CLASS NOTES-ANSWERS

EXERCISE 2.5

A. Solve the following linear equations:

1. $\frac{x}{2} - \frac{1}{5} = \frac{x}{3} + \frac{1}{4}$

Answer:

LCM of the denominators, 2, 3, 4, and 5, is 60.

Multiplying both sides by 60,

$60\left(\frac{x}{2} - \frac{1}{5}\right) = 60\left(\frac{x}{3} + \frac{1}{4}\right)$

$30x - 12 = 20x + 15$

$30x - 20x = 15 + 12$

$10x = 27$

$x = \frac{27}{10}$

2. $\frac{n}{2} - \frac{3n}{4} + \frac{5n}{6} = 21$

Answer:

LCM of the denominators, 2, 4, and 6, is 12.

Multiplying both sides by 12,

$12\left(\frac{n}{2} - \frac{3n}{4} + \frac{5n}{6}\right) = 21 \times 12$

$6n - 9n + 10n = 252$

$7n = 252$

$n = \frac{252}{7}$

$n = 36$

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

Answer:

LCM of the denominators, 2, 3, and 6, is 6.

Multiplying both sides by 6,

$$6x + 42 - 16x = 17 - 15x$$

$$6x - 16x + 15x = 17 - 42$$

$$5x = -25$$

$$x = -5$$

4. $\frac{x-5}{2} = \frac{x-3}{5}$

Answer:

LCM of the denominators, 3 and 5, is 15.

Multiplying both sides by 15, we obtain

$$5(x - 5) = 3(x - 3)$$

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

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

$$2x = 16$$

$$x = 8$$

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

Answer:

LCM of the denominators, 3 and 4, is 12.

Multiplying both sides by 12,

$$3(3t - 2) - 4(2t + 3) = 8 - 12t$$

$$9t - 6 - 8t - 12 = 8 - 12t$$

$$9t - 8t + 12t = 8 + 6 + 12$$

$$13t = 26$$

$$t = 2$$

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

Answer:

LCM of the denominators, 2 and 3, is 6.

Multiplying both sides by 6, we obtain

$$6m - 3(m-1) = 6 - 2(m-2)$$

$$6m - 3m + 3 = 6 - 2m + 4$$

$$6m - 3m + 2m = 6 + 4 - 3$$

$$5m = 7$$

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

B. Simplify and solve the following linear equations:

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

Answer:

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

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

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

$$-14 = 7t$$

$$t = -2$$

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

Answer:

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

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

$18y-12=0$

$18y=12$

$y=\frac{12}{18}$

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

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

Answer:

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

$15z-21-18z+22=32z-52-17$

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

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

$-35z=-70$

$z=2$

10. $0.25(4f-3)=0.05(10f-9)$

Answer:

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

$\frac{1}{4}(4f-3)=\frac{1}{20}(10f-9)$

Multiplying both sides by 20,

$5(4f-3)=10f-9$

$20f-15=10f-9$

$10f=-9+15$

$10f = 6$

$f = \frac{6}{10}$

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

$f = 0.6$