

# Factorising to a Single Bracket

**Factorising to a single bracket** means that we take out the **highest common factor** from each term in an algebraic expression, and then write the expression as a **product** of the HCF and a single bracket.

 Example

$$3x + 6 = 3(x + 2)$$

→ 3 is the HCF of  $3x$  and 6, so this is written outside the single bracket.

 Example

$$4xy + 6y = 2y(2x + 3)$$

→  $2y$  is the HCF of  $4xy$  and  $6y$ , so this is written outside the single bracket.

# Factorising Quadratics

**Factorising quadratics** is the opposite of expanding brackets. Most quadratic expressions require two brackets in the form  $(x + p)(x + q)$

 **Example**

Factorise  $x^2 + 2x - 15$

Factor pairs of 15 are 1 and 15  
3 and 5

We choose the factor pair 3 and 5 as these can be used to make 2 by addition or subtraction.

$$x^2 + 2x - 15 = (x + 5)(x - 3)$$

# Difference of Two Squares

**Difference of two squares** is a type of quadratic factorisation used when an algebraic expression is made up of a squared term subtracted from another squared term.

$$a^2 - b^2 = (a + b)(a - b)$$

 **Example** Factorise using the difference of two squares

$$\begin{array}{ccc} & \xrightarrow{\text{blue}} & x^2 - 9 \xleftarrow{\text{pink}} \\ \sqrt{x^2} = x & & \sqrt{9} = 3 \\ (x + 3)(x - 3) \end{array}$$