

Completing the Square

Question Paper

Level	GCSE
Subject	Maths
Exam Board	Edexcel GCSE
Topic	Completing the Square
Grade Level	Grade 8/9
Booklet	Question Paper

Time Allowed: 33 minutes

Score: /27

Percentage: /100

Grade Boundaries:

1. For all values of x , $x^2 + 6x - 2 = (x + p)^2 + q$

Find the value of p and the value of q .

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

(Total 2 marks)

2. Write $x^2 + 10x + 3$ in the form $(x + a)^2 + b$, where a and b are constants.

.....

(Total 3 marks)

3. (a) Express $x^2 - 4x - 10$ in the form $(x + a)^2 + b$

.....

(b) Hence write down the minimum value of $y = x^2 - 4x - 10$

(.....),(.....)

(Total 3 marks)

4. The expression $x^2 - 8x + 21$ can be written in the form $(x - a)^2 + b$ for all values of x .

(a) Find the value of a and the value of b .

.....

The equation of a curve is $y = f(x)$ where $f(x) = x^2 - 8x + 21$.

(b) Write down the coordinates of the minimum point of this curve.

(.....),(.....)

(Total 3 marks)

5. (a) Express $x^2 - 6x + 10$ in the form $(x + a)^2 + b$

.....
(b) Hence write down the minimum value of $y = x^2 - 6x + 10$

(.....),(.....)

(Total 3 marks)

6. (a) Express $x^2 + 4x - 12$ in the form $(x + a)^2 + b$

.....
(b) Hence, or otherwise, solve $x^2 + 4x - 12 = 0$

.....
(Total 4 marks)

7. By completing the square solve $x^2 + 8x + 13 = 0$

Give your answers in surd form.

$x = \dots\dots\dots$ or $x = \dots\dots\dots$

(Total 5 marks)

8. By completing the square find the minimum point of the curve $y = x^2 + 10x + 3$

.....

(Total 4 marks)