

# NCERT Solutions for Class 7 Maths Chapter 4

## Simple Equations Class 7

Chapter 4 Simple Equations Exercise 4.1, 4.2, 4.3, 4.4 Solutions

**Exercise 4.1 :** Solutions of Questions on Page Number : 81

**Q1 :**

**Complete the last column of the table.**

| S. No. | Equation          | Value     | Say, whether the equation is satisfied. (Yes/No) |
|--------|-------------------|-----------|--------------------------------------------------|
| (i)    | $x + 3 = 0$       | $x = 3$   | -                                                |
| (ii)   | $x + 3 = 0$       | $x = 0$   | -                                                |
| (iii)  | $x + 3 = 0$       | $x = - 3$ | -                                                |
| (iv)   | $x - 7 = 1$       | $x = 7$   | -                                                |
| (v)    | $x - 7 = 1$       | $x = 8$   | -                                                |
| (vi)   | $5x = 25$         | $x = 0$   | -                                                |
| (vii)  | $5x = 25$         | $x = 5$   | -                                                |
| (viii) | $5x = 25$         | $x = - 5$ | -                                                |
| (ix)   | $\frac{m}{3} = 2$ | $m = - 6$ | -                                                |
| (x)    | $\frac{m}{3} = 2$ | $m = 0$   | -                                                |
| (xi)   | $\frac{m}{3} = 2$ | $m = 6$   | -                                                |

**Answer :**

(i)  $x + 3 = 0$

L.H.S. =  $x + 3$

By putting  $x = 3$ ,

L.H.S. =  $3 + 3 = 6 \neq$  R.H.S.

∴ No, the equation is not satisfied.

(ii)  $x + 3 = 0$

L.H.S. =  $x + 3$  By

putting  $x = 0$ ,

L.H.S. =  $0 + 3 = 3 \neq$  R.H.S.

∴ No, the equation is not satisfied.

(iii)  $x + 3 = 0$  L.H.S. =  $x + 3$  By putting  $x = -3$ ,

L.H.S. =  $-3 + 3 = 0 =$  R.H.S.

∴ Yes, the equation is satisfied.

(iv)  $x - 7 = 1$  L.H.S. =  $x - 7$  By putting  $x = 7$ ,

L.H.S. =  $7 - 7 = 0 \neq$  R.H.S.

∴ No, the equation is not satisfied.

(v)  $x - 7 = 1$

L.H.S. =  $x - 7$  By

putting  $x = 8$ ,

L.H.S. =  $8 - 7 = 1 =$  R.H.S.

∴ Yes, the equation is satisfied.

(vi)  $5x = 25$  L.H.S. =  $5x$  By putting  $x = 0$ ,

L.H.S. =  $5 \times 0 = 0 \neq$  R.H.S.

∴ No, the equation is not satisfied.

(vii)  $5x = 25$

L.H.S. =  $5x$

By putting  $x = 5$ ,

L.H.S. =  $5 \times 5 = 25 =$  R.H.S.

∴ Yes, the equation is satisfied.

(viii)  $5x = 25$

L.H.S. =  $5x$  By putting  $x = -5$ ,

L.H.S. =  $5 \times (-5) = -25 \neq$  R.H.S.

∴ No, the equation is not satisfied.

$$(ix) \frac{m}{3} = 2$$

$$\text{L.H.S.} = \frac{m}{3}$$

By putting  $m = -6$ ,

$$\text{L. H. S.} = \frac{-6}{3} = -2 \neq \text{R.H.S.}$$

$$(x) \frac{m}{3} = 2 \quad \therefore \text{No, the equation is not satisfied.} \neq \text{R.H.S.}$$

$$\text{L.H.S.} = \frac{m}{3}$$

By putting  $m = 0$ ,

$$\text{L.H.S.} = \frac{0}{3} = 0$$

$\therefore$

$$(xi) \frac{m}{3} = 2 \quad \text{L.H.S.} = \text{R.H.S.} \quad \therefore \text{Yes, the equation is satisfied.}$$

$$\text{L.H.S.} = \frac{m}{3}$$

By putting  $m = 6$ ,

$$\frac{6}{3} = 2$$

**Q2 :**

Check whether the value given in the brackets is a solution to the given equation or not:

(a)  $n + 5 = 19$  ( $n = 1$ ) (b)  $7n + 5 = 19$  ( $n = -2$ )

(c)  $7n + 5 = 19$  ( $n = 2$ ) (d)  $4p - 3 = 13$  ( $p = 1$ )

(e)  $4p - 3 = 13$  ( $p = -4$ ) (f)  $4p - 3 = 13$  ( $p = 0$ )

**Answer :**

(a)  $n + 5 = 19$  ( $n = 1$ ) Putting  $n = 1$  in L.H.S.,  $n + 5 = 1 + 5 = 6 \neq 19$

As L.H.S.  $\neq$  R.H.S.,

Therefore,  $n = 1$  is not a solution of the given equation,  $n + 5 = 19$ .

