

GCSE Maths Algebra Basics (Foundation): check-up and exam-style questions: answers

GCSE Maths - Algebra Basics - Foundation - Test yourself

Answers. Final answers to the worksheet questions. Full step-by-step solutions for every question are free at websink.site/gcse/maths/ch07-algebra-basics/foundation/check-up-and-exam-style-questions/

Exercise 7Z Check-up (non-calculator) Non-calculator

1 Simplify $5a + 3b - 2a + 4b - 6 + 9$.

Answer: $3a + 7b + 3$

2 Write each using algebraic notation: (a) $a \times b \times b \times 5$ (b) $y \div 4$.

(a) $a \times b \times b \times 5$

Answer: $5ab^2$

(b) $y \div 4$

Answer: $\frac{y}{4}$

3 Simplify (a) $3x^2 \times 5x^4$ (b) $12a^5 \div 3a^2$ (c) $(2y^3)^2$.

(a) $3x^2 \times 5x^4$

Answer: $15x^6$

(b) $12a^5 \div 3a^2$

Answer: $4a^3$

(c) $(2y^3)^2$

Answer: $4y^6$

4 Expand (a) $4(2x - 3)$ (b) $x(x + 6)$.

(a) $4(2x - 3)$

Answer: $8x - 12$

(b) $x(x + 6)$

Answer: $x^2 + 6x$

5 Expand and simplify $3(x + 2) - 2(x - 1)$.

Answer: $x + 8$

6 Expand and simplify $(x + 3)(x - 5)$.

Answer: $x^2 - 2x - 15$

7 Factorise fully $8x^2 + 12x$.

Answer: $4x(2x + 3)$

8 Factorise $x^2 - 10x + 24$.

Answer: $(x - 6)(x - 4)$

9 Factorise (a) $x^2 - 81$ (b) $9y^2 - 16$.

(a) $x^2 - 81$

Answer: $(x - 9)(x + 9)$

(b) $9y^2 - 16$

Answer: $(3y - 4)(3y + 4)$

10 Is $2(x + 4) = 2x + 8$ an equation or an identity? Give a reason.

Answer: Identity. Both sides simplify to the same expression, so it is true for every x .

Exercise 7X Exam-style questions

Non-calculator

1 Simplify $6a + 3b - 2a + 5b$.

[2 marks]

Answer: $4a + 8b$

2 Expand and simplify $4(x + 3) - 2(x - 1)$.

[2 marks]

Answer: $2x + 14$

3 Chris buys 4 pens costing p pence each and 3 books costing b pence each. (a) Write an expression for the total cost, in pence. (b) Chris pays with a £10 note. Write an expression for his change, in pence. [3 marks]

(a) Write an expression for the total cost, in pence.

Answer: $4p + 3b$

(b) Write an expression for his change, in pence.

Answer: $1000 - 4p - 3b$

4 Factorise fully $6x^2 + 9x$.

[2 marks]

Answer: $3x(2x + 3)$

5 Expand and simplify $(x + 5)(x - 3)$.

[2 marks]

Answer: $x^2 + 2x - 15$

6 Factorise $x^2 - 7x + 12$.

[2 marks]

Answer: $(x - 4)(x - 3)$

7 Simplify (a) $p^3 \times p^4$ (b) $y^8 \div y^2$ (c) $(m^2)^5$.

[3 marks]

(a) $p^3 \times p^4$

Answer: p^7

(b) $y^8 \div y^2$

Answer: y^6

(c) $(m^2)^5$

Answer: m^{10}

- 8 Factorise $25x^2 - 4$. [2 marks]

Answer: $(5x - 2)(5x + 2)$

- 9 Show that $(x + 4)(x - 4) + 16 \equiv x^2$. [3 marks]

Answer: x^2

- 10 For each statement write "equation" or "identity". (1 mark each) [3 marks]

(a) $4x + 1 = 21$

Answer: Equation

(b) $3(x + 1) = 3x + 3$

Answer: Identity

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

Answer: Identity

- 11 Prove that the sum of any four consecutive odd numbers is a multiple of 8. [3 marks]

Answer: $8(n + 2)$

- 12 The area of a rectangle is $(x^2 + 5x + 6) \text{ cm}^2$. The width of the rectangle is $(x + 2) \text{ cm}$. Find an expression for the length of the rectangle. [2 marks]

Answer: $(x + 3) \text{ cm}$