

Simultaneous Equations

GCE O Levels E-Maths

What is a Simultaneous Equation?

- Equations with more than one unknown variable:

$$x + y = 10$$

$$x - y = 4$$

- Finding x and y values that satisfy both equations
- 3 methods
 - Elimination
 - Substitution
 - Graphical

Question 1:

$$x + y = 10 \text{ — (1)}$$

$$x - y = 4 \text{ — (2)}$$

(1) + (2):

$$x + y + x - y = 10 + 4$$

$$(x + x) + (y - y) = 14$$

$$2x = 14 \rightarrow x = 7$$

Sub into (1)

$$7 + y = 10,$$

$$y = 3$$

Answer: $x = 7, y = 3$

Homework (Question 2):

Elimination Method

Using the elimination method, solve:

$$3x + 2y = 16 \text{ ---(1)}$$

$$2x + y = 1 \text{ --- (2)}$$

Question 1:

$$x + y = 10 \text{ — (1)}$$

$$x - y = 4 \text{ — (2)}$$

$$\text{Solve (2): } x - y = 4 \rightarrow x = 4 + y \text{ — (3)}$$

$$\text{Sub (3) into (1): } (4 + y) + y = 10$$

$$2y = 10 - 4$$

$$y = 3$$

Answer: $x = 7, y = 3$

$$\text{Sub } y = 3 \text{ into (1)}$$

$$x + 3 = 10 \rightarrow x = 10 - 3 = 7$$

Homework (Question 3):

Using the substitution method, solve:

$$2x + 3y = 12 \text{ — (1)}$$

$$x - y = 1 \text{ — (2)}$$