(b)  $7n + 5 = 19$  ( $n = -2$ )

Putting  $n = -2$  in L.H.S.,

$$7n + 5 = 7 \times (-2) + 5 = -14 + 5 = -9 \neq 19$$

As L.H.S.  $\neq$  R.H.S.,

Therefore,  $n = -2$  is not a solution of the given equation,  $7n + 5 = 19$ .

(c)  $7n + 5 = 19$  ( $n = 2$ )

Putting  $n = 2$  in L.H.S.,

$7n + 5 = 7 \times (2) + 5 = 14 + 5 = 19 = \text{R.H.S.}$  As  
L.H.S. = R.H.S.,

Therefore,  $n = 2$  is a solution of the given equation,  $7n + 5 = 19$ .

(d)  $4p - 3 = 13$  ( $p = 1$ )

Putting  $p = 1$  in L.H.S.,

$4p - 3 = (4 \times 1) - 3 = 1 \neq 13$

As L.H.S.  $\neq$  R.H.S.,

Therefore,  $p = 1$  is not a solution of the given equation,  $4p - 3 = 13$ .

(e)  $4p - 3 = 13$  ( $p = -4$ )

Putting  $p = -4$  in L.H.S.,

$4p - 3 = 4 \times (-4) - 3 = -16 - 3 = -19 \neq 13$

As L.H.S.  $\neq$  R.H.S.,

Therefore,  $p = -4$  is not a solution of the given equation,  $4p - 3 = 13$ .

(f)  $4p - 3 = 13$  ( $p = 0$ )

Putting  $p = 0$  in L.H.S.,

$4p - 3 = (4 \times 0) - 3 = -3 \neq 13$

As L.H.S.  $\neq$  R.H.S.,

Therefore,  $p = 0$  is not a solution of the given equation,  $4p - 3 = 13$ .

**Q3 :**

**Solve the following equations by trial and error method:**

**(i)  $5p + 2 = 17$  (ii)  $3m - 14 = 4$**

**Answer :**

(i)  $5p + 2 = 17$

Putting  $p = 1$  in L.H.S.,

$(5 \times 1) + 2 = 7 \neq \text{R.H.S.}$

Putting  $p = 2$  in L.H.S.,

$(5 \times 2) + 2 = 10 + 2 = 12 \neq \text{R.H.S.}$

Putting  $p = 3$  in L.H.S.,

$(5 \times 3) + 2 = 17 = \text{R.H.S.}$

Hence,  $p = 3$  is a solution of the given equation.

(ii)  $3m - 14 = 4$

Putting  $m = 4$ ,

$(3 \times 4) - 14 = -2 \neq \text{R.H.S.}$

Putting  $m = 5$ ,  
 $(3 \times 5) - 14 = 1 \neq \text{R.H.S.}$

Putting  $m = 6$ ,  
 $(3 \times 6) - 14 = 18 - 14 = 4 = \text{R.H.S.}$

Hence,  $m = 6$  is a solution of the given equation.

**Q4 :**

**Write equations for the following statements:**

- (i) The sum of numbers  $x$  and 4 is 9.
- (ii) 2 subtracted from  $y$  is 8.
- (iii) Ten times  $a$  is 70.
- (iv) The number  $b$  divided by 5 gives 6.
- (v) Three-fourth of  $t$  is 15.
- (vi) Seven times  $m$  plus 7 gets you 77.
- (vii) One-fourth of a number  $x$  minus 4 gives 4.
- (viii) If you take away 6 from 6 times  $y$ , you get 60.
- (ix) If you add 3 to one-third of  $z$ , you get 30.

