



G.D.GOENKA PUBLIC SCHOOL

Subject: Mathematics (7th)

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Chapter 8 (Linear Equations)

Exercise 8.1

(2) Use the method of trial and error to solve the given equations.

(i) $x + 11 = (-15)$

For $x = 25$, $x + 11 = 25 + 11 = 36 \neq (-15)$. Here, LHS \neq RHS.

For $x = (-25)$, $x + 11 = (-25) + 11 = (-14) \neq (-15)$. Here, LHS \neq RHS.

For $x = (-26)$, $x + 11 = (-26) + 11 = (-15)$. Here, LHS = RHS.

Thus, the value of x is (-26) .

(ii) $3m = (-48)$

For $m = 10$, $3m = 3 \times 10 = 30 \neq (-48)$. Here, LHS \neq RHS.

For $m = (-17)$, $3m = 3 \times (-17) = (-51) \neq (-48)$. Here, LHS \neq RHS.

For $m = (-16)$, $3m = 3 \times (-16) = (-48) = (-48)$. Here, LHS = RHS.

Thus, the value of m is (-16) .

(iii) $y - 14 = 0$

For $y = 12$, $y - 14 = 12 - 14 = (-2) \neq 0$. Here, LHS \neq RHS.

For $y = 13$, $y - 14 = 13 - 14 = (-1) \neq 0$. Here, LHS \neq RHS.

For $y = 14$, $y - 14 = 14 - 14 = 0$. Here, LHS = RHS.

Thus, the value of y is 14.

(iv) $5 - x = 7$

For $x = 0$, $5 - x = 5 - (0) = 5 \neq 7$. Here, LHS \neq RHS.

For $x = (-1)$, $5 - x = 5 - (-1) = 6 \neq 7$. Here, LHS \neq RHS.

For $x = (-2)$, $5 - x = 5 - (-2) = 7$. Here, LHS = RHS.

Thus, the value of x is (-2) .

(v) $2x + 3 = x$

For $x = (-1)$, $2x + 3 = 2(-1) + 3 = (-2) + 3 = 1 \neq (-1)$. Here, LHS \neq RHS.

For $x = (-2)$, $2x + 3 = 2(-2) + 3 = (-4) + 3 = (-1) \neq (-2)$. Here, LHS \neq RHS.

For $x = (-3)$, $2x + 3 = 2(-3) + 3 = (-6) + 3 = (-3)$. Here, LHS = RHS.

Thus, the value of x is (-3) .

(vi) $2x + 5 = x + 7$

For $x = (-1)$, LHS = $2x + 5 = 2 \times (-1) + 5 = (-2) + 5 = 3$; RHS = $x + 7 = (-1) + 7 = 6$. Here, LHS \neq RHS.

For $x = 0$, LHS = $2x + 5 = 2 \times 0 + 5 = 0 + 5 = 5$; RHS = $x + 7 = 0 + 7 = 7$. Here, LHS \neq RHS.

For $x = 2$, LHS = $2x + 5 = 2 \times 2 + 5 = 4 + 5 = 9$; RHS = $x + 7 = 2 + 7 = 9$. Here, LHS = RHS.

Thus, the value of x is 2.

(3) Use the method of simultaneous operations on RHS and LHS to solve the given equations.

(i) $8 - 3x = 11$

$$8 - 3x = 11$$

$$8 - 3x - 8 = 11 - 8 \quad (\text{Subtract 8 from both the sides})$$

$$-3x = 3$$

$$-3x \div (-3) = 3 \div (-3) \quad (\text{Divide both the sides by } -3)$$

$$x = (-1)$$

Thus, the value of x is (-1) .

Check:

Substituting $x = (-1)$ in $8 - 3x = 11$, we get LHS $= 8 - 3(-1) = 8 + 3 = 11$.

So, LHS = RHS. Therefore, $x = (-1)$ is the solution of the equation.

(ii) $5x = (-10)$

$$5x = (-10)$$

$$\frac{5x}{5} = \frac{(-10)}{5} \quad (\text{Divide both the sides by 5})$$

$$x = (-2)$$

Thus, the value of x is (-2) .

Check:

Substituting $x = (-2)$ in $5x = (-10)$, we get LHS $= 5(-2) = (-10)$.

So, LHS = RHS. Therefore, $x = (-2)$ is the solution of the equation.

(iii) $14 = 27 - x$

$$14 = 27 - x$$

$$14 - 27 = 27 - x - 27 \quad (\text{Subtract 27 on both the sides})$$

$$-13 = (-x) \quad (\text{Divide both the sides by } -1)$$

$$13 = x$$

Thus, the value of x is 13.

Check:

Substituting $x = 13$ in $27 - x$, we get RHS $= 27 - 13 = 14$. So, LHS = RHS. Therefore, $x = 13$ is the solution of the equation.

(iv) $m - 7 = (-18)$

$$m - 7 = (-18)$$

$$m - 7 + 7 = (-18) + 7 \quad (\text{Add 7 on both sides})$$

$$m = (-11)$$

Thus, the value of m is (-11) .

