

Factorising into single brackets

Starter

1. **(Review of last lesson)** Expand and simplify:
(a) $(2x + 5)(x - 3)(x + 3)$ (b) $(x - 2)(x + 5)^2$

N.B. Factorising is the opposite to expanding brackets.

2. **(Review of previous material)**
Factorise: (a) $6x + 8$ (b) $12x - 16y$ (c) $10a^2 - 15ab$

Notes

To factorise an expression look at each term of the expression and decide which are the common factors. These factors could be **numbers or letters**.

The final answer needs to have the **highest common factor (HCF)** in front of the bracket.

For example: $8x + 12 = 2(4x + 6)$

This is a correct first step but it is not the final answer because 2 is not the HCF of $8x$ and 12. It is fine to have two bites at the cherry though.

$$8x + 12 = 2(4x + 6) = 2 \times 2(2x - 3) = 4(2x - 3)$$

It is better if you can spot the HCF at the start.

Success criteria – factorising

1. Look at the **coefficients** (i.e. the numbers in front of the letters) in each term – **take out the HCF**.
2. Look at the **letters** in each term – **take out the HCF**.
3. After factorising, look at the terms in the bracket and see if you can take out anything else out as a factor. If so, take it out and multiply the term in front of the bracket.

N.B. Always check your answer by expanding the bracket mentally and seeing if it is the same as the question.

E.g. 1 Factorise these expressions:

- (a) $2x - 11x^2$ (b) $56x - 32y$ (c) $36p^2 + 20p$
(d) $45x^2y + 30xy^2$ (e) $14p^3q^4 + 21p^2q$ (f) $24x^2y - 36xy + 18xy^3$

Working: (a) $2x - 11x^2 = x(2 - 11x)$

Video: [Factorisation](#)

[Solutions to Starter and E.g.s](#)

Exercise

9-1 class textbook: p108 M4.7 Qu 1-54 odd
A*-G class textbook: p97 M4.6 Qu 1-50 odd
9-1 homework book: p38 M4.7 Qu 1-29
A*-G homework book: p28 M4.6 Qu 1-27

Summary

Success criteria — factorising:

1. Look at the **coefficients** (i.e. the numbers in front of the letters) in each term — **take out the HCF**.
2. Look at the **letters** in each term — **take out the HCF**.
3. After factorising, look at the terms in the bracket and see if you can take out anything else out as a factor. If so, take it out and multiply the term in front of the bracket.

N.B. Always check your answer by expanding the bracket mentally and seeing if it is the same as the question.