**Answer :**

(i)  $x + 4 = 9$

(ii)  $y - 2 = 8$

(iii)  $10a = 70$

$$\frac{b}{5} = 6 \quad (\text{iv})$$

$$\frac{3}{4}t = 15 \quad (\text{v})$$

(vi) Seven times of  $m$  is  $7m$ .

$$7m + 7 = 77$$

(vii) One-fourth of a number  $x$  is  $\frac{x}{4}$ .

$$\frac{x}{4} - 4 = 4$$

(viii) Six times of  $y$  is  $6y$ .

$$6y - 6 = 60$$

(ix) One-third of  $z$  is  $\frac{z}{3}$ .

$$\frac{z}{3} + 3 = 30$$

**Q5 :**

Write the following equations in statement forms:

(i)  $p + 4 = 15$  (ii)  $m - 7 = 3$

(iii)  $2m = 7$  (iv)  $\frac{m}{5} = 3$

(v)  $\frac{3m}{5} = 6$  (vi)  $3p + 4 = 25$

(vii)  $4p - 2 = 18$  (viii)  $\frac{p}{2} + 2 = 8$

**Answer :**

- (i) The sum of  $p$  and 4 is 15.
- (ii) 7 subtracted from  $m$  is 3.
- (iii) Twice of a number  $m$  is 7.
- (iv) One-fifth of  $m$  is 3.
- (v) Three-fifth of  $m$  is 6.
- (vi) Three times of a number  $p$ , when added to 4, gives 25.
- (vii) When 2 is subtracted from four times of a number  $p$ , it gives 18.
- (viii) When 2 is added to half of a number  $p$ , it gives 8.

**Q6 :**

Set up an equation in the following cases:

- (i) Irfan says that he has 7 marbles more than five times the marbles Parmit has. Irfan has 37 marbles. (Take  $m$  to be the number of Parmit's marbles.)
- (ii) Laxmi's father is 49 years old. He is 4 years older than three times Laxmi's age. (Take Laxmi's age to be  $y$  years.)
- (iii) The teacher tells the class that the highest marks obtained by a student in her class is twice the lowest marks plus 7. The highest score is 87. (Take the lowest score to be  $l$ .)
- (iv) In an isosceles triangle, the vertex angle is twice either base angle. (Let the base angle be  $b$  in degrees. Remember that the sum of angles of a triangle is 180 degrees.)

**Answer :**

- (i) Let Parmit has  $m$  marbles.

5 x Number of marbles Parmit has + 7 = Number of marbles Irfan has

$$5 \times m + 7 = 37$$

$$5m + 7 = 37$$

- (ii) Let Laxmi be  $y$  years old.

3 x Laxmi's age + 4 = Laxmi's father's age

$$3 \times y + 4 = 49$$

$$3y + 4 = 49$$

(iii) Let the lowest marks be  $l$ .

$2 \times \text{Lowest marks} + 7 = \text{Highest marks}$

$$2 \times l + 7 = 87$$

$$2l + 7 = 87$$

(iv) An isosceles triangle has two of its angles of equal measure.

Let base angle be  $b$ .

$$\text{Vertex angle} = 2 \times \text{Base angle} = 2b$$

$$\text{Sum of all interior angles of a } \Delta = 180^\circ$$

$$b + b + 2b = 180^\circ$$

$$4b = 180^\circ$$

#### Exercise 4.2 : Solutions of Questions on Page Number : 86

**Q1 :**

**Give first the step you will use to separate the variable and then solve the equation:**

(a)  $x + 1 = 0$  (b)  $x + 1 = 0$  (c)  $x - 1 = 5$

(d)  $x + 6 = 2$  (e)  $y - 4 = -7$  (f)  $y - 4 = 4$

(g)  $y + 4 = 4$  (h)  $y + 4 = -4$

**Answer :**

(a)  $x - 1 = 0$

Adding 1 to both sides of the given equation, we obtain

$$x - 1 + 1 = 0 + 1 \quad x = 1$$

(b)  $x + 1 = 0$

Subtracting 1 from both sides of the given equation, we obtain

$$x + 1 - 1 = 0 - 1 \quad x = -1$$

(c)  $x - 1 = 5$

Adding 1 to both sides of the given equation, we obtain

$$x - 1 + 1 = 5 + 1 \quad x = 6$$

(d)  $x + 6 = 2$

Subtracting 6 from both sides of the given equation, we obtain

$$x + 6 - 6 = 2 - 6 \quad x = -4$$

(e)  $y - 4 = -7$

Adding 4 to both sides of the given equation, we obtain

$$y - 4 + 4 = -7 + 4 \quad y = -3$$

(f)  $y - 4 = 4$

Adding 4 to both sides of the given equation, we obtain  $y$

$$-4 + 4 = 4 + 4$$

$$y = 8 \quad \text{(g) } y + 4$$

$$= 4$$



Subtracting 4 from both sides of the given equation, we obtain

$$y + 4 - 4 = 4 - 4 \quad y = 0$$

(h)  $y + 4 = -4$

Subtracting 4 from both sides of the given equation, we obtain

$$y + 4 - 4 = -4 - 4 \quad y = -8$$

**Q2 :**

**Give first the step you will use to separate the variable and then solve the equation:**

(a)  $3l = 42$        $\frac{b}{2} = 6$       (c)  $\frac{p}{7} = 4$       (b)

