

Simultaneous Equations (Two Unknowns)

For AQA Level 2 Certificate in Further Mathematics (8365)

Name _____

Total marks: **30**

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

- 1** Circle the point that lies on both $y = x^2 - 1$ and $y = x + 5$

[1 mark]

(2, 3)

(3, 8)

(8, 3)

(-3, 2)

- 2** Solve the simultaneous equations

$$\frac{x}{3} + \frac{y}{2} = 4$$

$$0.5x - 0.2y = 2.2$$

[3 marks]

Answer _____

- 3** k is a constant.
Solve the simultaneous equations
 $3x - y = 5k + 1$
 $x + 2y = 4k - 2$
Give x and y in terms of k .

[3 marks]

$x = \underline{\hspace{2cm}}$ $y = \underline{\hspace{2cm}}$

- 4** Solve the simultaneous equations
 $x - 2y = 1$
 $x^2 - 2y^2 = 17$
You must show your working.

[4 marks]

Answer $\underline{\hspace{2cm}}$

- 5 Solve the simultaneous equations

$$xy = 2$$

$$3x + 4y = 10$$

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

[5 marks]

Answer _____

- 6 A curve has equation $y = ax^2 + bx - 3$, where a and b are constants.
The curve passes through the point $(-1, 6)$.
The gradient of the curve at the point where $x = 2$ is 1.
Work out the values of a and b .

[4 marks]

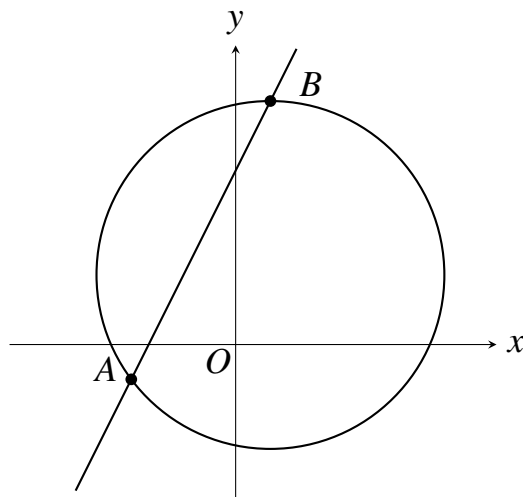
$a =$ _____ $b =$ _____

- 7 Two squares have a total area of 106 cm^2 .
The perimeter of the larger square is 16 cm more than the perimeter of the smaller square.
Work out the side length of each square.
You must show your working.

[5 marks]

Larger _____ cm Smaller _____ cm

- 8 The circle $(x - 1)^2 + (y - 2)^2 = 25$ and the line $y = 2x + 5$ meet at the points A and B .



Not drawn accurately

Work out the coordinates of A and B .
You must show your working.

[5 marks]

Answer _____