SIMULTANEOUS EQUATIONS I

Lesson 1

GCSE Mathematics

Simultaneous Equations I

1.1 Exploring The Algebra

Consider the equation,

$$y + x = 8$$

There are many values of x and y that make this true.

For example, $x = 7$ and $y = 1$ which could be conveniently written $(7, 1)$

Question

List four more pairs of values that make the equation $y + x = 8$ true.

☞

Now consider this second equation,

$$y - x = 4$$

Again, there are many values of x and y that make this true.

For example, $x = 10$ and $y = 6$ which could be written $(10, 6)$

Question

List four more pairs of values that make the equation $y - x = 4$ true.

☞

1.2 The Special Pair

There is one special pair of values, (x, y), that make both equations true.

Question

Experiment until the pair that makes both of the equations $\left.\begin{matrix} y + x = 8 \\ y - x = 4 \end{matrix}\right\}$ true is found.

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Solving equations simultaneously is a mathematical method for locating any pairs of values, (x, y), that satisfy a system of equations.

1.3 Exercise

Marks Available : 24

Solve the following pairs of equations simultaneously by adding the equations.

Question 1

$$\left.\begin{aligned} y + x &= 14 \\ y - x &= 10 \end{aligned}\right\}$$

[3 marks]

Question 2

$$\left.\begin{aligned} 5y + 3x &= 29 \\ 3y - 3x &= 3 \end{aligned}\right\}$$

[3 marks]

Question 3

$$\left.\begin{aligned} 7y + 2x &= 22 \\ 5y - 2x &= 2 \end{aligned}\right\}$$

[3 marks]

Question 4

$$\left.\begin{aligned} 3y + 6x &= 36 \\ -3y + 2x &= 4 \end{aligned}\right\}$$

[3 marks]

Question 5

$$\left.\begin{aligned} 3y + 3x &= 48 \\ -3y + 2x &= 12 \end{aligned}\right\}$$

[3 marks]

Question 6

$$\left.\begin{aligned} 8y + 4x &= 16 \\ 5y - 4x &= 23 \end{aligned}\right\}$$

[3 marks]

Question 7

$$\left.\begin{aligned} 3y + 2x &= -2 \\ 2y - 2x &= -18 \end{aligned}\right\}$$

[3 marks]

Question 8

$$\left.\begin{aligned} 4y + 4x &= -32 \\ y - 4x &= 17 \end{aligned}\right\}$$

[3 marks]