Check:

Substituting $m = -11$ in $m - 7 = (-18)$, we get $(-11) - 7 = (-18)$. So, LHS = RHS. Therefore, $m = (-11)$ is the solution of the equation.

(v) $\frac{x}{15} = 2$

$$\frac{x}{15} = 2$$

$$\frac{x}{15} \times 15 = 2 \times 15 \quad (\text{Multiply both the sides by 15})$$

$$x = 30$$

Thus, the value of x is 30.

Check:

Substituting $x = 30$ in $\frac{x}{15} = 2$, we get LHS $= \frac{30}{15} = 2$

So, LHS = RHS. Therefore, $x = 30$ is the solution of the equation.

(4) Find the solutions of these equations.

(i) $4x + 5.6x = 16$

$$4x + 5.6x = 16$$

$$9.6x = 16$$

$$\frac{9.6x}{9.6} = \frac{16}{9.6} \text{ (Divide both the sides by 9.6)}$$

$$x = \frac{16}{9.6} = \frac{160}{96} = 1\frac{2}{3}$$

Thus, the value of x is $1\frac{2}{3}$.

Check:

Substituting $x = 1\frac{2}{3}$ in $4x + 5.6x = 16$, we get, $\text{LHS} = 4 \times 1\frac{2}{3} + 5.6 \times 1\frac{2}{3} = \frac{20}{3} + \frac{28}{3} = \frac{48}{3} = 16$.

So, $\text{LHS} = \text{RHS}$. Therefore, $x = 1\frac{2}{3}$ is the solution of the equation.

(ii) $5x - 1 = 74$

$$5x - 1 = 74$$

$$5x - 1 + 1 = 74 + 1 \text{ (Add 1 to both the sides)}$$

$$5x = 75$$

$$\frac{5x}{5} = \frac{75}{5} \text{ (Divide both the sides by 5)}$$

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

Thus, the value of x is 15.

Check:

Substituting $x = 15$ in $5x - 1 = 74$, we get $5 \times 15 - 1 = 75 - 1 = 74$. So, $\text{LHS} = \text{RHS}$.

Therefore, $x = 15$ is the solution of the equation.

(iii) $3(x - 12) = 8$

$$3(x - 12) = 8$$

$$\frac{3(x - 12)}{3} = \frac{8}{3} \text{ (Divide both the sides by 3)}$$

$$x - 12 = \frac{8}{3}$$

$$x - 12 + 12 = \frac{8}{3} + 12 \text{ (Add 12 on both the sides)}$$

$$x = \frac{8 + 36}{3} = \frac{44}{3} = 14\frac{2}{3}$$

Thus, the value of x is $14\frac{2}{3}$.

Check:

Substituting $x = 14\frac{2}{3}$ in $3(x - 12) = 8$, we get $\text{LHS} = 3\left\{\left(14\frac{2}{3}\right) - 12\right\} = 3\left(\frac{44}{3} - 12\right) = 3\left(\frac{44 - 36}{3}\right) = 8$.

So, $\text{LHS} = \text{RHS}$. Therefore, $x = 14\frac{2}{3}$ is the solution of the equation.

$$(iv) x - 12 = 2\frac{2}{5}$$

$$x - 12 = 2\frac{2}{5}$$

$$x - 12 = \frac{12}{5}$$

$$x - 12 + 12 = \frac{12}{5} + 12 \text{ (Adding 12 on both the sides)}$$

$$x = \frac{12}{5} + 12 = \frac{12 + 60}{5} = \frac{72}{5} = 14\frac{2}{5}$$

Thus, the value of x is $14\frac{2}{5}$.

Check:

$$\text{Substituting } x = 14\frac{2}{5} \text{ in } x - 12 = \frac{12}{5}, \text{ we get } \text{LHS} = 14\frac{2}{5} - 12 = \frac{72}{5} - 12 = \frac{72 - 60}{5} = \frac{12}{5}.$$

Therefore, $x = 14\frac{2}{5}$ is the solution of the equation.

(5) Solve the following equations by trial and error method.

(i) $6m - 4 = 32$ for $m = (4, 6, 8)$

Value for the variable	LHS $6m - 4$	RHS 32	Conclusion LHS = RHS?
4	$6 \times 4 - 4 = 24 - 4 = 20$	32	False
6	$6 \times 6 - 4 = 36 - 4 = 32$	32	True
8	$6 \times 8 - 4 = 48 - 4 = 44$	32	False

As $m = 6$ satisfies the given equation, the solution of the given equation is $m = 6$.

(ii) $7x + 2 = -33$ for $(5, -5, 7)$

Value for the variable	LHS $7x + 2$	RHS -33	Conclusion LHS = RHS?
5	$7 \times 5 + 2 = 35 + 2 = 37$	-33	False
-5	$7 \times (-5) + 2 = (-35) + 2 = -33$	-33	True
7	$7 \times 7 + 2 = 49 + 2 = 51$	-33	False

As $x = (-5)$ satisfies the given equation, the solution of the given equation is $x = (-5)$.

Write Q2 to Q5 in your mathematics notebook.