

# **Linear Equations In One Variable**

#### MATHEMATICAL REASONING

**1.** Solve for x :

(3x + 1)	(2x-3)	(x+3)	(3x-1)
16	7	8	14
(a) 5		(b) 10	)
(c) –14		(d) 12	2

- A number is 56 greater than the average of its third, quarter and one-twelfth. Find the number.
  (a) 85
  (b) 64
  - (c) 72 (d) 40
- **3.** If  $\frac{1}{3}$  of a number is 10 less than the original number, then the number is \_\_\_\_\_. (a) 30 (b) 15 (c) 10 (d) 27 **4.** Solve for x: 6(3x+2)-5(6x-1)=6(x-3)
- 4. Solve for x: 6(3x+2) 5(6x-1) = 6(x-3)-5(7x-6)+12x (a) -1 (b) 1 (c) 0 (d) 2
- The number 299 is divided into two parts in the ratio 5:8. The product of the numbers is \_\_\_\_\_.
  (a) 21140
  - (b) 21294 (c) 21160
  - (d) 31294
- 6. If  $\left(\frac{2}{3}\right)^{rd}$  of a number is 20 less than the

original number, then the number is\_\_\_\_\_.

- (a) 60 (b) 40
- (c) 80
- (d) 120

7. The perimeter of a rectangle is numerically equal to the area of rectangle. If width of rectangle is  $2\frac{3}{4}cm$ , then its length is \_\_\_\_\_.

(a) 
$$\frac{11}{3}cm$$
  
(b)  $\frac{22}{3}cm$   
(c) 11cm

- (d) 10cm
- A number whose seventh part exceeds its eighth part by 1, is \_\_\_\_\_.
  (a) 58 (b) 56
  (c) 64 (d) 68
- **9.** A number consists of two digits whose sum is 9. If 27 is subtracted from the original number, its digits are interchanged. Then the original number is \_\_\_\_\_.
  - (a) 53 (b) 45 (c) 92 (d) 63
- **10.** The denominator of a rational number is greater than its numerator by 3. If 3 is subtracted from the numerator and 2 is added to its denominator, the new number becomes 1/5. The original rational number is;\_\_.

(a) 
$$-\frac{5}{8}$$
 (b)  $\frac{5}{8}$   
(c)  $\frac{3}{8}$  (d)  $-\frac{3}{8}$ 

11. If  $x - \left(2x - \frac{5x - 1}{3}\right) = \frac{x - 1}{3} + \frac{1}{2}$  then, x is equal to \_\_\_\_\_. (a)  $\frac{3}{2}$  (b)  $\frac{4}{7}$ (c)  $\frac{7}{3}$  (d)  $\frac{9}{2}$ 

- **12.** A 2-digit number is less than 20. The sum of the digits is double that of their product. What is the number?
  - (a) 12 (b) 15 (c) 13 (d) 11
- **13.** Find two parts of 34 such that  $\left(\frac{4}{7}\right)^{\text{th}}$  of one part is equal to  $\left(\frac{2}{5}\right)^{\text{th}}$  of the other. (a) 16, 18 (b) 14, 20 (c) 15, 19 (d) None of these
- **14.** if the angles of a triangle are in the ratio 2:3:4, then the difference between the greatest and the smallest angle is \_\_\_\_\_.
  - (a)  $10^{\circ}$  (b)  $20^{\circ}$ (c)  $30^{\circ}$  (d)  $40^{\circ}$
- 15. One-sixth of a number when subtracted from the number itself gives 25. The number is
  (a) 30
  (b) 32
  (c) 35
  (d) 28

#### **EVERYDAY MATHEMATICS**

**16.** There were only two candidates in an election. One got 62% votes and was elected by a margin of 144 votes. The total number of voters were \_\_\_\_\_.

