

Exercise – 2.2**Questions 1**

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

$$\text{lcm}(2, 5, 3, 4) = 60$$

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

$$30x - 12 = 20x + 15$$

$$30x - 20x - 12 = 15$$

$$10x - 12 = 15$$

$$10x = 27$$

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

**Questions 2**

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

$$\text{lcm}(2, 4, 6) = 12$$

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

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

$$-3n + 10n = 252$$

$$7n = 252$$

$$n = 36$$

**Questions 3**

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

$$\text{lcm}(1, 3, 6, 2) = 6$$

$$6\left(x + 7 - \frac{8x}{3}\right) = 6\left(\frac{17}{6} - \frac{5x}{2}\right)$$

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

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

$$-10x + 42 + 15x = 17$$

$$5x + 42 = 17$$

$$5x = -25$$

$$x = -5$$

**Questions 4**

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

$$\text{lcm}(3, 5) = 15$$

$$15\left(\frac{x-5}{3}\right) = 15\left(\frac{x-3}{5}\right)$$

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

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

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

$$2x - 25 = -9$$

$$2x = 16$$

$$x = 8$$

**Questions 5**

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

$$\text{lcm}(4, 3) = 12$$

$$12\left(\frac{3t-2}{4}\right) - 12\left(\frac{2t+3}{3}\right) = 12\left(\frac{2}{3} - t\right)$$

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

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

$$t - 18 = 8 - 12t$$

$$t + 12t - 18 = 8$$

$$13t = 26$$

$$t = 2$$

**Questions 6**

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

$$\text{lcm}(1, 2, 3) = 6$$

$$6\left(m - \frac{m-1}{2}\right) = 6\left(1 - \frac{m-2}{3}\right)$$

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

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

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

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

$$5m + 3 = 10$$

$$5m = 7$$

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

**Questions 7**

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

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

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

$$-7t - 9 = 5$$

$$-7t = 14$$

$$t = -2$$

**Questions 8**

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

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

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

$$18y - 12 = 0$$

$$18y = 12$$

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

**Questions 9**

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

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

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

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

$$-35z + 1 = -69$$

$$-35z = -70$$

$$z = 2$$

**Questions 10**

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

Multiply both sides by 100:

$$25(4f - 3) = 5(10f - 9)$$

$$100f - 75 = 50f - 45$$

$$100f - 50f - 75 = -45$$

$$50f - 75 = -45$$

$$50f = 30$$

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