

## Lesson 2

## Simultaneous Equations : GCSE

### 2.1 Recap

To solve questions like the following;

**GCSE, June 2011, paper 3H, Q22**

Solve the simultaneous equations

$$y = 2x - 3 \quad (\textit{line})$$

$$x^2 + y^2 = 2 \quad (\textit{circle})$$

We need to be competent at the following five topics;

- Expanding brackets, FOIL
- Gathering together like terms
- Rearranging equations into the form  $f(x) = 0$
- Factorising quadratics
- Solving quadratic equations

### 2.2 Revision Exercise

#### Question 1

- Expanding brackets, FOIL

Expand the brackets;

(i)  $(x + 6)(x + 11)$

(ii)  $(3x + 5)(4x - 3)$

(iii)  $(x + 4)^2$

**Question 2**

- Gathering together like terms

Simplify each of the following;

(i)  $x^2 + 9x + 17x + 18$

(ii)  $7x^2 + 17x - 3x^2 + 13 - 5x$

(iii)  $15x^2 - (6x - 7) + 6x^2 - 15$

**Question 3**

- Rearranging equations into the form  $f(x) = 0$

Rearrange each of the following equation into the form  $f(x) = 0$

(i)  $19x^2 + 2x + 6 = 5x + 3$

(ii)  $5x^2 + 12x - 8 = 2x^2 - 7x + 8$

(iii)  $13x^2 - (7x - 6) = 1 - 4x$

#### Question 4

*This question is a mix the first three ideas.*

- Expanding brackets, FOIL
- Gathering together like terms
- Rearranging equations into the form  $f(x) = 0$

Rearrange each of the following equation into the form  $f(x) = 0$

(i)  $(x + 5)(x + 8) = 4x + 3$

(ii)  $(x + 5)^2 = 7x + 9$

(iii)  $(3x - 2)^2 = (x + 1)^2$