(d)  $4x = 25$        $\frac{z}{3} = \frac{5}{4}$       (e)  $8y = 36$       (f)

(g)  $\frac{a}{5} = \frac{7}{15}$       (h)  $20t = -10$

**Answer :**

(a)  $3l = 42$

Dividing both sides of the given equation by 3, we obtain

$$\frac{3l}{3} = \frac{42}{3}$$

$l = 14$

(b)  $\frac{b}{2} = 6$

Multiplying both sides of the given equation by 2, we obtain

$$\frac{b \times 2}{2} = 6 \times 2$$

$b = 12$

(c)  $\frac{p}{7} = 4$

$$\frac{p \times 7}{7} = 4 \times 7$$

$p = 28$

(d)  $4x = 25$

Multiplying both sides of the given equation by 7, we obtain

$$\frac{4x}{4} = \frac{25}{4}$$

Dividing both sides of the given equation by 4, we obtain

$$x = \frac{25}{4}$$

(e)  $8y = 36$

Dividing both sides of the given equation by 8, we obtain

$$\frac{8y}{8} = \frac{36}{8}$$

$$y = \frac{9}{2}$$

$$(f) \quad \frac{z}{3} = \frac{5}{4}$$

$$\frac{z \times 3}{3} = \frac{5 \times 3}{4}$$

Multiplying both sides of the given equation by 3, we obtain

$$z = \frac{15}{4}$$

$$(g) \quad \frac{a}{5} = \frac{7}{15}$$

$$\frac{a \times 5}{5} = \frac{7 \times 5}{15}$$

Multiplying both sides of the given equation by 5, we obtain  
Dividing both sides of the given equation by 20, we obtain

$$a = \frac{7}{3}$$

$$(h) \quad 20t = -10$$

$$\frac{20t}{20} = \frac{-10}{20}$$

$$t = \frac{-1}{2}$$

**Q3 :**

**Give the steps you will use to separate the variable and then solve the equation:**

$$(a) \quad 3n - 2 = 46 \quad (b) \quad 5m + 7 = 17 \quad (c) \quad \frac{20p}{3} = 40$$



$$(d) \frac{3p}{10} = 6$$

**Answer :**

$$(a) 3n - 2 = 46$$

$$(b) 5m + 7 = 17$$

Subtracting 7 from both sides of the given equation, we obtain

$$(c) \frac{20p}{3} = 40$$

Adding 2 to both sides of the given equation, we obtain

$$3n - 2 + 2 = 46 + 2$$

$$3n = 48$$

Dividing both sides of the given equation by 3, we obtain

$$\frac{3n}{3} = \frac{48}{3}$$

$$n = 16$$

$$5m + 7 - 7 = 17 - 7$$

$$5m = 10$$

Dividing both sides of the given equation by 5, we obtain

$$\frac{5m}{5} = \frac{10}{5}$$

$$m = 2$$

Multiplying both sides of the given equation by 3, we obtain

$$\frac{20p \times 3}{3} = 40 \times 3$$

$$20p = 120$$

$$\frac{20p}{20} = \frac{120}{20}$$

$$p = 6$$

Dividing both sides of the given equation by 20, we obtain

$$\frac{3p \times 10}{10} = 6 \times 10$$

$$3p = 60$$

Multiplying both sides of the given equation by 10, we obtain Dividing both sides of the given equation by 3, we obtain

