

Multiplying & Factorising Expressions

You should be able to:

- Multiply out brackets and collect like terms.
- Factorise Expressions back into brackets.

Example 1

Multiply out the following bracket:

$$\begin{aligned} & 3(x + 2) \\ & \begin{array}{c} \text{↖ ↗} \\ 3(x + 2) \end{array} \\ & = 3x + 6 \end{aligned}$$

To multiply out a bracket
You multiply every single
thing inside the bracket
by what's outside.

Example 2

Multiply out the following bracket:

$$\begin{aligned} & 5(a - 3) \\ & \begin{array}{c} \text{↖ ↗} \\ 5(a - 3) \end{array} \\ & = 5a - 15 \end{aligned}$$

Example 3

Multiply out the following bracket:

$$\begin{aligned} & 2(m + 2k) \\ & \begin{array}{c} \text{↖ ↗} \\ 2(m + 2k) \end{array} \\ & = 2m + 4k \end{aligned}$$

Example 4

Multiply out the following:

$$10(x + 9) - 10$$



$$10(x + 9) - 10$$

$$= 10x + 90 - 10$$

$$= 10x + 80$$

Example 5

Factorise the following expression:

$$5x + 15$$

$$5x + 15$$

$$= 5(x + 3)$$

$$\text{HCF} = 5$$

This number goes outside the bracket. You divide everything by that value.

Factorising is the opposite process to breaking open brackets. We take out the highest common factor of the tens.

Example 6

Factorise the following expression:

$$4x + 18$$

$$4x + 18 \\ = 2(2x + 9)$$

$$\text{HCF} = 2$$

Example 7

Factorise the following expression:

$$6x^2 + 12x$$

$$6x^2 + 12x \\ = 6x(x + 2)$$

$$\text{HCF} = 6$$

N.B. Remember to check your answer by multiplying out the brackets. You should get back to the question

We also have another
common factor of x to take out