(a) 500	(b) 600
(c) 700	(d) 800

- **17.** Sunita is twice a sold as Ashima. If six years is subtracted from Ashima's age and four years added to Sunita's age, then Sunita will be four times that of Ashima's age. Find the sum of their ages two years ago.
  - (a) 40 years
  - (b) 42 years
  - (c) 36 years
  - (d) 38 years

18. At a party, colas, squash and fruit juice were offered to guests. One-fourth of the guests drank colas, One-third drank squash, two-fifths drank fruit juice and just three did not drink anything. How many guests were there in all?,
(a) 240
(b) 180

(a) 240	(b) 180
(c) 144	(d) 190

- 19. Two years ago, Mohit was three times as old as his son and two years hence, twice of his age will be equal to five times that of his son. Then the present age of Mohit is \_\_\_\_\_.
  (a) 14 years (b) 38 years
  (c) 32 years (d) 34 years
- **20.** A steamer goes downstream and covers the distance between two ports in 5 hours while it covers the same distance upstream in 6 hours. If the speed of the stream is 1 km/hr, find the speed of the steamer in still water.
  - (a) 12 km/hr
  - (b) 11 km/hr
  - (c) 13 km/hr
  - (d) 14 km/hr

## **ACHIEVERS SECTION (HOTS)**

**21.** Fill in the blanks.

(i) The solution of the equation ax+b=0 is .

(ii) The shifting of a number from one side of an equation to other is \_\_\_\_\_.

(iii) If a and b are positive integers then the solution of the equation ax=b has to be always \_\_\_\_\_.

(iv) Linear equation in one variable has only one variable with power\_\_\_\_\_.

	(i)	(ii)	(iii)	(iv)
(a)	x=b/a	commutativity	positive	1
(b)	x=-b/a	commutativity	negative	2
(c)	x=b/a	transposition	negative	2
(d)	x=-b/a	transposition	positive	1

**22.** Which of the following statements is CORRECT?

**Statement - 1:**  $X = \frac{1}{2}$  is the solution of  $\frac{(2x-3)}{2} - \frac{(2x-1)}{2} - \frac{x-2}{2}$ 

$$\frac{1}{4} - \frac{1}{2} = \frac{1}{3}$$

**Statement - 2:**  $x = \frac{63}{2}$  is the solution of

$$\frac{2x-17}{2} - \left(x - \frac{x-1}{3}\right) = 12$$

- (a) Only Statement-1
- (b) Only Statement-2
- (c) Both Statement -1 and Statement 2
- (d) Neither Statement -1 nor Statement 2

**23.** State 'T' for true and 'F' for false.

I. An altitude of a triangle is five-third the length of its corresponding base. If the altitude be increased by 4 cm and the base be decreased by 2 cm, the area of the triangle would remain the same. The base and the altitude of the triangle respectively is 12 cm and 20 cm.

II. The perimeter of a rectangle is 140 cm. If the length of the rectangle is increased by 2 cm and its breadth decreased by 2 cm, the area of the rectangle is increased by 66 sq. cm. The length and breadth of the rectangle respectively is 35 cm and 30 cm.

III. The sum of two numbers is 2490. If 6.5% of one number is equal to 8.5% of the other number, then one of the numbers will be 1411.

	Ι	II	III
(a)	F	F	F
(b)	F	Т	Т
(c)	Т	F	F
(d)	Т	F	Т

**24.** Which of the following statements is INCORRECT?

(a) Kusum buys some chocolates at the rate of Rs. 10 per chocolate. She also buys an equal number of candies at the rate of Rs. 5 per candy. She makes a 20% profit on

chocolates and 8% profit on candies. At the end of the day, all chocolates and candies are sold out and her profit is Rs. 240. Therefore, Kusum buys 100 chocolates.

(b) A carpenter charged Rs. 2500 for making a bed. The cost of materials used is Rs. 1100 and the labour charges are Rs. 200/hr. So, the carpenter will work for 7 hours.

(c) On dividing Rs. 200 between A and B such that twice of A's share is less than 3 times B's share by 200. So, B's share is Rs. 120.

(d) Madhulika thought of a number, double it and added 20 to it. On dividing the resulting number by 25, she gets 4. Hence, the required number is 45.

