Factorising into a Single Bracket

Example: Factorising with a Common Factor

Factorising is the opposite of expanding. There are several method of factorising, but the most basic one involves indentifying **common factors**. For example, in the expression

$$x^2 - 12x$$

x is a common factor, and so

$$x^2 - 12x = x(x - 12)$$

Example: More than One Factor

Sometimes, there is more than one common factor, and more than two terms:

$$4x^2y + 8xy^2 + 4xy = 4xy(x + 2y + 1)$$

> ⚠ **Warning**
>
> When you take out all the factors from a term, there is a 1 left, not a 0. This is because when you factorise, you are dividing rather than subtracting, and anything divided by itself is 1.

Test Your Understanding

Factorise completely:

1) $(3x^2 + 9x)$
2) $(14t^2 - 21t^3)$
3) $(8y + 28y^3)$
4) $(-5h^3 - 40h^7)$

Answers

1) $(3x^2 + 9x) = 3x(x + 3)$

2) $(14t^2 - 21t^3) = 7t^2(2 - 3t)$

3) $(8y + 28y^3) = 4y(2 + 7y^2)$

4) $(-5h^3 - 40h^7) = -5h^3(1 + 8h^4)$