

Exercises — Simplifying and factoring expressions

Evaluate or simplify each of the following expressions:

1. $2(5 + 4) - 3(2 + 4)$
2. $3(4(5 + 3) + (2 + 3))$
3. $2(2(2 + 2) + 2(2 + 2))$
4. $2(x + 4) - 3(x + 4)$
5. $3(4(x + 3) + (2 + x))$
6. $2(2(x + 2) + 2(x + 2))$
7. $2(5 - 4) - 3(2 - 4)$
8. $-3(4(-5 + 3) + (2 - 3))$
9. $3(x(5 - 3) + (x - 3))$
10. $2(x(2 + x) + 2(x + 2))$
11. $2(5 + z) - 3(2 + z)$
12. $x(5 - 4) - x(2 + 4)$
13. $y(4(x + 3) + (y + x))$
14. $-3y(x - 3) - (-x(y + 4))$
15. $-4x(z + y) + (x(x - y))$
16. $-4a((c + b) + a(a - b))$
17. $3((h + k - m) + 3(h - k))$

18. $3((x^2 - 2y + z) - (x - xy))$

Factor the following expressions:

1. $5x + 25$

2. $3x \times x + 18$

3. $6x^2 + 24x$

4. $2(x + 4)^2 - 3(x + 4)$. Hint: write $(x + 4)^2$ as $(x + 4)(x + 4)$.

5. $1.43xy + 2.86y^2$

6. $2y(x - 2) + 6y^2(x - 2)$

7. $2zx - 3xy + 4x^2y^2 - 3yx$

8. $3a(b + 3)^2 + 2ba(b + 3) - a(b + 3)$. Hint: write $(b + 3)^2$ as $(b + 3)(b + 3)$.

9. $4ab^2c - 2b^2c + 3(2a - 1)c$. Hint: factor $2b^2c$ from the first two terms.

10. $2y(x + 2) + 6y^2(2 + x)$. Hint: write $(2 + x)$ as $(x + 2)$.

11. $2x(5 - z) - 3y(z - 5)$. Hint: write $(z - 5)$ as $-(5 - z)$.

12. $x^2 - xy - y^2 + xy$. Hint: Factor the x from the first two terms, and the y from the second two terms.

13. $6x^2 - 2xy + 9xy - 3y^2$. Hint: Factor $2x$ from the first two terms and $3y$ from the last two terms.

14. $2ABh + 3hAt$.

15. $4a((c + b)^2 + 3(c + b))$

16. $7((x^2 - 2x + 1) - (x - 1))$. Hint: $x^2 - 2x + 1 = (x - 1)^2$.