$$(d) \frac{3p}{10} = 6$$

$$\frac{3p}{3} = \frac{60}{3}$$

$$p = 20$$

**Q4 :**

**Solve the following equations:**

(a)  $10p = 100$  (b)  $10p + 10 = 100$  (c)  $\frac{p}{4} = 5$

(d)  $\frac{-p}{3} = 5$  (e)  $\frac{3p}{4} = 6$  (f)  $3s = -9$

(g)  $3s + 12 = 0$  (h)  $3s = 0$  (i)  $2q = 6$

(j)  $2q - 6 = 0$  (k)  $2q + 6 = 0$  (l)  $2q + 6 = 12$

**Answer :**

(a)  $10p = 100$

$$\frac{10p}{10} = \frac{100}{10}$$

$$p = 10$$

(b)  $10p + 10 = 100$

$$10p + 10 - 10 = 100 - 10$$

$$10p = 90$$

$$\frac{10p}{10} = \frac{90}{10}$$

$$p = 9$$

(c)  $\frac{p}{4} = 5$

$$\frac{p \times 4}{4} = 5 \times 4$$

$$p = 20$$

(d)  $\frac{-p}{3} = 5$

$$\frac{-p \times (-3)}{3} = 5 \times (-3)$$

$$p = -15$$

(e)

$$\frac{3p}{4} = 6$$

$$\frac{3p \times 4}{4} = 6 \times 4$$

$$3p = 24$$

$$\frac{3p}{3} = \frac{24}{3}$$

$$p = 8$$

(f)  $3s = -9$

$$\frac{3s}{3} = \frac{-9}{3}$$

$$s = -3$$

(g)  $3s + 12 = 0$

$$3s + 12 - 12 = 0 - 12$$

$$3s = -12$$

$$\frac{3s}{3} = \frac{-12}{3}$$

$$s = -4$$

(h)  $3s = 0$

$$\frac{3s}{3} = \frac{0}{3}$$

$$s = 0$$

(i)  $2q = 6$

$$\frac{2q}{2} = \frac{6}{2}$$

$$q = 3$$

(j)  $2q - 6 = 0$

$$2q - 6 + 6 = 0 + 6$$

$$2q = 6$$

$$\frac{2q}{2} = \frac{6}{2}$$

$$q = 3$$

(k)  $2q + 6 = 0$

$$2q + 6 - 6 = 0 - 6$$

$$2q = -6$$

$$\frac{2q}{2} = \frac{-6}{2}$$

$$q = -3$$

(l)  $2q + 6 = 12$

$$2q + 6 - 6 = 12 - 6$$

$$2q = 6$$

$$\frac{2q}{2} = \frac{6}{2}$$

$$q = 3$$

**Exercise 4.3 : Solutions of Questions on Page Number : 89**

**Q1 :**

**Solve the following equations.**

(a)  $2y + \frac{5}{2} = \frac{37}{2}$  (b)  $5t + 28 = 10$  (c)  $\frac{a}{5} + 3 = 2$

(d)  $\frac{q}{4} + 7 = 5$  (e)  $\frac{5}{2}x = -10$  (f)  $\frac{5}{2}x = \frac{25}{4}$

(g)  $7m + \frac{19}{2} = 13$  (h)  $6z + 10 = -2$  (i)  $\frac{3l}{2} = \frac{2}{3}$

(j)  $\frac{2b}{3} - 5 = 3$

**Answer :**

(a)  $2y + \frac{5}{2} = \frac{37}{2}$

$$2y = \frac{37}{2} - \frac{5}{2} = \frac{32}{2} = 16$$

Dividing both sides by 2,

$$y = \frac{16}{2} = 8$$

(b)  $5t + 28 = 10$

(Transposing  $\frac{5}{2}$  to R.H.S.)

$5t = 10 - 28 = -18$  (Transposing 28 to R.H.S.)

Dividing both sides by 5,

$$t = \frac{-18}{5}$$

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

(c)

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

(Transposing 3 to R.H.S.)



Multiplying both sides by 5,

$$a = -1 \times 5 = -5$$

(d)  $\frac{q}{4} + 7 = 5$

$$\frac{q}{4} = -2$$

(Transposing 7 to R.H.S.)

Multiplying both sides by 4, q

$$= -8$$

(e)  $\frac{5}{2}x = -10$

Multiplying both sides by 2,

$$5x = -10 \times 2 = -20$$

Dividing both sides by 5,

$$x = \frac{-20}{5} = -4$$

(f)  $\frac{5}{2}x = \frac{25}{4}$

Multiplying both sides by 2,

$$5x = \frac{25}{4} \times 2 = \frac{25}{2}$$

Dividing both sides by 5,

$$x = \frac{25}{2} \times \frac{1}{5} = \frac{5}{2}$$

(g)  $7m + \frac{19}{2} = 13$

$$7m = 13 - \frac{19}{2} = \frac{26 - 19}{2}$$

$$7m = \frac{7}{2}$$

Dividing both sides by 7,

$$m = \frac{1}{2}$$

(h)  $6z + 10 = -2$  (Transposing  $\frac{19}{2}$  to R.H.S.)

