



SpeedLabs

MATHS

CBSE 7<sup>th</sup>

TEEVRA EDUTECH PVT. LTD.

# Simple Equations

## Exercise-4.1

Q.1 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)	$\frac{m}{3} = 2$	$m = 6$	-

Sol: (i)  $x + 3 = 0$

$$\text{L.H.S.} = x + 3$$

By putting  $x = 3$ ,

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

$\therefore$  No, the equation is not satisfied.

(ii)  $x + 3 = 0$

$$\text{L.H.S.} = x + 3$$

By putting  $x = 0$ ,

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

$\therefore$  No, the equation is not satisfied.

(iii)  $x + 3 = 0$

$$\text{L.H.S.} = x + 3$$

By putting  $x = -3$ ,

$$\text{L.H.S.} = -3 + 3 = 0 = \text{R.H.S.}$$

∴ Yes, the equation is satisfied.

$$\text{(iv) } x - 7 = 1$$

$$\text{L.H.S.} = x - 7$$

By putting  $x = 7$ ,

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

∴ No, the equation is not satisfied.

$$\text{(v) } x - 7 = 1$$

$$\text{L.H.S.} = x - 7$$

By putting  $x = 8$ ,

$$\text{L.H.S.} = 8 - 7 = 1 = \text{R.H.S.}$$

∴ Yes, the equation is satisfied.

$$\text{(vi) } 5x = 25$$

$$\text{L.H.S.} = 5x$$

By putting  $x = 0$ ,

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

∴ No, the equation is not satisfied.

$$\text{(vii) } 5x = 25$$

$$\text{L.H.S.} = 5x$$

By putting  $x = 5$ ,

$$\text{L.H.S.} = 5 \times 5 = 25 = \text{R.H.S.}$$

∴ Yes, the equation is satisfied.

$$\text{(viii) } 5x = 25$$

$$\text{L.H.S.} = 5x$$

By putting  $x = -5$ ,

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

∴ No, the equation is not satisfied.

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

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

By putting  $m = -6$

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

∴ No, the equation is not satisfied.

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

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

By putting  $m = 0$ ,

$$\text{L.H.S.} = 0/3 = 0 \neq \text{R.H.S.}$$

$\therefore$  No, the equation is not satisfied.

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

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

By putting  $m = 6$ ,

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

$\therefore$  Yes, the equation is satisfied.

**Q.2** 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)  $4p - 3 = 13$  ( $p = 0$ )

**Sol:** (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,  $4p - 3 = 13$ .

**Q.3** Solve the following equations by trial and error method:

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

**Sol:** (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.

**Q.4** 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.

**Sol:** (i)  $x + 4 = 9$

(ii)  $y - 2 = 8$

(iii)  $10a = 70$

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

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

(vi) Seven times of m is 7m.

$7m + 7 = 77$

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

(viii) Six times of y is 6y.

$6y - 6 = 60$

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

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

**Q.5** 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)  $\frac{p}{2} + 2 = 8$

**Sol:** (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.

**Q.6** 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.)

**Sol:** (i) Let Parmit has  $m$  marbles.

$5 \times$  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.

$3 \times$  Laxmi's age  $+ 4 =$  Laxmi's father's age

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

$$3y + 4 = 49$$

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

$2 \times$  Lowest marks  $+ 7 =$  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  $b$ .

Vertex angle  $= 2 \times$  Base angle  $= 2b$

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

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

$$4b = 180^\circ$$