

Factorising

1) Look for a common factor

2) (i) 2 terms

✓ difference of two squares

✓ sum/difference of two cubes

(ii) 3 terms

✓ quadratic trinomial

(iii) 4 terms

✓ grouping in pairs

1. Common Factor

e.g. (i) $ax + bx = \underline{x(a + b)}$

(ii) $5x^2 - 10x = \underline{5x(x - 2)}$

(iii) $mx - nx - my + ny = x(m - n) - y(m - n)$
 $= \underline{(m - n)(x - y)}$

factorising
=
dividing by common factor

2. Difference of Two Squares

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

e.g. (i) $16x^2 - 1 = \underline{(4x - 1)(4x + 1)}$

(ii) $3y^2 - 75 = 3(y^2 - 25)$
 $= \underline{3(y - 5)(y + 5)}$

(iii) $5x - 5y + x^2 - y^2 = 5(x - y) + (x - y)(x + y)$
 $= \underline{(x - y)(5 + x + y)}$

3. Quadratic Trinomial

a) Monic Quadratic

$$(x+a)(x+b) = x^2 + (a+b)x + ab$$

e.g. (i) $x^2 + 9x + 18$ $\times = 18$

$(x+6)(x+3)$ $+ = 9$

(ii) $t^2 - 4t + 3$ $\times = 3$

$(t-3)(t-1)$ $+ = -4$

(iii) $x^2 - 5xy + 4y^2$ $\times = 4y^2$

$(x-y)(x-4y)$ $+ = -5y$

b) Splitting the Middle

e.g. (i) $3x^2 + 4x - 7$ $\times = -21$

$$= 3x^2 - 3x + 7x - 7 \quad + = 4$$

$$= 3x(x-1) + 7(x-1)$$

$$= \underline{(x-1)(3x+7)}$$

Multiply the constant by the coefficient of x squared

$$-7 \times 3$$

(ii) $2x^2 - 5x - 12$ $\times = -24$

$$= 2x^2 - 8x + 3x - 12 \quad + = -5$$

$$= 2x(x-4) + 3(x-4)$$

$$= \underline{(x-4)(2x+3)}$$

Exercise 1C; 1e, 2f, 3d, 4ejo, 5adhkn, 6ace etc, 7ace etc, 8*bdfij