#### **25.** Match the following.

Column – I	Column – II
(P) If $\frac{5m}{6} + \frac{3m}{4} = \frac{19}{12}$ , then $m =$	(i) $\frac{1}{6}$
(Q) If $2x + \frac{3}{4} = \frac{x}{2} + 1$ , then $x =$	(ii) 36
(R) If $\frac{z}{2} - \frac{3z}{4} + \frac{5z}{6} = 21$ , then $z =$	(iii) $\frac{27}{10}$
(S) If $\frac{y}{2} - \frac{1}{5} = \frac{y}{3} + \frac{1}{4}$ , then $y =$	(iv) 1

(a)  $P \rightarrow (iii)$ ;  $Q \rightarrow (iv)$ ;  $R \rightarrow (i)$ ;  $S \rightarrow (ii)$ (b)  $P \rightarrow (iv)$ ;  $Q \rightarrow (ii)$ :  $R \rightarrow (iii)$ :  $S \rightarrow (i)$ (c)  $P \rightarrow (ii)$ ;  $Q \rightarrow (i)$ ;  $R \rightarrow (iii)$ ;  $S \rightarrow (iv)$ (d)  $P \rightarrow (iv)$ ;  $Q \rightarrow (i)$ ;  $R \rightarrow (ii)$ ;  $5 \rightarrow (iii)$ 

ANSWER KEY									
1.	А	2.	С	3.	В	4.	А	5.	С
6.	А	7.	В	<b>8</b> .	В	9.	D	10.	В
11.	А	12.	D	13.	В	14.	D	15.	А
16.	В	17.	D	18.	В	19.	В	20.	В
21.	D	22.	А	23.	D	<b>24</b> .	D	<b>25</b> .	D

## **HINTS & EXPLANATIONS**

1.

(a) :We have,  

$$\frac{(3x+1)}{16} + \frac{(2x-3)}{7} = \frac{(x+3)}{8} + \frac{(3x-1)}{14}$$

$$\Rightarrow \frac{7(3x+1)+16(2x-3)}{112}$$

$$= \frac{14(x+3)+8(3x-1)}{112}$$

$$\Rightarrow \frac{21x+7+32x-48}{112} = \frac{14x+42+24x-8}{112}$$

$$\Rightarrow \frac{53x-41}{112} = \frac{38x+34}{112}$$

$$\Rightarrow 53x-41 = 38x+34 \Rightarrow 15x = 75$$

$$\Rightarrow x = \frac{75}{15} = 5$$

2. (c): Let the number be x. Then, One-third of  $x = \frac{x}{3}$ , Quarter of  $x = \frac{x}{4}$ One-twelfth of  $x = \frac{x}{12}$ 

Average of third, quarter and one-twelfth of x =

$$\frac{\left(\frac{x}{3} + \frac{x}{4} + \frac{x}{12}\right)}{3} = \frac{1}{3}\left(\frac{x}{3} + \frac{x}{4} + \frac{x}{12}\right)$$

According to question, we have

$$\therefore x = \frac{1}{3} \left( \frac{x}{3} + \frac{x}{4} + \frac{x}{12} \right) + 56$$
$$\Rightarrow x = \frac{x}{9} + \frac{x}{12} + \frac{x}{36} + 56$$
$$\Rightarrow x - \frac{x}{9} - \frac{x}{12} - \frac{x}{36} = 56$$
$$\Rightarrow 36x - 4x - 3x - x = 36 \times 56$$
$$\Rightarrow 28x = 36 \times 56 \qquad \Rightarrow x = \frac{36 \times 56}{28}$$
$$\Rightarrow x = 72$$
Hence, the number is 72.

**3.** (b): Let the number be *x*. According to question, we have  $x = \frac{1}{3}x + 10$ 

$$\Rightarrow x - \frac{1}{3}x = 10 \Rightarrow \frac{3x - x}{3} = 10$$

$$\Rightarrow \frac{2x}{3} = 10 \Rightarrow x = \frac{10 \times 3}{2} = 15$$
  
Hence, the number is 15.

