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Expanding Brackets

Solutions & Answer Key

Full worked solutions, marking scheme & answer key

IGCSE Mathematics

The Panda Math Tutor

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Companion to the *Student Worksheet*

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Note

About this booklet. These are the complete solutions to every question in the *Expanding Brackets — Student Worksheet*. Question numbers match exactly (SB1–SB8, VB1–VB7, ES1–ES7, DB1–DB9, PS1–PS8, DS1–DS7, TB1–TB6, CX1–CX6, AP1–AP7, the Mixed Review MR1–MR10, and the examination questions Q1–Q8). Each solution shows the individual products *before* the like terms are collected, because that is where method marks are earned and where mistakes are made. Depth is scaled to difficulty. Part V collects the common mistakes to watch for, and Part VI is a quick answer key for fast marking.

4 Part IV — Complete Solutions

Note

A fast way to check any expansion is to substitute a simple value such as $x = 2$ into both the original expression and the answer. If the two numbers disagree, there is a sign error or a missing term.

4.1 Solutions — Expanding a Single Bracket

Solution SB1

Multiply the 5 by *each* term inside:

$$5(x + 3) = 5 \times x + 5 \times 3 = 5x + 15.$$

Solution SB2

$$8(2y - 5) = 8 \times 2y + 8 \times (-5) = 16y - 40.$$

Solution SB3

$$6(3a + 4) = 6 \times 3a + 6 \times 4 = 18a + 24.$$

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Solution SB4

The multiplier is negative, so both products are negative:

$$-4(3m+7) = (-4)\times 3m + (-4)\times 7 = -12m - 28.$$

Solution SB5

$$-9(2p-5) = (-9)\times 2p + (-9)\times(-5) = -18p + 45.$$

Negative $\times$ negative $=$ positive, which is why the second term is $+45$.

Solution SB6

Three terms inside means three products:

$$12(2x - 3y + 5) = 24x - 36y + 60.$$

Solution SB7

$$-5(4-3k) = (-5)\times 4 + (-5)\times(-3k) = -20 + 15k.$$

Written with the k term first: $\mathbf{15k - 20}$.
Check ($k=1$): original $= -5(4-3) = -5$; answer $= 15 - 20 = -5$. ✓

Solution SB8

The error: the student multiplied -7 by -2 and obtained -14. Two negatives multiply to give a *positive*, so the second term should be $+14$.

$$-7(x-2) = (-7)\times x + (-7)\times(-2) = -7x + 14.$$

Verification at $x = 3$:

- Original: $-7(3-2) = -7\times 1 = -7$.
- Correct expansion: $-7(3) + 14 = -21 + 14 = -7$. ✓
- Student's answer: $-7(3) - 14 = -21 - 14 = -35$. ✗

The two values disagree, which proves the student's expansion is wrong.

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Preview ends here

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