1) Factorising and Manipulation of Formulae:

Factorising:

1. Taking out the HCF (taking out what's common)

e.g.s

i) $2x - 10$
$= 2(x - 5)$

ii) $3x^2 - 18x$
$= 3x(x - 6)$

2. Grouping (always has 4 terms)

e.g.

i) $ax + ay + bx + by$
$= a(x + y) + b(x + y)$
$= (x + y)(a + b)$

3. Quadratic (always has 3 terms x^2, x, a)

e.g.s

i) $x^2 + 5x + 6$
$= (x + 3)(x + 2)$

ii) $x^2 - 3x - 18$
$= (x - 6)(x + 3)$

4. Difference of 2 Squares (always 2 terms with a '-' between)

Note: Watch for square numbers: 1, 4, 9, 16, 25, 36, 49, 64, 81….

e.g.

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

2) Solving Quadratic Equations:

Solving Quadratic Eqns by factorising: (Eqns with an x^2)

Steps:

1. Bring all terms to the left-hand side (LHS) and leave '0' on the RHS
2. Factorise the LHS (See section on Factorising in previous tab)
3. Let each factor be = 0
4. Solve the two simple equations to find the two answers.

Example 1: $x^2 - 3x - 18 = 0$

$(x - 6)(x + 3) = 0$

$x - 6 = 0$ *or* $x + 3 = 0$

=> $x = 6$ *or* $x = -3$

Example 2: $x^2 - 25 = 0$

$(x - 5)(x + 5) = 0$

$x - 5 = 0$ *or* $x + 5 = 0$

=> $x = 5$ *or* $x = -5$