

10.3 Simplifying Expressions

1. Simplify, as far as possible, each of these expressions:

(a) $x + 4x$

(b) $3x + 5x - 2x$

(c) $x + 4 - 2x + 2$

(d) $5a - 2 + a + 6$

(e) $3a - 5b + 6a + 7b$

(f) $-4a - 5y + 2a + 6y$

(g) $x + 4 - y + 2x - y$

(h) $2x + 7y - 4x + 3y + 1$

(i) $4p + 8q - 4p + 8q$

(j) $x + y - 10x - 11y$

2. Collect like terms together where possible in each of the following expressions.

(a) $4x^2 + 2x + x^2 + 5x$

(b) $3x^2 - 2x + 2x^2 - 2x$

(c) $5y^2 + 3y - 4y^2 - 4y$

(d) $x^2 + y^2 - 3x^2 - 3y^2$

(e) $3x + x^2 - y^2 - 4x + y^2$

(f) $x^2 - 2xy + y^2 + 4xy$

(g) $3x^2 + x - 1 + x^2 - 3x + 2$

(h) $4ab - 7bc + 5ab - 2ac$

3. Expand the following:

(a) $4(x + 2)$

(b) $5(3 + 2x)$

(c) $6(2x + 1)$

(d) $4(2x - 2)$

(e) $3(x + y)$

(f) $7(x - 2y)$

(g) $x(1 + y)$

(h) $x(x + 2y)$

(i) $3(x + 2y - 2)$

(j) $x(1 + x + y)$

(k) $2x(1 + y)$

(l) $3x(x + 2y)$

4. Simplify each of the following expressions by first removing the brackets.

(a) $2(x + 1) + 4(2 + x)$

(b) $3(2x - 1) + 2(x + 4)$

(c) $3(x + y) + 2(2x - y)$

(d) $5(x - y) - 2(x + y)$

(e) $4(a + 2b) + 3(2a + b)$

(f) $3(2x + 3y) - 4(x + 2y)$

5. (a) Simplify $8p + 5q - 3p + 2q$

(b) Simplify $5x + 8y - 2x - 3y$

(c) Simplify $5w^2 - 2w^2$

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