$$6z = -2 - 10 = -12 \text{ (Transposing 10 to R.H.S.)}$$

Dividing both sides by 6,

$$z = \frac{-12}{6} = -2$$

$$(i) \quad \frac{3l}{2} = \frac{2}{3}$$

Multiplying both sides by 2,

$$3l = \frac{2}{3} \times 2 = \frac{4}{3}$$

Dividing both sides by 3,

$$l = \frac{4}{3} \times \frac{1}{3} = \frac{4}{9}$$

$$(j) \quad \frac{2b}{3} - 5 = 3$$

$$\frac{2b}{3} = 3 + 5 = 8$$

(Transposing - 5 to  
R.H.S.)

Multiplying both sides by 3,

$2b = 8 \times 3 = 24$  Dividing both  
sides by 2,

$$b = \frac{24}{2} = 12$$

**Q2 :**

**Solve the following equations.**

(a)  $2(x + 4) = 12$  (b)  $3(n - 5) = 21$

(c)  $3(n - 5) = -21$  (d)  $-4(2 + x) = 8$

(e)  $4(2 - x) = 8$

**Answer :**

(a)  $2(x + 4) = 12$

Dividing both sides by 2,

$$x + 4 = \frac{12}{2} = 6$$

$x = 6 - 4 = 2$  (Transposing 4 to R.H.S.)

(b)  $3(n - 5) = 21$

Dividing both sides by 3,

$$n - 5 = \frac{21}{3} = 7$$

$n = 7 + 5 = 12$  (Transposing - 5 to R.H.S.)

(c)  $3(n - 5) = -21$

Dividing both sides by 3,

$$n - 5 = \frac{-21}{3} = -7$$

$n = -7 + 5 = -2$  (Transposing - 5 to R.H.S.)

(d)  $-4(2 + x) = 8$

Dividing both sides by - 4,

$$2 + x = \frac{8}{-4} = -2$$

$x = -2 - 2 = -4$  (Transposing 2 to R.H.S.)

(e)  $4(2 - x) = 8$

Dividing both sides by 4,

$2 - x = 2$

$-x = 2 -$

2 (

Trans

posing

2 to

R.H.S.

)

$-x = 0$

$x = 0$

**Q3 :**

**Solve the following equations.**

(a)  $4 = 5(p - 2)$  (b)  $-4 = 5(p - 2)$

(c)  $16 = 4 + 3(t + 2)$  (d)  $4 + 5(p - 1) = 34$

(e)  $0 = 16 + 4(m - 6)$

**Answer :**

(a)  $4 = 5(p - 2)$

Dividing both sides by 5,

$$\frac{4}{5} = p - 2$$

$$\frac{4}{5} + 2 = p$$

(Transposing - 2 to L.H.S.)

$$\frac{4 + 10}{5} = p$$

$$\frac{14}{5} = p$$

(b)  $-4 = 5(p - 2)$

Dividing both sides by 5,

$$\begin{aligned}
 -\frac{4}{5} &= p - 2 \\
 -\frac{4}{5} + 2 &= p && \text{(Transposing } -2 \text{ to L.H.S.)} \\
 \frac{-4+10}{5} &= p \\
 \frac{6}{5} &= p
 \end{aligned}$$

(c)  $16 = 4 + 3(t + 2)$

$16 - 4 = 3(t + 2)$  (Transposing 4 to L.H.S.)

$12 = 3(t + 2)$

Dividing both sides by 3,

$$\frac{12}{3} = t + 2$$

$4 = t + 2$

$4 - 2 = t$  (Transposing 2 to L.H.S.)

$2 = t$

(d)  $4 + 5(p - 1) = 34$

$5(p - 1) = 34 - 4 = 30$  (Transposing 4 to R.H.S.)

Dividing both sides by 5,

$$p - 1 = \frac{30}{5} = 6$$

$p = 6 + 1 = 7$  (Transposing - 1 to R.H.S.)

