Worked answers | Algebra

Simplifying expressions

6 questions | 14 marks

Equivalent correct methods earn the corresponding marks.

1. Simplify $9x - 4x + 2x$. [2 marks]

Add coefficients: $9 - 4 + 2 = 7$.

Answer: $7x$

2. Simplify $5a + 3b - 2a + 4b$. [2 marks]

Collect $5a - 2a$ and $3b + 4b$.

Answer: $3a + 7b$

3. Simplify $8m^2 - 3m + 2m^2 + 7m$. [2 marks]

Collect equal powers separately.

Answer: $10m^2 + 4m$

4. Simplify $4p - (3p - 5)$. [2 marks]

The subtraction gives $4p - 3p + 5$.

Answer: $p + 5$

5. A rectangle has adjacent sides $3x + 2$ cm and $x + 5$ cm. Write its perimeter in simplified form. [3 marks]

$P = 2(3x + 2) + 2(x + 5)$.

Expand and collect: $6x + 4 + 2x + 10 = 8x + 14$.

Answer: $8x + 14$ cm

6. Rina says $2x + 5y = 7xy$. Explain the error and test the claim using $x = 2, y = 1$. [3 marks]

The variable parts x and y differ.

Substitution gives $2(2) + 5(1) = 9$, while $7(2)(1) = 14$.

Answer: Unlike terms cannot be combined. The original equals 9; $7xy$ equals 14.