

# secondary 2 mathematics@2024-12-01

## exponents

1. Simplify  $a \times a^2$ .
2. Simplify  $a^3 \times a^4$ .
3. Simplify  $a^a \times a^b$ .
4. Simplify  $a^5 \div a^2$ .
5. Simplify  $a^2 \div a^5$ .
6. Simplify  $(a^3)^9$ .
7. Simplify  $(a^9)^x$ .
8. Simplify  $(x^y)^x$ .
9. Simplify  $\left(\frac{c}{d}\right)^4$ .
10. Simplify  $\left(\frac{c^2}{d}\right)^4$ .
11. Simplify  $(xy)^a$ .
12. Simplify  $xy^a$ .
13. Simplify  $((xy)^a)^b$ .
14. Simplify  $\left(\frac{ac}{bd}\right)^e$ .
15. Simplify  $\left(cd^2\left(\frac{a^2}{b^3}\right)^e\right)^f$ .

## expand

1. Expand  $(7 - 3y)(y - 3)$ .
2. Expand  $(-7w - 4)(2w - 5)$ .
3. Expand  $(3v + 7)(6v - 4)$ .
4. Expand  $(4 - 2m)(m + 6)$ .
5. Expand  $(1 - 3x)(3x + 3)$ .
6. Expand  $4y(7y + 5)(7y + 7)$ .
7. Expand  $2(-7n - 6)(-n - 5)n$ .
8. Expand  $21s^2(3s + 7)$ .
9. Expand  $-6v(35v^2 - 39v - 14)$ .
10. Expand  $7w(3w + 2)(4w + 5)(7w + 6)$ .

## factor

1. Factor  $a^2 - b^2$ .
2. Factor  $a^2 - 2a - 15$ .
3. Factor  $a^2 + a - 20$ .

4. Factor  $n^2 - 10n + 21$ .
5. Factor  $2y^2 + 16y + 14$ .
6. Factor  $n^2 + 6n + 5$ .
7. Factor  $x^2 - 5xz - 6z^2$ .
8. Factor  $3m^2 + 12mn - 36n^2$ .
9. Factor  $u^4 + 8u^2 + 15$ .
10. Factor  $m^4 + 2m^2n^2 + n^4$ .
11. Factor  $(3x)^3 - (4y)^3$ .
12. Factor  $(3z)^3 + (4w)^3$ .
13. Factor  $27a^3 - 64b^3$ .
14. Factor  $27c^3 + 64d^3$ .
15. Factor  $a^2 + 2ab + b^2$ .
16. Factor  $4c^2 + 4cd + d^2$ .
17. Factor  $8e^2 + 8ef + 2f^2$ .
18. Factor  $v^3 - v^2 - 6v$ .
19. Factor  $2a^4 + 12a^3 + 16a^2$ .
20. Factor  $2n^4m - 22n^2m^2 + 56m^3$ .