measure of each angle.

SECTION C

(3 Marks Each)

11. Find the compound interest on ₹8000 for 1 year at 10% per annum compounded half-yearly.
12. In a survey of 100 students, 60 like Mathematics, 45 like Science and 20 like both. Find the number of students who like neither Mathematics nor Science using a Venn diagram.
13. 15 men can build a wall in 12 days. How many men will be required to build a similar wall in 9 days?

14. Solve the inequation $3(x-2) < 2(x+1)$ and represent the solution on a number line if $x \in \mathbb{N}$.

SECTION D

(4 Marks Each - Case Study)

Case Study 1: Work and Efficiency
Two workers, RAM and SHYAM, are hired for a painting job. RAM can paint a house in 12 days, while SHYAM can do it in 15 days.

(i) If they work together, in how many days will they complete the job? (2 Marks)

(ii) If they work together for 4 days and then RAM leaves, how many more days will SHYAM take to finish the remaining work? (2 Marks)

Case Study 2: Geometric Properties in Design
An architect is designing a courtyard in the shape of a quadrilateral. The angles of the quadrilateral are $(x+10)^\circ, (2x-30)^\circ, x^\circ$ and $(x+20)^\circ$.

(i) Find the value of x using the angle sum property of a quadrilateral. (2 Marks)

(ii) Determine the measure of all four angles and check if the quadrilateral is a parallelogram. (2 Marks)

VIVA VOCE

(5 Marks)

- **Squares:** How many digits are there in the square root of a 6-digit perfect square?
- **Interest:** If the rate of interest is 10% per annum, what rate is used for half-yearly compounding?
- **Sets:** What is a "Power Set" and how do you find the number of elements in it?
- **Quadrilaterals:** Can a trapezium be a parallelogram? Justify.
- **Roots:** What is the cube root of 0.027?