

Completing the Square

For Pearson Edexcel GCSE Mathematics (1MA1) • Higher tier

Name _____

Total marks: **20**

Answer **all** questions in the spaces provided. Show your working: marks are given for correct method.

1 Write $x^2 + 6x + 1$ in the form $(x + a)^2 + b$

.....
(2)

(Total for Question 1 is 2 marks)

2 (a) Write $x^2 + 12x + 5$ in the form $(x + a)^2 + b$

.....
(2)

(b) Write $x^2 - 3x - 2$ in the form $(x + a)^2 + b$

.....
(2)

(Total for Question 2 is 4 marks)

- 3 Solve $x^2 - 6x - 11 = 0$ by completing the square.
Give your answers in the form $p \pm q\sqrt{5}$

.....
(3)

(Total for Question 3 is 3 marks)

- 4 Ella says,
"There is a value of x for which $x^2 - 8x + 22 = 5$ "
By completing the square, show that Ella is wrong.

(3)

(Total for Question 4 is 3 marks)

- 5 $x^2 + ax + 19 \equiv (x + b)^2 - 6$ where b is a positive integer.
Find the value of a and the value of b .

$a = \dots\dots\dots b = \dots\dots\dots$
(2)

(Total for Question 5 is 2 marks)

- 6** A curve has equation $y = x^2 + px + q$ where p and q are integers.
The turning point of the curve is $(5, -21)$.

(a) Find the value of p and the value of q .

$$p = \dots\dots\dots q = \dots\dots\dots$$

(2)

(b) Write down the coordinates of the point where the curve crosses the y -axis.

$$(\dots\dots\dots , \dots\dots\dots)$$

(1)

(Total for Question 6 is 3 marks)

- 7** Solve $x^2 + 5x + 2 = 0$ by completing the square.

Give your answers in the form $\frac{a \pm \sqrt{b}}{2}$ where a and b are integers.

$$\dots\dots\dots$$

(3)

(Total for Question 7 is 3 marks)
