

Algebra – Simplifying Brackets

The **distributive law** is used to multiply a number or variable outside brackets by every term inside the brackets.

The rule is:

$$a(b + c) = ab + ac$$

This means the value outside the brackets must be distributed to each term inside.

Step-by-step examples

Example 1

Simplify:

$$3(x + 4)$$

Multiply the 3 by both terms inside the bracket:

$$3 \times x + 3 \times 4$$

So:

$$= 3x + 12$$

Example 2

Simplify:

$$3x(x + 4)$$

Multiply the 3 by both terms inside the bracket:

$$(3x \times x) + (3x \times 4)$$

So:

$$= 3x^2 + 12x$$

Simplify

1. $4(3b + 2) =$

2. $3(2a + 2b) =$

3. $5(a + 3b + 2c) =$

4. $b(4 + c) =$

5. $b(b+6) =$

i. $b^2 + 6$

ii. $b^2 + 6b$

iii. $8b$

iv. $2b + 6$

6. $2c(2c + 6) =$

- a. $4 + c^2 + 2c + 12$ b. $c^2 + 4c + 6$ c. $4c^2 + 12c$ d. $4 + c^2 + 12c$

7. $2c(3f + 5c) =$

- a. $6 + cf + 10c^2$ b. $6cf + 10c^2$ c. $30cfc$ d. $30c^2f$

8. $4b(b + 4 + 2c) =$

- a. $4b^2 + 16b + 8bc$ b. $4 + b^2 + 16b + 8c$ c. $32b^2c$

i. $2(3 \times 6) =$

ii. $3(4 \times a) =$

iii. $4b(3 \times b) =$

- a. $12 + 4b^2$ b. $12b + 4b^2$ c. $12b^2$