

# Simple Linear Equations

## EXERCISE 22 (A)

### Question 1.

Solve:

$$(i) x + 2 = 6 \quad (ii) x + 6 = 2$$

$$(iii) y + 8 = 5 \quad (iv) x + 4 = -3$$

$$(v) y + 2 = -8 \quad (vi) b + 2 \cdot 5 = 4 \cdot 2$$

$$(vii) p + 4 \cdot 6 = 8 \cdot 5 \quad (viii) y + 3 \cdot 2 = -6 \cdot 5$$

$$(ix) a + 8 \cdot 9 = -12 \cdot 6$$

$$(x) x + 2\frac{1}{3} = 5$$

$$(xi) z + 2 = 4\frac{1}{5} \quad (xii) m + 3\frac{1}{2} = 4\frac{1}{4}$$

$$(xiii) x + 2 = 1\frac{1}{4} \quad (xiv) y + 5\frac{1}{3} = 4$$

$$(xv) a + 3\frac{1}{5} = 1\frac{1}{2}$$

**Solution:**



$$(i) \quad x + 2 = 6$$

$$\Rightarrow \quad x = 6 - 2$$

$$\Rightarrow \quad x = 4$$

$$(ii) \quad x + 6 = 2$$

$$\Rightarrow \quad x = 2 - 6$$

$$\Rightarrow \quad x = -4$$

$$(iii) \quad y + 8 = 5$$

$$\Rightarrow \quad y = 5 - 8$$

$$\Rightarrow \quad y = -3$$

$$(iv) \quad x + 4 = -3$$

$$\Rightarrow \quad x = -3 - 4$$

$$\Rightarrow \quad x = -7$$

$$(v) \quad y + 2 = -8$$

$$\Rightarrow \quad y = -8 - 2$$

$$\Rightarrow \quad y = -10$$

$$(vi) \quad b + 2 \cdot 5 = 4 \cdot 2$$

$$\Rightarrow \quad b = 4 \cdot 2 - 2 \cdot 5$$

$$\Rightarrow \quad b = 1 \cdot 7$$

$$(vii) \quad p + 4 \cdot 6 = 8 \cdot 5$$

$$\Rightarrow \quad p = 8 \cdot 5 - 4 \cdot 6$$

$$\Rightarrow \quad p = 3 \cdot 9$$

$$(viii) \quad y + 3 \cdot 2 = -6 \cdot 5$$

$$\Rightarrow \quad y = -6 \cdot 5 - 3 \cdot 2$$

$$\Rightarrow \quad y = -9 \cdot 7$$

$$(ix) \quad a + 8 \cdot 9 = -12 \cdot 6$$

$$\Rightarrow \quad a = -12 \cdot 6 - 8 \cdot 9$$

$$\Rightarrow \quad a = -21 \cdot 5$$

$$(x) \quad x + 2\frac{1}{3} = 5$$

$$\Rightarrow x + \frac{7}{3} = 5 \quad \Rightarrow x = 5 - \frac{7}{3}$$

$$\Rightarrow x = \frac{15-7}{3} \quad \Rightarrow x = \frac{8}{3}$$

$$\Rightarrow x = 2\frac{2}{3}$$

$$(xi) \quad z + 2 = 4\frac{1}{5}$$

$$\Rightarrow z + 2 = \frac{21}{5} \quad \Rightarrow z = \frac{21}{5} - 2$$

$$\Rightarrow z = \frac{21-10}{5} \quad \Rightarrow z = \frac{11}{5}$$

$$\Rightarrow z = 2\frac{1}{5}$$

$$(xii) \quad m + 3\frac{1}{2} = 4\frac{1}{4}$$

$$\Rightarrow m + \frac{7}{2} = \frac{17}{4} \quad \Rightarrow m = \frac{17}{4} - \frac{7}{2}$$

$$\Rightarrow m = \frac{17-14}{4} \quad \Rightarrow m = \frac{3}{4}$$

$$(xiii) \quad x + 2 = 1\frac{1}{4}$$

$$\Rightarrow x + 2 = \frac{5}{4} \quad \Rightarrow x = \frac{5}{4} - 2$$

$$\Rightarrow x = \frac{5-8}{4} \quad \Rightarrow x = -\frac{3}{4}$$

$$(xiv) \quad y + 5\frac{1}{3} = 4$$

$$\Rightarrow y + \frac{16}{3} = 4 \quad \Rightarrow y = 4 - \frac{16}{3}$$

$$\Rightarrow y = \frac{12-16}{3} \quad \Rightarrow y = -\frac{4}{3}$$

$$\Rightarrow y = -1\frac{1}{3}$$

$$(xv) \quad a + 3\frac{1}{5} = 1\frac{1}{2}$$

$$\Rightarrow a + \frac{16}{5} = \frac{3}{2} \quad \Rightarrow a = \frac{3}{2} - \frac{16}{5}$$

$$\Rightarrow a = \frac{15-32}{10} \quad \Rightarrow a = -\frac{17}{10}$$

$$\Rightarrow a = -1\frac{7}{10}$$

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## Question 2.