- 4. (a) : We have, 6(3x + 2) 5(6x 1)= 6(x - 3) - 5(7x - 6) + 12x $\Rightarrow 18x + 12 - 30x + 5$ = 6x - 18 - 35x + 30 + 12x $\Rightarrow 5x = -5 \Rightarrow x = -1$
- 5. (c) : Ratio of two parts = 5 : 8 Smaller number =  $\frac{5}{13} \times 299 = 115$ Larger number =  $\frac{8}{13} \times 299 = 184$ So, the product of the number = 115 × 184 = 21160
- 6. (a): Let the number be x. According to question, we have  $\frac{2x}{3} = x - 20$   $\Rightarrow \frac{2x}{3} - \frac{x}{1} = -20 \Rightarrow \frac{2x - 3x}{3} = -20$  $\Rightarrow \frac{-x}{3} = -20 \Rightarrow x = 20 \times 3 = 60$
- 7. (b): Let the length of rectangle be  $x \ cm$ . Width of rectangle =  $2\frac{3}{4}cm = \frac{11}{4}cm$   $\therefore$  Area of rectangle = length × width  $= x \times \frac{11}{4} = \frac{11x}{4}sq$ . cm

Also, perimeter of rectangle = 2 (length + width) Now, according to question.

$$\frac{11x}{4} = 2x + \frac{11}{2} \Rightarrow \frac{11x}{4} - 2x = \frac{11}{2}$$
$$\Rightarrow \frac{11x - 8x}{4} = \frac{11}{2} \Rightarrow \frac{3x}{4} = \frac{11}{2}$$
$$\Rightarrow 6x = 4 \times 11 \Rightarrow x = \frac{4 \times 11}{6} = \frac{22}{3} cm$$

**8.** (b): Let the number be x. According to question, we have

$$\frac{x}{7} - \frac{x}{8} = 1 \Longrightarrow \frac{8x - 7x}{56} = 1 \Longrightarrow x = 56$$

- 9. (d): Let units place digit be x. So tens place digit = 9 - x.  $\therefore$  The original number = 10(9-x)+x= 90-10x + x=90 - 9xNow. after interchanging the digits, the number formed = 10 (x) + 9 - x = 9x + 9 $\therefore$  According to question, we have 90 - 9x - 27 = 9x + 9 $\Rightarrow -18x = -54 \Rightarrow x = 3$ So, the original number =  $90 - 9 \times 3 = 63$
- **10.** (b): Let numerator be x, then denominator is x+3.

... The original rational number =  $\frac{x}{x+3}$ Now, according to question  $\frac{x-3}{x+3+2} = \frac{1}{5} \Rightarrow \frac{x-3}{x+5} = \frac{1}{5}$ On cross multiplying, we get 5(x-3) = x+5  $\Rightarrow 5x-15 = x+5 \Rightarrow 5x-x = 5+15$   $\Rightarrow 4x = 20 \Rightarrow x = \frac{20}{4} = 5$ Hence, the original rational number is  $\frac{5}{5+3} = \frac{5}{8}$ 

- 11. (a): We have,  $x - \left(2x - \frac{(5x-1)}{3}\right) = \frac{x-1}{3} + \frac{1}{2}$   $\Rightarrow x - \left(\frac{6x - 5x + 1}{3}\right) = \frac{2x - 2 + 3}{6}$   $\Rightarrow \frac{3x - x - 1}{3} = \frac{2x + 1}{6}$   $\Rightarrow 6(2x - 1) = 3(2x + 1) \Rightarrow 12x - 6 = 6x + 3$   $\Rightarrow 6x = 9 \Rightarrow x = \frac{9}{6} = \frac{3}{2}$
- 12. (d) : Since, 2 digit number is less then 20 so tens digit =1.
  Let ones digit of the number be x According to question, we have

 $1 + x = 2(1 \times x) \Longrightarrow 1 + x = 2x \Longrightarrow x = 1$ ∴ Required numbers 11.

