FACTORISING ALGEBRAIC EXPRESSIONS

What is factorising?

Consider ordinary numbers

$$6 = 2 \times 3$$
$$15 = 3 \times 5$$
$$20 = 2 \times 10$$
$$\text{or} \quad 20 = 2 \times 2 \times 5$$

Here, numbers 6, 15, 20 are being written as the product of their factors, that is their factors multiplied together.

In algebra, factorising is the opposite operation to expanding brackets:

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

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

Expanding $p(q-r) = pq - pr$

Factorising $pq - pr = p(q-r)$

We identify factors common to each term and pull then to the front. We then form a bracket to rebuild the original expression.

Examples

1) $4 + 6t = 2(2 + 3t)$

2) $3 + 3y = 3(1 + y)$

3) $8p - 6 = 2(4p - 3)$

4) $10p + 15q = 5(2p + 3q)$

5) $6xy + 3x = 3x(2y + 1)$

6) $x^2 - 5x = x(x - 5)$

7) $y^2 + yp = y(y + p)$

8) $pq + p^2 + pr = p(q + p + r)$

9) $x^3 - 2x^2 = x^2(x - 2)$

10) $pqr + qrt = qr(p + t)$

11) $15hk^2 - 10hk = 5hk(k - 2)$

12) $tp^2 + pt^2 = tp(p + t)$