

Expanding Brackets

KS3 Maths · Follows the national curriculum

Name _____ Class _____ Date _____

1. Worked example

Expand $4(3x - 2)$

Step 1 · Multiply 4 by the first term: $4 \times 3x$
 $= 12x$

Step 2 · Multiply 4 by the second term: $4 \times (-2)$
 $= -8$

Step 3 · Write the full expansion
 $12x - 8$

Answer: $12x - 8$

Check: Substitute $x=1$: $4(3-2)=4$. $12-8=4$ ✓

2. Now try one with the steps

Expand $(x + 5)(x - 3)$

Step 1 · $x \times x$ (First $\times$ First)

Step 2 · $x \times (-3)$ (First $\times$ Last)

Step 3 · $5 \times x$ (Last $\times$ First)

Step 4 · $5 \times (-3)$ (Last $\times$ Last)

Step 5 · Collect x terms: $-3x + 5x = 2x$

Answer:

3. Practice

Show your working. The marks tell you how much is expected.

1. Expand: $3(x + 4)$ [1]

2. Expand: $5(2x - 3)$ [1]

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

4. Expand: $(x + 3)(x + 4)$ [2]

5. Expand: $(x - 2)(x + 5)$ [2]

6. Expand and simplify: $(x + 3)^2 - (x + 1)(x - 1)$ [3]

7. Expand: $4(y - 6)$ [1]

8. Expand: $x(x + 7)$ [1]

9. Expand: $-2(3x - 5)$ [2]

10. Expand: $(x + 6)(x + 1)$ [2]

11. Expand and simplify: $5(x + 2) - 3(x - 4)$ [2]

12. Expand: $(x - 4)(x - 5)$ [2]

13. Expand: $(x + 7)^2$ [2]

14. Expand: $3a(2a - b)$ [2]

15. Expand: $(x + 5)(x - 5)$ [2]

16. Expand and simplify: $(3x - 2)(2x + 5)$ [3]

4. Before you hand it in

$3(x + 4) = 3x + 4$ (only multiplying the first term)

Every term inside the bracket gets multiplied by the factor outside. $3(x + 4) = 3 \times x + 3 \times 4 = 3x + 12$.

$(x + 3)(x + 4) = x^2 + 12$ (only multiplying first and last)

Four products are needed. The area model shows why: the rectangle has four regions. $(x+3)(x+4) = x^2 + 4x + 3x + 12 = x^2 + 7x + 12$.

$(x - 2)^2 = x^2 - 4$ (forgetting the middle term)

$(x-2)^2 = (x-2)(x-2) = x^2 - 2x - 2x + 4 = x^2 - 4x + 4$. The middle term $(-4x)$ is always present in a squared bracket.