- 13. (b) :Let one part be x Then, other part be 34 - xAccording to question, we have  $\frac{4}{7}(x) = \frac{2}{5}(34 - x) \Rightarrow \frac{4x}{7} = \frac{68}{5} - \frac{2x}{5}$   $\Rightarrow \frac{4x}{7} + \frac{2x}{5} = \frac{68}{5} \Rightarrow \frac{20x + 14x}{35} = \frac{68}{5}$   $\Rightarrow \frac{34}{35} \times x = \frac{68}{5} \Rightarrow x = \frac{68}{5} \times \frac{35}{34}$   $\Rightarrow x = 2 \times 7 \Rightarrow x = 14$   $\therefore$  One part = 14 and Other part = 34 - 14 = 20
- **14.** (d) : Let the angles of the triangle be 2x, 3x and 4x. As sum of angles of a triangle Is 180° ∴ 2x + 3x + 4x = 180°  $\Rightarrow 9x = 180^\circ \Rightarrow x = \frac{180^\circ}{9} = 20^\circ$ So, the angles are  $2x = 2 \times 20^\circ = 40^\circ$  $3x = 3 \times 20^\circ = 60^\circ$  $4x = 4 \times 20^\circ = 80^\circ$ ∴ Difference between the greatest and smallest angles =  $80^\circ - 40^\circ = 40^\circ$
- **15.** (a) : Let the number be *x* According to question, we have

$$x - \frac{1}{6}x = 25 \Rightarrow \frac{6x - x}{6} = 25$$
$$\Rightarrow 5x = 25 \times 6 \Rightarrow x = \frac{25 \times 6}{5} \Rightarrow x = 30$$

So, the number is 30.

16. (b) : If there were only two candidates and one of them got 62% votes. So, other got (100 - 62)% = 38% votes. Win margin of first candidate -(62 - 38)% = 24%Now, let the total number of voters be x. According to question, we have 24% of x = 14424x

$$\Rightarrow \frac{24x}{100} = 144 \Rightarrow 24x = 144x100$$

$$\Rightarrow x = \frac{144 \times 100}{24} = 600$$
  
So, the total number of voters = 600.

- **17.** (d): Let age of Ashima be x years. Then, age of Sunita Is 2x years, According to question, we have 4(x-6) = 2x+4  $\Rightarrow 4x-24 = 2x+4 \Rightarrow 2x = 28 \Rightarrow x = 14$   $\therefore$  Age of Ashima = 14 years Age of Sunita =  $2 \times 14 = 28$  years Sum of their ages = 42 years Hence, two years ago they were 42 - 4 = 38 years
- **18.** (b): Let total number of guests at the party be x

Number of guests who drank colas =  $\frac{1}{4}x$ Number of guests who drank squash =  $\frac{1}{3}x$ Number of guests who drank fruit juice =  $\frac{2}{5}x$ Number of guests who did not drank anything = 3 According to question, we have  $\frac{1}{4}x + \frac{1}{3}x + \frac{2}{5}x + 3 = x$   $\Rightarrow \frac{15x + 20x + 24x + 180}{60} = x$   $\Rightarrow 59x + 180 = 60x \Rightarrow x = 180$ Hence, there were 180 guests at the party.

**19.** (b) : Let present age of Mohit be x years Two years ago, his age = (x - 2) years So, his son's age =  $\left(\frac{x-2}{3}\right)$  years So, present age of son =  $\left(\frac{x-2}{2}+2\right)$  years

After 2 years, son's age = 
$$\left(\frac{x-2}{3}+2+2\right)$$

years

and that of Mohit = (x + 2) years So, according to question, we have

$$2(x+2) = 5\left(\frac{x-2}{3}+2+2\right)$$
  

$$\Rightarrow 2x+4 = \frac{5x-10}{3}+20$$
  

$$\Rightarrow 2x - \left(\frac{5x-10}{3}\right) = 20-4$$
  

$$\Rightarrow \frac{6x-5x+10}{3} = 16 \Rightarrow x+10 = 48$$
  

$$\Rightarrow x = 48 - 10 = 38 years$$
  

$$\therefore \text{ Present age of Mohit} = 38 \text{ years.}$$

- **20.** (b) : Let the speed of the steamer in still water be x km/hr. Speed of the stream = 1 Km/hr Downstream speed = (x + 1) km/hr Upstream speed = (x - 1) km/hr According to question, 5(x + 1) = 6(x - 1) $\Rightarrow 5x + 5 = 6x - 6$  $\Rightarrow 5 + 6 = 6x - 5x \Rightarrow x = 11$ Hence, the speed of the steamer in still water is 11 km/hr.
- **21.** (d): (i) We have, ax + b = 0 $\Rightarrow ax = -b \Rightarrow x = \frac{-b}{a}$

(ii) The shifting of a number from one side of an equation to other is called transposition. (iii) We have, ax = b

 $\Rightarrow x = \frac{b}{a}$ , which is the required solution

Given that a and b are positive integers.  $\therefore$  Solution of the equation ax = b has to be always positive.