Solve:

$$(i) x - 3 = 2$$

$$(ii) m - 2 = -5$$

$$(iii) b - 5 = 7$$

$$(iv) a - 2 \cdot 5 = -4$$

$$(v) y - 3\frac{1}{2} = 6$$

$$(vi) z - 2\frac{1}{3} = -6$$

$$(vii) p - 5 \cdot 4 = 2 \cdot 7 \quad (viii) x - 1 \cdot 5 = -4 \cdot 9$$

$$(ix) n - 4 = -4\frac{1}{5}$$

Solution:

$$(i) x - 3 = 2$$

$$\Rightarrow x = 2 + 3$$

$$\Rightarrow x = 5$$

$$(ii) m - 2 = -5$$

$$\Rightarrow m = -5 + 2$$

$$\Rightarrow m = -3$$

$$(iii) b - 5 = 7$$

$$\Rightarrow b = 7 + 5$$

$$\Rightarrow b = 12$$

$$(iv) a - 2 \cdot 5 = -4$$

$$\Rightarrow a = -4 + 2 \cdot 5$$

$$\Rightarrow a = -1 \cdot 5$$

$$(v) y - 3\frac{1}{2} = 6$$

$$\Rightarrow y - \frac{7}{2} = 6 \quad \Rightarrow y = 6 + \frac{7}{2}$$

$$\Rightarrow y = \frac{12+7}{2} \quad \Rightarrow y = \frac{19}{2}$$

$$\Rightarrow y = 9\frac{1}{2}$$

$$(vi) z - 2\frac{1}{3} = -6$$

$$\Rightarrow z - \frac{7}{3} = -6 \quad \Rightarrow z = -6 + \frac{7}{3}$$

$$\Rightarrow z = \frac{-18+7}{3} \quad \Rightarrow z = \frac{-11}{3}$$

$$\Rightarrow z = -3\frac{2}{3}$$

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$$(vii) p - 5 \cdot 4 = 2 \cdot 7$$

$$\Rightarrow p = 2 \cdot 7 + 5 \cdot 4$$

$$\Rightarrow p = 8 \cdot 1$$

$$(viii) x - 1 \cdot 5 = -4 \cdot 9$$

$$\Rightarrow x = -4 \cdot 9 + 1 \cdot 5$$

$$\Rightarrow x = -3 \cdot 4$$

$$(ix) n - 4 = -4 \frac{1}{5}$$

$$\Rightarrow n - 4 = -\frac{21}{5} \Rightarrow n = -\frac{21}{5} + 4$$

$$\Rightarrow n = \frac{-21 + 20}{5} \Rightarrow n = -\frac{1}{5}$$

### Question 3.

Solve:

$$(i) 3x = 12$$

$$(ii) 2y = 9$$

$$(iii) 5z = 8 \cdot 5$$

$$(iv) 2 \cdot 5m = 7 \cdot 5$$

$$(v) 3 \cdot 2p = 16$$

$$(vi) 2a = 4 \cdot 6$$

**Solution:**

$$(i) 3x = 12$$

$$\Rightarrow x = \frac{12}{3}$$

$$\Rightarrow x = 4$$

$$(ii) 2y = 9$$

$$\Rightarrow y = \frac{9}{2} \quad \Rightarrow y = 4\frac{1}{2}$$

$$(iii) 5z = 8.5$$

$$\Rightarrow z = \frac{8.5}{5} \Rightarrow z = 1.7$$

$$(iv) 2.5m = 7.5$$

$$\Rightarrow m = \frac{7.5}{2.5} \Rightarrow m = \frac{75}{25}$$

$$\Rightarrow m = 3$$

$$(v) 3.2p = 16$$

$$\Rightarrow p = \frac{16}{3.2} \Rightarrow p = \frac{16 \times 10}{32}$$

$$\Rightarrow p = 5$$

$$(vi) 2a = 4.6$$

$$\Rightarrow a = \frac{4.6}{2} \Rightarrow a = 2.3$$

**Question 4.**

Solve:

