



Combining like terms

Example 1. Simplify: $6p - 2q + 7r - 4 - 5q + 3s + 9 + 2p - 3r + 5s$.

Add or subtract the like terms by adding or subtracting the coefficients of the terms. Use integer rules to add or subtract the coefficients.

We get $(6p+2p) + (-) (2q + 5q) + (7r -3r) + (3s + 5s) + (- 4 + 9)$

We have $8p+ 7q + 4r + 8s +5$. This is the simplified expression and we cannot simplify it further.

Example 2. Simplify: $6a + 4b - 3c + 20 + 9c + 8b + 6a - 8$.

Here $6a$ and $6a$, $4b$ & $8b$, $(-3c)$ & $9c$, are like terms and 20 and $(- 8)$ are constants. On combining them,

we get $(6a + 6a) + (4b + 8b) + (- 3c + 9c) + (20 - 8)$

$=12a + 12b+6c +12$

$= 6(2a +2b +c + 2)$.

Answer: $6(2a + 2b + c + 2)$.

Simplify the following expressions

1. $3a - 4b + 5c + 13 + a - c + 7 + 8b$

$= (3a+a) + (-4b+8b) + (5c-c) +13-7$

$= 4a + 4b + 4c + 20 = 4(a + b + c+5)$

2. $p + 2q - 3r + 2p + 5r - 10 + 4q + 20$

3. $4z - 3y + 2x + 4 + 5y + 2z + 3x - 8$

4. $4m - 5p - 6q + 2r - 5 - m + 4r + 6p + r + 10$

5. $7m + (3m - 2n + 5) - (2n - 3m) + 5$

$= 7m + 3m - 2n + 5 - 2n + 3m + 5$

$= 13m - 4n + 10$

6. $7x + 4y - 5(2y - x + z) + 3z + 5 + (2y - 4x - 3z + 2) - 9$

7. $4c - 3b + 5 + 3a - (6 - 2a - 4b + c) - 5$

8. $15 + (2p - 3q + r) - (5 + p - 5q) + 3r - 7$

9. $9x - 4y + 2z - 7 + 3y - 2[(4x - 2z + 2) - (z - 2y - 6)]$

10. $2n - 3m + 5p + 6m + 3n + 2q - 5 - (m - n + q - 3)$



ANSWERS:

1. $4(a + b + c + 5)$
2. $3p + 6q + 2r + 10$
3. $5x + 2y + 6z - 4$
4. $3m + p - 6q + 7r + 5$
5. $13m - 4n + 10$
6. $8x - 4y - 5z - 2$
7. $5a + b + 3c - 6$
8. $p + 2q + 4r + 3$
9. $x - 5y + 8z - 23$
10. $2m + 6n + 5p - q - 2.$