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Expanding Brackets

IGCSE Mathematics

The Panda Math Tutor

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1 Introduction to Expanding Brackets

Note

Expanding brackets (also called "multiplying out" brackets) is one of the most important algebraic skills in IGCSE Mathematics. It allows us to remove brackets from expressions and simplify them. This skill is essential for solving equations, simplifying expressions, and working with quadratics.
In this chapter, we will explore:

- Expanding a single bracket
- Expanding two brackets (double brackets)
- Expanding three or more brackets
- Special cases: perfect squares and difference of two squares
- Expanding and simplifying combined expressions
- Applications to problem solving

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2 Expanding a Single Bracket

Definition

Expanding a single bracket means multiplying every term inside the bracket by the term outside.
If a, b, and c are any terms, then:

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

This is known as the **distributive law** (or distributive property).

Method

How to Expand a Single Bracket

Step 1: Identify the term outside the bracket (the multiplier)

Step 2: Multiply the outside term by each term inside the bracket

Step 3: Be careful with signs (positive and negative)

Step 4: Simplify the result if possible

Example

Expand $4(x+7)$.

Solution:
Multiply 4 by each term inside the bracket:

$$\begin{aligned} 4(x+7) &= 4 \times x + 4 \times 7 \\ &= 4x + 28 \end{aligned}$$

Example

Expand $7(3y-2)$.

Solution:

$$\begin{aligned} 7(3y-2) &= 7 \times 3y + 7 \times (-2) \\ &= 21y - 14 \end{aligned}$$

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Example

Expand $-6(2a+5)$.

Solution:
When the term outside is negative, take extra care with signs:

$$\begin{aligned} -6(2a+5) &= (-6) \times 2a + (-6) \times 5 \\ &= -12a - 30 \end{aligned}$$

Preview ends here

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