(e)  $0 = 16 + 4(m - 6)$

$0 = 16 + 4m - 24$

$0 = -8 + 4m$

$4m = 8$  (Transposing - 8 to L.H.S.) Dividing both sides by 4,  $m = 2$

**Q4 :**

**(a) Construct 3 equations starting with  $x = 2$**

**(b) Construct 3 equations starting with  $x = -2$**

**Answer :**

(a)  $x = 2$

Multiplying both sides by 5,

$5x = 10$  (i)

Subtracting 3 from both sides,

$5x - 3 = 10 - 3$

$5x - 3 = 7$  (ii)

Dividing both sides by 2,

$$\frac{5x}{2} - \frac{3}{2} = \frac{7}{2} \quad (\text{iii})$$

$$(b) x = -2$$

Subtracting 2 from both sides, x

$$-2 = -2 - 2 \quad x - 2 = -4 \quad (i)$$

Again,  $x = -2$

Multiplying by 6,

$$6 \times x = -2 \times 6$$

$$6x = -12$$

Subtracting 12 from both sides,

$$6x - 12 = -12 - 12$$

$$6x - 12 = -24 \quad (ii)$$

Adding 24 to both sides,

$$6x - 12 + 24 = -24 + 24$$

$$6x + 12 = 0 \quad (iii)$$

#### Exercise 4.4 : Solutions of Questions on Page Number : 91

**Q1 :**

**Set up equations and solve them to find the unknown numbers in the following cases:**

(a) Add 4 to eight times a number; you get 60.

(b) One-fifth of a number minus 4 gives 3.

(c) If I take three-fourths of a number and add 3 to it, I get 21.

(d) When I subtracted 11 from twice a number, the result was 15.

(e) Munna subtracts thrice the number of notebooks he has from 50, he finds the result to be 8.

(f) Ibenhal thinks of a number. If she adds 19 to it and divides the sum by 5, she will get 8.

(g) Anwar thinks of a number. If he takes away 7 from  $\frac{5}{2}$  of the number, the result is 23.

**Answer :**

(a) Let the number be x.

8 times of this number =  $8x$

$$8x + 4 = 60$$

$$8x = 60 - 4 \quad (\text{Transposing 4 to R.H.S.})$$

$$8x = 56$$

Dividing both sides by 8,

$$\frac{8x}{8} = \frac{56}{8}$$
$$x = 7$$

(b) Let the number be  $x$ .

$$\frac{x}{5}$$

One-fifth of this number =

$$\frac{x}{5} - 4 = 3$$

$$\frac{x}{5} = 3 + 4$$

(Transposing - 4 to R.H.S.)

$$\frac{x}{5} = 7$$

Multiplying both sides by 5,

$$\frac{x \times 5}{5} = 7 \times 5$$
$$x = 35$$

(c) Let the number be  $x$ .

Three-fourth of this number =  $\frac{3x}{4}$

$$\frac{3}{4}x + 3 = 21$$

$$\frac{3}{4}x = 18$$

(Transposing 3 to R.H.S.)

Multiplying both sides by 4,

$$\frac{3x \times 4}{4} = 18 \times 4$$
$$3x = 72$$

Dividing both sides by 3,

$$\frac{3x}{3} = \frac{72}{3}$$
$$x = 24$$

(d) Let the number be  $x$ .

Twice of this number =  $2x$

$$2x - 11 = 15$$

$$2x = 15 + 11 \text{ (Transposing - 11 to R.H.S.)}$$

$$2x = 26$$

Dividing both sides by 2,

$$\frac{2x}{2} = \frac{26}{2}$$

$$x = 13$$

(e) Let the number of books be  $x$ .

Thrice the number of books =  $3x$

$$50 - 3x = 8$$

$$-3x = 8 - 50 \text{ (Transposing 50 to R.H.S.)}$$

$$3x = -42$$

Dividing both sides by -3,

$$\frac{-3x}{-3} = \frac{-42}{-3}$$
$$x = 14$$

(f) Let the number be  $x$ .

$$\frac{x+19}{5} = 8$$

Multiplying both sides by 5,

$$\frac{(x+19) \times 5}{5} = 8 \times 5$$

$$x + 19 = 40$$

$$x = 40 - 19 \text{ (Transposing 19 to R.H.S.)}$$

$$x = 21$$

(g) Let the number be  $x$ .

$$\frac{5}{2} \text{ of this number} = \frac{5x}{2}$$

$$\frac{5x}{2} - 7 = 23$$

$$\frac{5x}{2} = 23 + 7 \text{ (Transposing } -7 \text{ to R.H.S.)}$$

$$\frac{5x}{2} = 30$$

Multiplying both sides by 2,

$$\frac{5x \times 2}{2} = 30 \times 2$$

$$5x = 60$$

Dividing both sides by 5,

$$\frac{5x}{5} = \frac{60}{5}$$

$$x = 12$$

**Q2 :**

**Solve the following:**

(a) The teacher tells the class that the highest marks obtained by a student in her class is twice the lowest marks plus 7. The highest score is 87. What is the lowest score?

