

Simultaneous Equations (Three Unknowns)

For AQA Level 2 Certificate in Further Mathematics (8365)

Name _____

Total marks: **26**

Answer **all** questions in the spaces provided. Show your working: marks are given for correct method. You may use a calculator.

- 1** Here are three simultaneous equations.

$$x + y + z = 6$$

$$2x - y + z = 3$$

$$x + 2y - z = 2$$

Circle the solution, written as (x, y, z) .

[1 mark]

$(3, 3, 0)$

$(4, 0, 2)$

$(1, 2, 3)$

$(2, -1, -2)$

- 2** Solve the simultaneous equations

$$p + q = 11$$

$$q + r = 4$$

$$p + r = 9$$

[3 marks]

$p =$ _____ $q =$ _____ $r =$ _____

3 Solve the simultaneous equations

$$x + y + z = 3$$

$$x - 2y = 2$$

$$2y + z = 0$$

[3 marks]

$$x = \underline{\hspace{2cm}} \quad y = \underline{\hspace{2cm}} \quad z = \underline{\hspace{4cm}}$$

4 Solve the simultaneous equations

$$2x + 3y - z = -5$$

$$x - 2y + 3z = 22$$

$$4x + y + 2z = 20$$

Do not use trial and improvement.
You must show your working.

[5 marks]

$$x = \underline{\hspace{2cm}} \quad y = \underline{\hspace{2cm}} \quad z = \underline{\hspace{4cm}}$$

- 5** Solve the simultaneous equations

$$4x + y + z = 3$$

$$2x - 3y + 2z = -12$$

$$6x + 2y - 3z = 15$$

Do not use trial and improvement.
You must show your working.

[5 marks]

$x =$ _____ $y =$ _____ $z =$ _____

- 6** A curve has equation $y = ax^2 + bx + c$, where a , b and c are constants.
The curve passes through the points $(1,4)$, $(-2,19)$ and $(3,14)$.
Work out the values of a , b and c .
You must show your working.

[4 marks]

$a =$ _____ $b =$ _____ $c =$ _____

7 Solve the simultaneous equations

$$2a + 3b + 4c = -1$$

$$4a - b + 2c = 9$$

$$6a + 5b - 2c = -2$$

Do not use trial and improvement.
You must show your working.

[5 marks]

$a =$ _____ $b =$ _____ $c =$ _____