
MATHEMATICS MOCK TEST

Class: VIII | Set: 7

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

NAME: _____

ROLL NO: _____

SECTION A

(1 Mark Each)

1. Rewrite using set notation: "Cardinal number of set E is 15."
2. Solve the linear equation: $3(y - 7) - 2(3y - 4) = (2 - 5y)$.
3. If the cost of 40 toys is ₹1024, find the cost of one dozen such toys.
4. Find three natural numbers whose sum and product are equal.
5. If a pipe can fill a tank in 16 hours, what part of the tank is filled in 1 hour?

SECTION B

(2 Marks Each)

6. In a two-digit number, the units digit is four times the tens digit and the sum of the digits is 10. Find the number.
7. Let A be the set of letters in the word "seed". Find $n(A)$ and the total number of subsets of A .
8. A journey by car takes 48 minutes at 65 km/h. How fast must the car go to finish the same journey in 40 minutes?
9. A is twice as good a workman as B and together they finish a piece of work in 14 days. In how many days can A alone do it?
10. Divide 180 into two parts such that the first part is 12 less than twice the second part.

SECTION C

(3 Marks Each)

11. Find the values of A , B and C in the following cryptarithmic addition:

$$\begin{array}{r} \\ \\ + \\ \hline \\ \\ \\ \end{array}$$

12. Let $\xi = \{x \mid x \in N, 4 \leq x < 18\}$, $A = \{x \mid x \text{ is a multiple of } 2\}$, $B = \{x \mid x \text{ is a multiple of } 3\}$, and $C = \{x \mid x \in N, x < 11\}$. Verify that: $A \cup (B \cap C) = (A \cup B) \cap (A \cup C)$.

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13. A and B together can finish a work in 30 days. They worked at it for 20 days and then B left. The remaining work was done by A alone in 20 more days. In how many days can A alone finish the whole work?
14. A man made a trip of 480 km in 9 hours. Some part of the trip was covered at 45 km/h and the remaining part at 60 km/h. Find the distance covered at 45 km/h.

SECTION D

(4 Marks Each - Case Study)

Case Study 1: Digital Cryptarithmic

In a mathematics workshop, a student is given a division problem where digits are replaced by letters A and B :

$$AB)252(BA$$

The process involves a first subtraction of 24 and a final remainder of 0 after a subtraction of 12.

- (i) Determine the values of A and B that satisfy this division sum. (2 Marks)
- (ii) Using the values of A and B found, calculate the product ($A \times B$) and the sum ($A + B$). (2 Marks)

Case Study 2: Construction Labor Dynamics

A contractor calculates that 7 workers working 6 hours a day can build a specific boundary wall in 12 days.

- (i) How many total man-hours are required to build the wall? (2 Marks)
- (ii) How many days will 3 workers take to build a similar wall if they work 8 hours a day? (2 Marks)

VIVA VOCE

(5 Marks)

- **Sets:** What is the difference between an element belonging to a set (\in) and a set being a subset (\subset)?
- **Numbers:** Test the divisibility of 7304 by 8 verbally.
- **Linear Equations:** If you subtract a number from the numerator of $\frac{12}{13}$ and add six times that number to the denominator, and the fraction becomes $\frac{1}{11}$, what is the first step to solve this?
- **Time & Work:** If A is thrice as good a workman as B , what is the ratio of the time taken by A to that of B to finish the same work?
- **Variation:** Is the relationship between the number of workers and the time taken to complete a job an example of direct or inverse variation?