(iv) Linear equation is of the form ax + b = 0i.e., only one variable with power 1

22. (a): Statement-1: 
$$\frac{(2x-3)}{4} - \frac{(2x-1)}{2} = \frac{x-2}{3}$$
$$\Rightarrow \frac{2x-3-4x+2}{4} = \frac{x-2}{3}$$
$$\Rightarrow \frac{-2x-1}{4} = \frac{x-2}{3} \Rightarrow -6x - 3 = 4x - 8$$
$$\Rightarrow -6x - 4x = -8 + 3$$
$$\Rightarrow -10x = -5 \Rightarrow x = \frac{1}{2}$$
So, Statement-1 is true.

Statement - 2: 
$$\frac{2x-17}{2} - \left(x - \frac{x-1}{3}\right) = 12$$
  

$$\Rightarrow \frac{2x-17}{2} - \left(\frac{3x-x+1}{3}\right) = 12$$

$$\Rightarrow \frac{3(2x-17) - 2(2x+1)}{6} = 12$$

$$\Rightarrow 6x - 51 - 4x - 2 = 12 \times 6$$

$$\Rightarrow 2x - 53 = 72 \Rightarrow 2x = 72 + 53$$

$$\Rightarrow x = \frac{125}{2}$$

So, Statement-2 is false.

- 23. (d) : I. Let length of the base of a triangle corresponding to the altitude be  $x \ cm$ Altitude of the triangle  $= \frac{5}{3}xcm$ Area of the triangle  $= \frac{1}{2} \times x \times \frac{5}{3}x = \frac{5}{6}x^2$ According to question, we have  $\frac{1}{2}(x-2)\left(\frac{5}{3}x+4\right) = \frac{5}{6}x^2$   $\Rightarrow \left(\frac{1}{2}x-1\right)\left(\frac{5}{3}x+4\right) = \frac{5}{6}x^2$   $\Rightarrow \frac{5}{6}x^2+2x-\frac{5}{3}x-4=\frac{5}{6}x^2$   $\Rightarrow \frac{5}{6}x^2+2x-\frac{5}{3}x=\frac{5}{6}x^2+4$ 
  - $\Rightarrow \frac{6x 5x}{3} = 4 \qquad \Rightarrow \frac{x}{3} = 4 \Rightarrow x = 12$   $\therefore \text{ Length of base of the triangle} = 12 \text{ cm}$ Attitude of the triangle  $= \frac{5}{3} \times 12 = 20 \text{ cm}$ II. Let length of the rectangle be x cm Perimeter of the rectangle = 140 cm  $\Rightarrow 2(\text{Length} + \text{Breadth}) = 140 \text{ cm}$   $\Rightarrow (x + \text{Breadth}) = \frac{140}{2} = 70$   $\Rightarrow \text{Breadlh} = (70 - x) \text{ cm}$   $\therefore \text{ Area of the rectangle} = \text{Length} \times \text{Breadth}$   $= x \times (70 - x = 70x - x^2)$ According to question, we have  $(x + 2) (70 - x - 2) = 70x - x^2 + 66$  $\Rightarrow (x + 2) (68 - x) = 70x - x^2 + 66$

 $\Rightarrow 66x - x^2 - 70x + x^2 = 66 - 136$  $\Rightarrow -4x = -70 \Rightarrow x = 17.5$  $\therefore$  Length of the rectangle = 17.5cm Breadth of the rectangle = (70 - 17.5)cm $= 52.5 \ cm$ III. Let the one number be x Then, the other number be 2490 - x 6.5% of the first number =  $x \times \frac{6.5}{100}$ 8.5% of the second number  $=(2490-x)\times\frac{8.5}{100}$ According to question, we have  $\frac{6.5}{100} = (2490 - x) \times \frac{8.5}{100}$  $\Rightarrow \frac{6.5}{100}x + \frac{8.5}{100}x = \frac{21165}{100}$  $\Rightarrow \frac{15x}{100} = \frac{21165}{100} \Rightarrow x = \frac{21165}{15} \Rightarrow x = 1411$ 

