MATHEMATICS MOCK TEST

Class: VIII | Set: 9

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

NAME: _____ **ROLL NO:** _____

SECTION A

(1 Mark Each)

1. Test the divisibility of 562 by 4 using the divisibility rule.
2. Rewrite the following using set notation: "Set A is a proper subset of set B."
3. If the cost of 50 pencils is ₹120, what is the cost of one pencil?
4. If A can finish a piece of work in n days, what part of the work is completed by A in 1 day?
5. Solve the following linear equation for x: $\dfrac{2-9x}{16+5x}=0$.

SECTION B

(2 Marks Each)

6. Find the sum of the digits of a two-digit number where the units digit is 3 and seven times the sum of the digits is the number itself.
7. Let $\xi=\{x \mid x\in\mathbb{Z}, -4\le x\le 4\}$, $A=\{x \mid x\in W, x<4\}$ and $B=\{x \mid x\in N, 2<x\le 4\}$. Find A' and B'.
8. If 18 notebooks cost ₹333, how many notebooks can be purchased for ₹425.50?
9. A pipe can fill a tank in 16 hours. Due to a leak in the bottom, it is filled in 24 hours. If the tank is full, how much time will the leak take to empty it?
10. Two numbers are in the ratio $3:4$ and their sum is 84. Find the numbers.

SECTION C

(3 Marks Each)

11. If X and Y represent digits, what is the maximum possible value of Y in the following addition?

$$\begin{array}{cccc} & 5 & X & 9 \\ & 3 & 2 & 7 \\ + & 2 & Y & 8 \\ \hline 1 & 1 & 1 & 4 \end{array}$$

12. Let $A = \{a, b, c, d, e\}$, $B = \{a, c, e, g\}$, and $C = \{b, e, f, g\}$. Verify the distributive law: $A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$.

13. A journey by car takes 48 minutes at 65 km/h. How fast must the car go to finish the journey in 40 minutes?

14. Divide 25 into two parts such that 7 times the first part added to 5 times the second part makes 139.

SECTION D

(4 Marks Each - Case Study)

Case Study 1: Efficiency and Earnings
In a technical project, three experts A, B, and C are assigned a task. A can do a piece of work in 12 days, B in 15 days, and C in 10 days. They work together to finish the task.

(i) In what time will they all together finish the work? (2 Marks)

(ii) If they received ₹1800 for the entire job, how should the money be shared among them based on their daily work contribution? (2 Marks)

Case Study 2: The Number Balance Riddle
The sum of two numbers is 110. The numbers follow a specific mathematical balance: one-fifth of the larger number is 8 more than one-ninth of the smaller number.

(i) Let the larger number be x. Form a linear equation representing the condition using both x and the total sum. (2 Marks)

(ii) Solve the equation to find the values of both the larger and the smaller numbers. (2 Marks)

VIVA VOCE

(5 Marks)

- **Numbers:** State the divisibility rule for a number to be divisible by 6.
- **Sets:** What is a "Power Set" and how do you calculate the number of elements in it?
- **Variation:** If the number of workers increases, does the time taken to complete a job show direct or inverse variation?
- **Time & Work:** If person A takes 10 days and person B takes 20 days, what is the ratio of their efficiency?
- **Linear Equations:** What is the "Degree" of a linear equation?