

Factorising with a Common Factor

Learning Objectives

- Factorise out one or more common factors using a single bracket

Example: Factorising with a Common Factor

Factorising is the opposite of expanding. There are several methods of factorising, but the most basic one involves identifying **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

$$\mathbf{1)} \quad (3x^2 + 9x) = 3x(x + 3)$$

$$\mathbf{2)} \quad (14t^2 - 21t^3) = 7t^2(2 - 3t)$$

$$\mathbf{3)} \quad (8y + 28y^3) = 4y(2 + 7y^2)$$

$$\mathbf{4)} \quad (-5h^3 - 40h^7) = -5h^3(1 + 8h^4)$$

Exercise

Please complete the worksheet