24. (d): (a) Let the number of chocolates purchased be x.  $\therefore$  The number of candies purchased = xCost of x chocolates = Rs. 10xand cost of x candies = Rs. 5xAccording to question, 20% of 10x + 8% of 5x = Rs.240 $\Rightarrow \frac{20}{100} \times 10x + \frac{8}{100} \times 5x = 240$  $\Rightarrow \frac{200x + 40x}{100} = 240 \Rightarrow 240x = 24000$  $\Rightarrow x = \frac{24000}{240} \Rightarrow x = 100$ Hence, the number of chocolates purchased is 100. (b) Let the carpenter worked for x hours.  $\therefore$  Labour charges for x hours = Rs. 200x According to question. 200x + 1100 = 2500 $\Rightarrow$  200x = 2500 - 1100  $\Rightarrow$  200x = 1400  $\Rightarrow x = \frac{1400}{200} \Rightarrow x = 7$ Hence, the carpenter worked for 7 hours.

Hence, the carpenter worked for 7 hours. (c) Let B's share be Rs. x. Since,  $2 \times A$ 's share  $= 3 \times B$ 's share -200

$$\Rightarrow A's \text{ share } = \frac{3x - 200}{2}$$
According to question,  $\frac{3x - 200}{2} + x = 200$ 

$$\Rightarrow \frac{3x}{2} - \frac{200}{2} + x = 200 \Rightarrow \frac{3x}{2} - 100 + x = 200$$

$$\Rightarrow \frac{3x}{2} + x = 200 + 100 \Rightarrow \frac{3x + 2x}{2} = 300$$

$$\Rightarrow \frac{5x}{2} = 300 \Rightarrow x = \frac{2x300}{5} \Rightarrow x = 120$$
Therefore, B's share =Rs. 120
(d) Let the number be x.
Double the number and added 20 to it, we get  $2x + 20$ 
According to the question,  $\frac{1}{25}(2x + 20) = 4$ 

$$\Rightarrow 2x + 20 = 4 \times 25 \Rightarrow 2x + 2 = 100$$

$$\Rightarrow 2x = 100 - 20 \Rightarrow 2x = 80$$

$$\Rightarrow x = \frac{80}{2} \Rightarrow x = 40$$

25. (d): P. 
$$\frac{5m}{6} + \frac{3m}{4} = \frac{19}{12}$$
  
 $\Rightarrow \frac{10m+9m}{12} = \frac{19}{12} \Rightarrow 19m = 19 \Rightarrow m = 1$   
Q.  $2x + \frac{3}{4} = \frac{x}{2} + 1 \Rightarrow \frac{4x-x}{2} = \frac{4-3}{4}$   
 $\Rightarrow 4(3x) = 2 \Rightarrow 12x = 2 \Rightarrow x = \frac{2}{12} = \frac{1}{6}$   
R.  $\frac{z}{2} - \frac{3z}{4} + \frac{5z}{6} = 21$   
 $\frac{6z - 9z + 10z}{12} = 21 \Rightarrow 7z = 21 \times 12$   
 $\Rightarrow z = \frac{21 \times 12}{7} \Rightarrow z = 36$   
S.  $\frac{y}{2} - \frac{1}{5} = \frac{y}{3} + \frac{1}{4}$   
 $\Rightarrow \frac{y}{2} - \frac{y}{3} = \frac{1}{4} + \frac{1}{5} \Rightarrow \frac{3y - 2y}{6} = \frac{5+4}{20}$   
 $\Rightarrow \frac{y}{6} = \frac{9}{20} \Rightarrow y = \frac{9 \times 6}{20} = \frac{9 \times 3}{10} = \frac{27}{10}$