



CLASS VIII: Maths
Chapter 2: Linear Equations in One Variable

Questions and Solutions | Exercise 2.2 - NCERT Books

Question 1. $x/2 - 1/5 = x/3 + 1/4$

Solution:

$$(5x - 2)/10 = (4x + 3)/12 \quad \dots(\text{Taking LCM on both the sides})$$

$$12(5x - 2) = 10(4x + 3) \quad \dots(\text{Cross multiplying})$$

$$60x - 24 = 40x + 30 \quad \dots(\text{Solving the brackets})$$

$$60x - 40x = 30 + 24 \quad \dots(\text{Transposing terms of } x \text{ to LHS and others to RHS})$$

$$20x = 54$$

$$x = 54/20 \text{ or } 27/10 \quad \dots (\text{Solution})$$

Verification:

Putting value of “x” in the equation to check if our answer is correct

$$27/20 - 1/5 = 27/30 + 1/4$$

$$(27 - 4)/20 = (108 + 30)/120$$

$$23/20 = 138/120$$

$$23/20 = 23/20$$

$$\text{LHS} = \text{RHS}$$

(Hence Proved that solution is correct)

Question 2. $n/2 - 3n/4 + 5n/6 = 21$

Solution:

$$(6n - 9n + 10n)/12 = 21 \quad \dots(\text{Taking LCM and solving LHS})$$

$$7n/12 = 21 \quad (\text{Solving LHS})$$

$$7n = 21 \times 12$$

$$n = 36 \quad \dots(\text{Solution})$$

Verification:

Putting value of “n” in the equation to check if our answer is correct

$$36/2 - 108/4 + 180/6 = 21 \quad 18 - 27 + 30 = 21 \quad 21 = 21$$

LHS = RHS (Hence Proved that solution is correct)



Question 3. $x + 7 - \frac{8x}{3} = \frac{17}{6} - \frac{5x}{2}$

Solution:

$x - \frac{8x}{3} + \frac{5x}{2} = \frac{17}{6} - 7$...(Transposing terms of x to LHS and others to RHS) $(\frac{6x - 16x + 15x}{6}) = (\frac{17 - 42}{6})$...(Taking LCM and solving)

$$\frac{5x}{6} = -\frac{25}{6}$$

$$x = -5 \text{ ...(Solution)}$$

Verification –

Putting value of “x” in the equation to check if our answer is correct

$$-5 + 7 - \frac{(-40)}{3} = \frac{17}{6} - \frac{(-25)}{2}$$

$$2 + \frac{40}{3} = \frac{17}{6} + \frac{25}{2}$$

$$\frac{46}{3} = \frac{(17 + 75)}{6}$$

$$\frac{46}{3} = \frac{92}{6}$$

$$\frac{46}{3} = \frac{46}{3}$$

LHS = RHS (Hence Proved that solution is correct)

Question 4. $\frac{(x - 5)}{3} = \frac{(x - 3)}{5}$

Solution:

$$5(x - 5) = 3(x - 3) \text{ ...(Cross multiply)}$$

$$5x - 25 = 3x - 9$$

$$2x = 16 \quad x = 8 \text{ ...(Solution)}$$

Verification –

Putting value of “x” in the equation to check if our answer is correct

$$\frac{(8 - 5)}{3} = \frac{(8 - 3)}{5}$$

$$\frac{3}{3} = \frac{5}{5}$$

$$1 = 1$$

LHS = RHS (Hence Proved that solution is correct)

Question 5. $\frac{(3t - 2)}{4} - \frac{(2t + 3)}{3} = \frac{2}{3} - t$

Solution:

$$\frac{3t}{4} - \frac{1}{2} - \frac{2t}{3} - 1 = \frac{2}{3} - t \text{ ...(Solving brackets)}$$

$$\frac{3t}{4} - \frac{2t}{3} + t = \frac{2}{3} + 1 + \frac{1}{2} \text{ ...(Transposing terms of x to LHS and others to RHS)}$$

$$\frac{(9t - 8t + 12t)}{12} = \frac{(4 + 6 + 3)}{6} \text{ ...(Taking LCM both sides)}$$



$$13t/12 = 13/6$$

$$t = 2 \quad \dots(\text{Solution})$$

Verification –

Putting value of “t” in the equation to check if our answer is correct

$$(3 \times 2 - 2)/4 - (2 \times 2 + 3)/3 = 2/3 - 2$$

$$4/4 - 7/3 = 2/3 - 2$$

$$(12 - 28)/12 = (2 - 6)/3$$

$$-16/12 = -4/3$$

$$-4/3 = -4/3$$

LHS = RHS (Hence Proved that solution is correct)