(b) In an isosceles triangle, the base angles are equal. The vertex angle is  $40^\circ$ . What are the base angles of the triangle? (Remember, the sum of three angles of a triangle is  $180^\circ$ ).

(c) Sachin scored twice as many runs as Rahul. Together, their runs fell two short of a double century. How many runs did each one score?

**Answer :**

(a) Let the lowest score be  $l$ .

$2 \times \text{Lowest marks} + 7 = \text{Highest marks}$

$$2l + 7 = 87$$

$$2l = 87 - 7 \text{ (Transposing 7 to R.H.S.)}$$

$$2l = 80$$

Dividing both sides by 2,

$$\frac{2l}{2} = \frac{80}{2}$$

$$l = 40$$

Therefore, the lowest score is 40.

(b) Let the base angles be equal to  $b$ .

The sum of all interior angles of a triangle is  $180^\circ$ .

$$b + b + 40^\circ = 180^\circ$$

$$2b + 40^\circ = 180^\circ$$

$$2b = 180^\circ - 40^\circ = 140^\circ \text{ (Transposing } 40^\circ \text{ to R.H.S.)}$$

Dividing both sides by 2,

$$\frac{2b}{2} = \frac{140^\circ}{2}$$

$$b = 70^\circ$$

Therefore, the base angles of the triangle are of  $70^\circ$  measure.

(c) Let Rahul's score be  $x$ .

Therefore, Sachin's score =  $2x$

$$\text{Rahul's score} + \text{Sachin's score} = 200 - 2$$

$$2x + x = 198$$

$$3x = 198$$

Dividing both sides by 3,



$$\frac{3x}{3} = \frac{198}{3}$$

$$x = 66$$

Rahul's score = 66

Sachin's score =  $2 \times 66 = 132$

**Q3 :**

**Solve the following:**

(i) Irfan says that he has 7 marbles more than five times the marbles Parmit has. Irfan has 37 marbles. How many marbles does Parmit have?

(ii) Laxmi's father is 49 year old. He is 4 years older than three times Laxmi's age. What is Laxmi's age?

(iii) People of Sundargram planted trees in the village garden. Some of the trees were fruit trees. The number of non-fruit trees was two more than three times the number of fruit trees. What was the number of fruit trees planted if the number of non-fruit trees planted was 77?

**Answer :**

(i) Let Parmit's marbles equal  $x$ .

5 times the number of marbles Parmit has =  $5x$

$$5x + 7 = 37$$

$$5x = 37 - 7 = 30 \text{ (Transposing 7 to R.H.S.)}$$

Dividing both sides by 5,

$$\frac{5x}{5} = \frac{30}{5}$$

$$x = 6$$

Therefore, Parmit has 6 marbles.

(ii) Let Laxmi's age be  $x$  years.

$3 \times \text{Laxmi's age} + 4 = \text{Her father's age}$

$$3x + 4 = 49$$

$$3x = 49 - 4 \text{ (Transposing 4 to R.H.S.)}$$

$$3x = 45$$

Dividing both sides by 3,

$$\frac{3x}{3} = \frac{45}{3}$$

$$x = 15$$

Therefore, Laxmi's age is 15 years.

(iii) Let the number of fruit trees be  $x$ .

$3 \times \text{Number of fruit trees} + 2 = \text{Number of non-fruit trees}$

$$3x + 2 = 77$$

$$3x = 77 - 2 \text{ (Transposing 2 to R.H.S.)}$$

$$3x = 75$$

Dividing both sides of the equation by 3,

$$\frac{3x}{3} = \frac{75}{3}$$

$$x = 25$$

Therefore, the number of fruit trees was 25.

**Q4 :**

**Solve the following riddle:**

**I am a number, Tell my  
identity! Take me seven  
times over And add a fifty!  
To reach a triple century  
You still need forty!**

**Answer :**

Let the number be  $x$ .

$$(7x + 50) + 40 = 300$$

$$7x + 90 = 300$$

$$7x = 300 - 90 \text{ (Transposing 90 to R.H.S.)}$$

$$7x = 210$$

Dividing both sides by 7,

$$\frac{7x}{7} = \frac{210}{7}$$

$$x = 30$$

Therefore, the number is 30.