

1. (i) $8 + 4 = 12$

(ii) $6m - 3m = 3m$

(v) $33b - 15b = 20$

(ii) $5x + 10x = 15x$

(iv) $6a + 4a = 10a$

(vi) $10y - 5y = 5y$

2. (i) $12x - 7x = 5x$

(iii) $9b - 12b = -3b$

(v) $x - x + y + x - y = x$

(vii) $a + b - c - d - e + f$

(ix) $a - a + b + c = b + c$

(xi) $2m - (3m + 2n - 6n)$
 $= 2m - 3m - 2n + 6n$
 $= -m - 4n$

(xiii) $x + y - x - y + x$
 $= x - x + x + y - y = x$

(xv) $3x + x + 2$
 $= 4x + 2$

(xvii) $5x^2 + x^2 - 3x - 4$
 $= 6x^2 - 3x - 4$

(ii) ~~$10m + 10m - 4m$~~

(iv) $-(-4a - 8a) = -(-12a)$

(vi) $p - p - q + q - r + r - s = -s$

(viii) $3x + 3x - 6x = 0$

(x) $6a^2 + a^2 - a^2 = 6a^2$

(xii) $r - m - n + m - m$
 $= -m - n$

(xiv) $25y - 7y$
 $= 18y$

(xvi) $a - 2a + 4a + 3 = 8a - 2a + 3 = 6a + 3$

(xviii) $-y + x - x - y + 2x + y$
 $= x - x + 2x - y - y + y = 2x - y$

3. (i) Ans - $x - y + z + x + y - z + y - z + x$
 $= (x, x, x), (-y, y, y), (z, -z, -z)$
 $= x + x + x - y + y + y + z - z - z$
 $= 3x + y - z$

(ii) $x - [y + \{x - (y + x)\}]$
 $= x - y - \{x - (y + x)\}$
 $= x - y - x + (y + x)$
 $= x - y - x + y + x$
 $= (x, -x, x), (-y, y)$
 $= x - x + x - y + y$
 $= x$

(iii) $4x + 3(2x - 5y)$
 $= 4x + 3 + 2x - 5y$ ~~$4x + 6x - 15y$~~
 $= 10x - 15y$

(iv) $2(3a - b) - 5(2a - 3b)$

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

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

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

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

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