$$(i) \frac{x}{2} = 5$$

$$(ii) \frac{y}{3} = -2$$

$$(iii) \frac{a}{5} = -15$$

$$(iv) \frac{z}{4} = 3\frac{1}{4}$$

$$(v) \frac{m}{6} = 2\frac{1}{2}$$

$$(vi) \frac{n}{7} = -2.8$$

**Solution:**

$$(i) \quad \frac{x}{2} = 5$$

$$\Rightarrow x = 5 \times 2 \Rightarrow x = 10$$

$$(ii) \quad \frac{y}{3} = -2$$

$$\Rightarrow y = -2 \times 3 \Rightarrow y = -6$$

$$(iii) \quad \frac{a}{5} = -15$$

$$\Rightarrow a = -15 \times 5 \Rightarrow -75$$

$$(iv) \quad \frac{z}{4} = 3\frac{1}{4}$$

$$\Rightarrow \frac{z}{4} = \frac{13}{4} \Rightarrow z = \frac{13}{4} \times 4$$

$$\Rightarrow z = 13$$

$$(v) \quad \frac{m}{6} = 2\frac{1}{2}$$

$$\Rightarrow \frac{m}{6} = \frac{5}{2} \Rightarrow m = \frac{5}{2} \times 6$$

$$\Rightarrow m = 15$$

$$(vi) \quad \frac{n}{7} = -2.8$$

$$\Rightarrow n = -2.8 \times 7$$

$$\Rightarrow n = -19.6$$

### Question 5.

Solve:

$$(i) -2x = 8$$

$$(ii) -3.5y = 14$$

$$(iii) -5z = 4$$

$$(iv) -5 = a + 3$$

$$(v) 2 = p + 5$$

$$(vi) 4.5 = m - 2.7$$

$$(vii) 3\frac{2}{5} = x - 2\frac{1}{3}$$

$$(viii) 5 = m + 3\frac{4}{7}$$

$$(ix) -2\frac{1}{5} = y - 4$$

**Solution:**

$$(i) \quad -2x = 8$$

$$\Rightarrow x = \frac{8}{-2} \Rightarrow x = -4$$

$$(ii) \quad -3 \cdot 5 y = 14$$

$$\Rightarrow y = \frac{14}{-3 \cdot 5}$$

$$\Rightarrow y = \frac{-14 \times 10}{35} \Rightarrow y = -4$$

$$(iii) \quad -5z = 4$$

$$\Rightarrow z = -\frac{4}{5} \Rightarrow z = -0.8$$

$$(iv) \quad -5 = a + 3$$

$$\Rightarrow a + 3 = -5$$

$$\Rightarrow a = -5 - 3$$

$$\Rightarrow a = -8$$

$$(v) \quad 2 = p + 5$$

$$\Rightarrow p + 5 = 2 \Rightarrow p = 2 - 5$$

$$\Rightarrow p = -3$$

$$(vi) \quad 4 \cdot 5 = m - 2 \cdot 7$$

$$\Rightarrow m - 2 \cdot 7 = 4 \cdot 5$$

$$\Rightarrow m = 4 \cdot 5 + 2 \cdot 7$$

$$\Rightarrow m = 7 \cdot 2$$

$$(vii) \quad 3\frac{2}{5} = x - 2\frac{1}{3}$$

$$\Rightarrow \frac{17}{5} = x - \frac{7}{3} \Rightarrow x - \frac{7}{3} = \frac{17}{5}$$

$$\Rightarrow x = \frac{17}{5} + \frac{7}{3} \Rightarrow x = \frac{51+35}{15}$$

$$\Rightarrow x = \frac{86}{15} \Rightarrow x = 5\frac{11}{15}$$

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$$(viii) \quad 5 = m + 3\frac{4}{7}$$

$$\Rightarrow 5 = m + \frac{25}{7} \quad \Rightarrow m + \frac{25}{7} = 5$$

$$\Rightarrow m = 5 - \frac{25}{7} \quad \Rightarrow m = \frac{35 - 25}{7}$$

$$\Rightarrow m = \frac{10}{7} \quad \Rightarrow m = 1\frac{3}{7}$$

$$(ix) \quad -2\frac{1}{5} = y - 4$$

$$\Rightarrow -\frac{11}{5} = y - 4 \quad \Rightarrow y - 4 = -\frac{11}{5}$$

$$\Rightarrow y = -\frac{11}{5} + 4 \quad \Rightarrow y = \frac{-11 + 20}{5}$$

$$\Rightarrow y = \frac{9}{5} \quad \Rightarrow y = 1\frac{4}{5}$$

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