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# Factorisation

## 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 *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:** $6(2y - 3) = 12y - 18$. ✓

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### 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 $b^2, b^3, b^2$).

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# Preview ends here

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