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. $(i)\ ax+bx = x(a+b)$

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

factorising
=
dividing by common factor

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

$=(m-n)(x-y)$

2. Difference of Two Squares

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

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

$(ii)\ 3y^2-75 = 3(y^2-25)$

$=3(y-5)(y+5)$

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

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

3. Quadratic Trinomial

a) Monic Quadratic

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

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

$= \underline{(x+6)(x+3)}$ $\quad + = 9$

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

$= \underline{(t-3)(t-1)}$ $\quad + = -4$

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

$= \underline{(x-y)(x-4y)}$ $\quad + = -5y$

b) Splitting the Middle

Multiply the constant by the coefficient of x squared

-7×3

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

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

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

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

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

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

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

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

Exercise 1C; 2ho, 3p, 4aow, 5afhmoqx, 6ehkmorvw, 7ace etc, 8cdfh, 9adegh*