

EXERCISE - 20(B)

$$\begin{aligned} \text{(i)} (23-15) + 7 \\ = 8 + 7 \\ = 15 \end{aligned}$$

$$\begin{aligned} \text{(ii)} 5x + (3x + 7x) \\ = 5x + 3x + 7x \\ = 15x \end{aligned}$$

$$\begin{aligned} \text{(iii)} 6m - (4m - m) \\ = 6m - 4m + m \\ = 6m + m - 4m \\ = 7m - 4m \\ = 3m \end{aligned}$$

$$\begin{aligned} \text{(iv)} (9a - 3a) + 4a \\ = 9a - 3a + 4a \\ = 9a + 4a - 3a \\ = 13a - 3a \\ = 10a \end{aligned}$$

$$\begin{aligned} \text{(v)} 35b - (16b + 9b) \\ = 35b - 16b - 9b \\ = 35b - 25b \\ = 10b \end{aligned}$$

$$\begin{aligned} \text{(vi)} (3y + 8y) - 5y \\ = 3y + 8y - 5y \\ = 3y - 5y + 8y \\ = -2y + 8y \\ = 6y \end{aligned}$$

$$\begin{aligned}
 2. (i) & 12x - (5x + 2x) \\
 &= 12x - 5x - 2x \\
 &= 12x - 7x \\
 &= 5x
 \end{aligned}$$

$$\begin{aligned}
 (ii) & 10m + (4n - 3n) - 5n \\
 &= 10m + n - 5n \\
 &= 10m - 4n
 \end{aligned}$$

$$\begin{aligned}
 (iii) & (15b - 6b) - (8b + 4b) \\
 &= 9b - 12b \\
 &= -3b
 \end{aligned}$$

$$\begin{aligned}
 (iv) & -(-4a - 8a) \\
 &= 4a + 8a \\
 &= 12a
 \end{aligned}$$

$$\begin{aligned}
 (v) & x - (x - y) - (-x + y) \\
 &= x - x + y + x - y \\
 &= x
 \end{aligned}$$

$$\begin{aligned}
 (vi) & p + (-q - r - s) - (p - q - r) \\
 &= p - q - r - s - p + q + r \\
 &= -s
 \end{aligned}$$

$$\begin{aligned}
 (vii) & (a + b) - (c + d) - (e - f) \\
 &= a + b - c - d - e + f
 \end{aligned}$$

$$\begin{aligned}
 (viii) & 3x + (8x - 5x) - (7x - x) \\
 &= 3x + 8x - 5x - 7x + x \\
 &= 3x + 8x + x - 5x - 7x \\
 &= 12x - 12x \\
 &= 0
 \end{aligned}$$

$$\begin{aligned} \text{(ix)} \quad a - (a - b + c) \\ = a - a + b - c \\ = b - c \end{aligned}$$

$$\begin{aligned} \text{(x)} \quad 6a^2 + (2a^2 - a^2) - (a^2 - b^2) \\ = 6a^2 + 2a^2 - a^2 - a^2 + b^2 \\ = 6a^2 + b^2 \end{aligned}$$

$$\begin{aligned} \text{(xi)} \quad 2m - (3m + 2n - 6n) \\ = 2m - 3m - 2n + 6n \\ = -m + 4n \\ = 4n - m \end{aligned}$$

$$\begin{aligned} \text{(xii)} \quad -m - n - (-m) - m \\ = -m - n + m - m \\ = -m - n \end{aligned}$$

$$\begin{aligned} \text{(xiii)} \quad x + y - (x + y - x) \\ = x + y - (x + y - x) \\ = x + y - y \\ = x \end{aligned}$$

$$\begin{aligned} \text{(xiv)} \quad 25y - (5x - 10y + 6x - 3y) \\ = 25y - 5x + 10y - 6x + 3y \\ = 25y + 10y + 3y - 5x - 6x \\ = 38y - 11x \end{aligned}$$

$$\begin{aligned} \text{(xv)} \quad 3x + (2x - x + 2) \\ = 3x + (2x - x + 2) \\ = 3x + 2x - x + 2 \\ = 4x + 2 \end{aligned}$$

$$\begin{aligned}
 \text{(xvi)} \quad a - (2a - 4a + 3a) \\
 = a - (2a - 4a + 3a) \\
 = a - 2a + 4a - 3a \\
 = a + 4a - 3a - 2a \\
 = 8a - 2a \\
 = 6a
 \end{aligned}$$

$$\begin{aligned}
 \text{(xvii)} \quad 5x^2 - (3x - x^2 - 4) \\
 = 5x^2 - (3x - x^2 + 4) \\
 = 5x^2 - 3x + x^2 - 4 \\
 = 5x^2 + x^2 - 3x - 4 \\
 = 6x^2 - 3x - 4
 \end{aligned}$$

$$\begin{aligned}
 \text{(xviii)} \quad -(y - x) - (x + y - 2x + y) \\
 = -(y - x) - (x + y - 2x + y) \\
 = -y + x - x - y + 2x + y \\
 = -y + 2x \\
 = 2x - y
 \end{aligned}$$

3. Simplify :

$$\begin{aligned}
 \text{(i)} \quad x - (y - z) + x + (y - z) + y - (z + x) \\
 = \cancel{x} - y + \cancel{z} + \cancel{x} + y - \cancel{z} + y - \cancel{z} - \cancel{x} \\
 = x + y - z
 \end{aligned}$$

$$\begin{aligned}
 \text{(ii)} \quad x - [y + \{x - (y + x)\}] \\
 = x - [y + \{x - y - x\}] \\
 = x - [y - y] \\
 = x - 0 = x
 \end{aligned}$$

$$\begin{aligned} \text{(iii)} \quad & 4x + 3(2x - 5y) \\ &= 4x + 6x - 15y \\ &= 10x - 15y \end{aligned}$$

$$\begin{aligned} \text{(viii)} \quad & 5 \{ a^2 - a(a - a - 2) \} \\ &= 5 \{ a^2 - a(a - a + 2) \} \\ &= 5 \{ a^2 - a^2 + a^2 - 2a \} \\ &= 5 \{ a^2 - 2a \} \\ &= 5a^2 - 10a \end{aligned}$$

$$\begin{aligned} \text{(iv)} \quad & 2(3a - b) - 5(a - 3b) \\ &= 6a - 2b - 5a + 15b \\ &= 6a - 5a + 15b - 2b \\ &= a + 13b \end{aligned}$$

— X —

$$\begin{aligned} \text{(v)} \quad & p + 2(q - r + p) \\ &= p + 2(q - r + p) \\ &= p + 2q - 2r + 2p \\ &= 2q - 2r + p + 2p \\ &= 2q - 2r + 3p \end{aligned}$$

$$\begin{aligned} \text{(vi)} \quad & a - \{ -(a - b - c) \} \\ &= a - \{ -(a - b + c) \} \\ &= a - \{ -a + b - c \} \\ &= a - [-a + b - c] \\ &= a - a + b - c \\ &= b - c \end{aligned}$$

$$\begin{aligned} \text{(vii)} \quad & 3x - \{ 5y - \{ 6y + 2(10y - x) \} \} \\ &= 3x - \{ 5y - \{ 6y + 20y - 2x \} \} \\ &= 3x - \{ 5y - 6y - 20y + 2x \} \\ &= 3x - \{ -21y + 2x \} \\ &= 3x + 21y - 2x \\ &= 3x - 2x + 21y \\ &= x + 21y \end{aligned}$$