MATHEMATICS MOCK TEST

Class: VIII | Set: 14

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

NAME: _____ **ROLL NO:** _____

SECTION A

(1 Mark Each)

1. If $A = \{x : x \text{ is a composite number}, x < 10\}$, find the cardinality $n(A)$.
2. Evaluate: $\sqrt[3]{-3375}$.
3. Solve for x: $\frac{3x}{4} - 2 = 7$.
4. Three angles of a quadrilateral are $110°, 70°,$ and $85°$. Find the fourth angle.
5. If x and y are in inverse variation and $x = 6$ when $y = 8$, find the constant of variation k.

SECTION B

(2 Marks Each)

6. Find the least number which must be added to 5607 so as to get a perfect square.
7. Solve the inequation $4(x - 3) \leq 2x + 6$ and represent the solution set if $x \in \mathbb{N}$.
8. Find the compound interest on ₹$20,000$ for 1 year at 8% per annum compounded half-yearly.
9. A scale of a map is given as $1 : 25,000,000$. Two cities are 3 cm apart on the map. Find the actual distance between them in km.
10. Two adjacent angles of a parallelogram are in the ratio $3 : 7$. Find the measure of all the angles.

SECTION C

(3 Marks Each)

11. Tap A can fill a tank in 10 hours and Tap B can fill it in 12 hours. An outlet pipe C can empty the full tank in 15 hours. If all three are opened together, how long will it take to fill the empty tank?
12. Let $U = \{1, 2, 3, \ldots, 10\}$, $A = \{x : x \text{ is a factor of } 6\}$ and $B = \{x : x \text{ is a factor of } 8\}$. Verify $(A \cup B)' = A' \cap B'$.
13. Find the square root of 147.1369 using the long division method.
14. A two-digit number is such that the digit at the tens place is twice the digit at the units place. If the sum of the digits is 9, find the number.

SECTION D

(4 Marks Each - Case Study)

Case Study 1: The School Renovation Fund
The students of Class VIII decided to contribute to a school renovation fund. Each student contributed as many rupees as the number of students in the class.

(i) If the total collection was ₹2401, find the number of students in the class. (2 Marks)

(ii) If the class teacher contributed an additional ₹599, what is the total fund collected? Is the new total a perfect square? (2 Marks)

Case Study 2: Geometric Tile Design
A flooring specialist is using rhombus-shaped tiles for a lobby. The diagonals of each tile are 40 cm and 30 cm.

(i) Find the area of one such tile. (2 Marks)

(ii) Find the perimeter of one tile. (Hint: Diagonals of a rhombus bisect each other at 90°; use Pythagoras theorem). (2 Marks)

VIVA VOCE

(5 Marks)

- **Roots:** How many digits are there in the square root of a 7-digit number?
- **Variation:** Give an example from daily life where inverse variation is applicable.
- **Interest:** Why is Compound Interest always more than Simple Interest for the same period (for $n > 1$)?
- **Quadrilaterals:** Define a "Kite" and state its property regarding its diagonals.
- **Inequations:** If $-2x < 6$, what is the relationship between x and -3?