

## EXERCISE

Solve the following equations:

### Question 1

$$20 = 6 + 2x$$

**Solution:-**

Simplifying we get  $20 = 6 + 2x$

$$20 - 6 = 2x$$

$$14 = 2x$$

$$7 = x$$

$$x = 7$$

### Question 2

$$15 + x = 5x + 3$$

**Solution:-**

Simplifying we get  $15 - 3 = 5x - x$

$$12 = 4x$$

$$3 = x$$

$$x = 3$$

### Question 3

$$(3x+2)/(x-6) = -7$$

**Solution:-**

By cross multiplying  $3x + 2 = -7(x-6)$

$$3x + 2 = -7x + 42$$

$$3x + 7x = 42 - 2$$

$$10x = 40$$

$$x = 4$$

### Question 4

$$3a - 2 = 2(4 - a)$$

**Solution:-**

$$3a - 4 = 8 - 2a$$

$$3a + 2a = 8 + 4$$

$$5a = 12$$

$$a = 2.4$$

### Question 5

$$3(b - 4) = 2(4 - b)$$

**Solution:-**

$$3b - 12 = 8 - 2b$$

$$3b + 2b = 8 + 12$$

$$5b = 20$$

$$b = 20/5$$

$$b = 4$$

**Question 6**

$$(x+2)/9 = (x+4)/11$$

**Solution:-**

By cross multiplying  $11(x+2) = 9(x+4)$

$$11x + 22 = 9x + 36$$

$$11x - 9x = 36 - 22$$

$$2x = 14$$

$$x = 14/2$$

$$\Rightarrow x = 7$$

**Question 7**

$$(x - 8)/5 = (x - 12)/9$$

**Solution:-**

By cross multiplying  $9(x - 8) = 5(x - 12)$

$$9x - 72 = 5x - 60$$

$$9x - 5 = -60 + 72$$

$$4x = 12$$

$$x = 12/4$$

$$x = 3$$

**Question 8**

$$5(8x + 3) = 9(4x + 7)$$

**Solution:-**

$$40x + 15 = 36x + 63$$

$$40x - 36x = 63 - 15$$

$$4x = 48$$

$$x = 48/4$$

$$x = 12$$

**Question 9**

$$3(x + 1) = 12 + 4(x - 1)$$

**Solution:-**

$$3(x+1) = 12 + 4(x-1)$$

$$3x + 3 = 12 + 4x - 4$$

$$3x - 4x = 12 - 4 - 3$$

$$-x = 5 \Rightarrow x = -5$$

**Question 10**

$$3x/4 - \frac{1}{4}(x - 20) = x/4 + 32$$

**Solution:-**

$$3x/4 - x/4 + 5 = x/4 + 32$$

$$3x/4 - x/4 - x/4 = 32 - 5$$

$$(3x - x - x)/4 = 27$$

$$x/4 = 27$$

$$x = 27 \times 4$$

$$x = 108$$

**Question 11.**

$$3a - \frac{1}{5} = \frac{a}{5} + 5\frac{2}{5}$$

**Solution:-**

$$3a - \frac{a}{5} = 5\frac{2}{5} + \frac{1}{5}$$

$$3a - a/5 = 27/5 + 1/5$$

(Multiplying each term by 5)

$$\Rightarrow (3a \times 5) - (a/5) \times 5 = (27/5) \times 5 + (1/5) \times 5$$

$$15a - a = 27 + 1$$

$$14a = 28$$

$$a = 28/14$$

$$a = 2$$

**Question 12.**

$$x/3 - 2\frac{1}{2} = 4x/9 - 2x/3$$

**Solution:-**

$$x/3 - 5/2 = 4x/9 - 2x/3$$

Since, L.C.M. of denominators 3, 2, 9 and 3=18

$$[\text{Multiplying each term by 18}] \Rightarrow (x/3) \times 18 - (5/2) \times 18 = (4x/9) \times 18 - (2x/3) \times 18$$

$$6x - 45 = 8x - 12x$$

$$6x + 12x - 8x = 45$$

$$18x - 8x = 45$$

$$10x = 45$$

$$x = 45/10$$

$$x = 4.5$$

**Question 13:**

$$(4(y + 2))/5 = 7 + 5y/13$$

**Solution:-**

$$(4y + 8)/5 = 7 + 5y/13$$

$$(4y + 8)/5 = (91 + 5y)/13$$

(By cross multiplying)

$$13(4y + 8) = 5(91 + 5y)$$

$$52y + 104 = 455 + 25y$$

$$52y - 25y = 455 - 104$$

$$27y = 351$$

$$y = 351/27$$

$$y = 13$$

**Question 14.**

$$(a + 5)/6 - (a + 1)/9 = (a + 3)/4$$

**Solution:-**

Since, L.C.M. of denominators 6, 9 and 4=36

$$\text{Multiplying each term by 36} \Rightarrow ((a + 5)/6) \times 36 - ((a + 1)/9) \times 36 = ((a + 3)/4) \times 36$$

$$6(a + 5) - 4(a + 1) = 9(a + 3)$$

$$6a + 30 - 4a - 4 = 9a + 27$$

$$6a - 4a - 9a = 27 - 30 + 4$$

$$6a - 13a = 1$$

$$-7a = 1$$

$$a = -1/7$$

**Question 15:**

$$(2x - 13)/5 - (x - 3)/11 = (x - 9)/5 + 1$$

**Solution:-**

$$(2x - 13)/5 - (x - 3)/11 = (x - 9)/5 + 1$$

Since, L.C.M. of denominators 5, 11, 5 and 1=55

$$\therefore ((2x - 13)/5) \times 55 - ((x - 3)/11) \times 55 = ((x - 9)/5) \times 55 + (1/1) \times 55$$

$$11(2x - 13) - 5(x - 3) = 11(x - 9) + 55$$

$$22x - 143 - 5x + 15 = 11x - 99 + 55$$

$$22x - 5x - 11x = -99 + 55 + 143 - 15$$

$$6x = 198 - 114$$

$$6x = 84$$

$$x = 84/6$$

$$x = 14$$



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