

VIII

Homework - 18 (LINEAR EQUATIONS IN ONE VARIABLES)

- 1) The two third of a number increased by 9 equals 19. Find the number.
 - 2) If $\frac{1}{2}$ is subtracted from a number and the difference is multiplied by 4, the result is 5. Find the number.
 - 3) The sum of two numbers is 52. The second number is 10 more than the first. Find the numbers.
 - 4) The sum of three consecutive even integers is 270. Find the integers.
 - 5) The sum of three consecutive integers is 246. Find the integers.
 - 6) The sum of three consecutive multiples of 7 is 777, find the numbers.
 - 7) The sum of the digits of a two-digit number is 14. If 36 is added to the number, its digits are interchanged. Find the number.
 - 8) The perimeter of a triangle is 49 cm. The one side is 7 cm longer than the other and 5 cm shorter than the third. Find the length of each side of the triangle.
 - 9) Nisha has a rectangular plot of land that has been fenced with 300 m long wires. Find the dimensions of the plot, if its length is twice the breadth.
 - 10) The sum of two numbers is 184. One-third of one number exceeds one-seventh of the other number by 8. Find the two numbers.
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VIII

Homework - 18 (Linear Equations in one variable - answers)1) Let the number be x .

Then, $\frac{2}{3}x + 9 = 19$

$$\Rightarrow \frac{2}{3}x = 10$$

$$\Rightarrow x = \frac{10 \times 3}{2} = 3 \times 5 = \underline{15}$$

Hence, the required number is 15.

2) Let the number be x .

Then, $(x - \frac{1}{2})4 = 5$

$$\Rightarrow x - \frac{1}{2} = \frac{5}{4}$$

$$\Rightarrow x = \frac{5 + 1 \times 2}{4 \times 2}$$

$$\therefore x = \frac{5 + 2}{4} = \underline{\underline{\frac{7}{4}}}$$

Hence the required number = $\frac{7}{4}$ 3) Let the numbers be x and $x + 10$.

Then, $x + x + 10 = 52$

$$\Rightarrow 2x = 42$$

$$\therefore x = 21$$

Hence, the numbers are $x = 21$

and $x + 10 = 21 + 10 = 31$

4) Let the three consecutive even integers be $x, x + 2$ and $x + 4$.

Then, $x + x + 2 + x + 4 = 270$

$$3x + 6 = 270$$

$$3x = 264$$

$$x = 88$$

Hence, the three required integers are 88, 90 and 92.

5) Let the three consecutive integers be $x, x+1$ and $x+2$.

$$\text{Then, } x+x+1+x+2 = 246$$

$$\Rightarrow 3x+3 = 246$$

$$\Rightarrow 3x = 243$$

$$\therefore x = 81$$

Hence, the three consecutive integers are 81, 82 and 83.

6) Let the three consecutive multiples of 7 be $x, x+7$ and $x+14$.

$$\text{Then, } x+x+7+x+14 = 777$$

$$3x+21 = 777$$

$$3x = 777 - 21 = 756$$

$$x = \frac{756}{3} = 252$$

Hence, the three required multiples are 252, 259 and 266.

7) Let the digit in the unit's place be x and the digit in the ten's place be $14-x$.

T	0
14-x	x

$$\begin{aligned} \text{The original number} &= 10(14-x) + x \\ &= 140 - 10x + x = 140 - 9x \end{aligned}$$

T	0
x	14-x

$$\begin{aligned} \text{The reversed number} &= 10x + 14 - x \\ &= 9x + 14 \end{aligned}$$

$$\text{Then, } 140 - 9x + 36 = 9x + 14$$

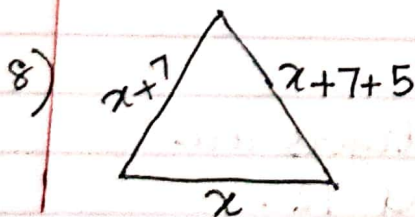
$$-9x - 9x = 14 - 140 - 36$$

$$-18x = -162$$

$$x = \frac{162}{18} = 9$$

$$\text{Also, } 14 - x = 14 - 9 = 5$$

Hence, the two digit number is 59



$$\text{Perimeter} = 49$$

$$\Rightarrow x+7+x+12+x = 49$$

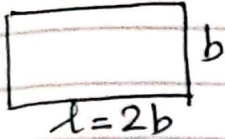
$$\Rightarrow 3x + 19 = 49$$

$$\Rightarrow 3x = 30$$

$$x = \underline{10}$$

Hence, the length of each side of the triangle
= 10cm, 17cm and 22cm.

9)



$$\text{Perimeter} = 300\text{m}$$

$$\Rightarrow 2(l+b) = 300$$

$$\Rightarrow l+b = 150$$

$$\Rightarrow 2b+b = 150$$

$$\Rightarrow 3b = 150$$

$$\therefore b = 50\text{m}$$

$$l = 2 \times 50 = 100\text{m}$$

Hence, the dimensions of the plot are 100m and 50m.

10)

Let the numbers be x and $184-x$.

$$\text{Then, } \frac{1}{3}x - \frac{1}{7}(184-x) = 8$$

$$\frac{1}{3}x - \frac{184}{7} + \frac{x}{7} = 8$$

$$\frac{x}{3} + \frac{x}{7} = 8 + \frac{184}{7}$$

$$\frac{7x+3x}{21} = \frac{56+184}{7}$$

$$\frac{10x}{21} = \frac{240}{7}$$

$$\therefore x = \frac{240 \times 21}{7 \times 10} = 72$$

$$\text{Also, } 184-x = 112$$

Hence, the two numbers are 112 and 72
