



# O Level Maths

## Topic: Algebraic Expressions and Manipulation

### Instructions

Answer all questions. Show working where necessary. Use your knowledge of algebraic expressions and manipulation to simplify and solve the given problems.

### Practice Problems

1. Simplify the expression:  $3x + 5x - 7$ .
2. Expand and simplify:  $(x + 4)(x - 2)$ .
3. Factorize the expression:  $x^2 - 9$ .
4. Simplify the expression:  $4(2x + 3) - 5x$ .
5. Expand:  $2(x + 5) - 3(x - 4)$ .
6. Factorize:  $x^2 + 7x + 10$ .
7. Simplify the expression:  $\frac{2x^2 + 4x}{2x}$ .
8. If  $x = 3$ , evaluate the expression  $2x^2 - 5x + 4$ .

### Word Problems

1. A rectangle has a length of  $2x + 3$  and a width of  $x - 1$ . Write an expression for the area of the rectangle and simplify it.
2. The perimeter of a rectangle is given by the expression  $2l + 2w$ , where  $l$  is the length and  $w$  is the width. If  $l = 3x + 4$  and  $w = 2x - 1$ , find the perimeter of the rectangle in terms of  $x$ .

3. A car travels a distance given by the expression  $60t + 5$ , where  $t$  is the time in hours. Find the distance traveled after 3 hours.

## Multiple-Choice Questions

1. Simplify the expression:  $5a + 3a - 2b + b$ .
  - A.  $8a - b$
  - B.  $8a + b$
  - C.  $2a + b$
  - D.  $8a - 3b$
2. Factorize:  $x^2 - 5x + 6$ .
  - A.  $(x - 1)(x - 6)$
  - B.  $(x - 2)(x - 3)$
  - C.  $(x - 3)(x + 2)$
  - D.  $(x - 6)(x + 1)$
3. What is the result of  $4(3x + 2) - 2(x - 3)$ ?
  - A.  $12x + 8 - 2x + 6$
  - B.  $10x + 6$
  - C.  $12x + 14$
  - D.  $6x + 10$
4. Factorize:  $x^2 + 10x + 25$ .
  - A.  $(x + 5)^2$
  - B.  $(x - 5)^2$
  - C.  $(x + 10)(x + 5)$
  - D.  $(x + 5)(x - 5)$

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