Question 6. $m - (m - 1)/2 = 1 - (m - 2)/3$

Solution:

$$(2m - m + 1)/2 = (3 - m + 2)/3 \quad \dots(\text{Taking LCM both sides})$$

$$(m + 1)/2 = (5 - m)/3$$

$$3(m + 1) = 2(5 - m) \quad \dots(\text{Cross multiplying})$$

$$3m + 3 = 10 - 2m$$

$$5m = 7$$

$$m = 7/5 \quad \dots(\text{Solution})$$

Verification –

Putting value of “m” in the equation to check if our answer is correct

$$7/5 - (7/5 - 1)/2 = 1 - (7/5 - 2)/3$$

$$7/5 - 1/5 = 1 - (-3)/15$$

$$6/5 = 1 + 1/5$$

$$6/5 = 6/5$$

LHS = RHS (Hence Proved that solution is correct)

Question 7. $3(t - 3) = 5(2t + 1)$

Solution:



$$3t - 9 = 10t + 5 \dots(\text{Opening brackets})$$

$$3t - 10t = 9 + 5$$

$$-7t = 14$$

$$t = -2 \dots(\text{Solution})$$

Verification –

Putting value of “t” in the equation to check if our answer is correct

$$3(-2 - 3) = 5(2(-2) + 1)$$

$$3(-5) = 5(-4 + 1)$$

$$-15 = -15$$

LHS = RHS (Hence Proved that solution is correct)

Question 8. $15(y - 4) - 2(y - 9) + 5(y + 6) = 0$

Solution:

$$15y - 60 - 2y + 18 + 5y + 30 = 0$$

$$18y - 12 = 0$$

$$y = 12/18 \text{ or } 2/3 \dots(\text{Solution})$$

Verification –

Putting value of “y” in the equation to check if our answer is correct

$$15(2/3 - 4) - 2(2/3 - 9) + 5(2/3 + 6) = 0$$

$$10 - 60 - 4/3 + 18 + 10/3 + 30 = 0$$

$$-50 - 4/3 + 48 + 10/3 = 0$$

$$-2 + 6/3 = 0$$

$$-2 + 2 = 0$$

$$0 = 0$$

LHS = RHS (Hence Proved that solution is correct)

Question 9. $3(5z - 7) - 2(9z - 11) = 4(8z - 13) - 17$

**Solution:**

$$15z - 21 - 18z + 22 = 32z - 52 - 17 \dots(\text{Solving the brackets})$$

$$-3z + 1 = 32z - 69$$

$$-35z = -70$$

$$z = 2 \dots(\text{Solution})$$

Verification –

Putting value of “z” in the equation to check if our answer is correct

$$3(5(2) - 7) - 2(9(2) - 11) = 4(8(2) - 13) - 17$$

$$3(3) - 2(7) = 4(3) - 17$$

$$9 - 14 = 12 - 17$$

$$-5 = -5$$

LHS = RHS (Hence Proved that solution is correct)

Question 10. $0.25(4f - 3) = 0.05(10f - 9)$ **Solution:**

$$f - 0.25(3) = 0.5f - 0.05(9)$$

$$f - 0.75 = 0.5f - 0.45$$

$$0.5f = 0.75 - 0.45$$

$$f = 3/5 \text{ or } 0.6 \text{ (Solution)}$$

Verification –

Putting value of “f” in the equation to check if our answer is correct

$$0.25(4(0.6) - 3) = 0.05(10(0.6) - 9)$$

$$0.25(2.4 - 3) = 0.05(6 - 9)$$

$$0.25 \times (-0.6) = 0.05 \times (-3)$$

$$-0.15 = -0.15$$

LHS = RHS (Hence Proved that solution is correct)