

The Panda Math Tutor

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Factorisation

Solutions & Answer Key

Full worked solutions, marking scheme & answer key

IGCSE Mathematics

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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 *Factorisation — Student Worksheet*. Question numbers match exactly (CF1–CF9, G1–G7, T1–T8, TA1–TA8, D1–D8, S1–S8, E1–E9, FC1–FC7, the Mixed Review MR1–MR10, and the examination questions Q1–Q8).

Each solution follows the notes' reasoning pattern — check for a common factor, count the terms, choose the method *and say why it fits*, work through it, then verify by expanding. 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

Every factorisation below is checked by expanding. Encourage students to do the same: expanding takes ten seconds and catches almost every sign error.

4.1 Solutions — Taking Out a Common Factor

Solution CF1

HCF of 8 and 20 is 4. Dividing each term by 4 gives $2x$ and 5:

$$8x + 20 = 4(2x + 5).$$

Check: $4(2x + 5) = 8x + 20$. ✓

Solution CF2

HCF of 12 and 18 is 6:

$$12y - 18 = 6(2y - 3).$$

Check: $6(2y - 3) = 12y - 18$. ✓

Solution CF3

HCF of 6, 15 and 27 is 3:

$$6a + 15b + 27 = 3(2a + 5b + 9).$$

Check: $3(2a + 5b + 9) = 6a + 15b + 27$. ✓

Solution CF4

The terms x^2 and $6x$ share a factor of x (the numbers 1 and 6 share nothing but 1):

$$x^2 + 6x = x(x + 6).$$

Check: $x(x + 6) = x^2 + 6x$. ✓

Solution CF5

Numbers: HCF of 10 and 25 is 5. Letters: the lowest power of p present in both terms is p^2 . So the HCF is $5p^2$.

$$10p^3 - 25p^2 = 5p^2(2p - 5).$$

Check: $5p^2(2p - 5) = 10p^3 - 25p^2$. ✓

Solution CF6

Numbers: HCF of 14 and 21 is 7. Letters: m appears in both (lowest power m^1) and n appears in both (lowest power n^1). HCF = $7mn$.

$$14m^2n + 21mn^2 = 7mn(2m + 3n).$$

Check: $7mn(2m + 3n) = 14m^2n + 21mn^2$. ✓

Solution CF7

Take the three ingredients of the HCF separately:

- Numbers: HCF of 20, 30, 50 is 10.
- Lowest power of a : a^2 (the powers are a^3, a^2, a^2).
- Lowest power of b : b^2 (the powers are b^2, b^3, b^2).

Preview ends here

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