

Completing the square

Grade 7 | Higher | 11 questions, 40 marks

GCSE Maths topic practice



Scan for the solutions

Name: _____ **Date:** _____ **Score:** _____ / 40

1 Write $x^2 + 10x + 7$ in the form $(x + a)^2 + b$, where a and b are integers. (2 marks)

Answer _____

2 Write $x^2 + 8x + 3$ in the form $(x + a)^2 + b$, where a and b are integers. (2 marks)

Answer _____

3 a. Write $x^2 - 5x + 1$ in the form $(x - a)^2 + b$.
b. Hence write down the minimum value of $x^2 - 5x + 1$ and the value of x for which it occurs. (3 marks)

Answer _____

4 a. Write $x^2 - 6x + 11$ in the form $(x - a)^2 + b$, where a and b are integers.
b. Hence find the coordinates of the turning point of the curve $y = x^2 - 6x + 11$ (3 marks)

Answer _____

- 5 The curve with equation $y = x^2 + bx + c$ has its turning point at $(3, -4)$.
Find the values of b and c .

(3 marks)

Answer _____

- 6 Solve $x^2 - 5x + 1 = 0$ by completing the square.
Give your answers in the form $p \pm \frac{\sqrt{q}}{2}$ where p and q are integers.

(4 marks)

Answer _____

- 7 By completing the square, solve
 $x^2 + 6x + 4 = 0$
Give your answers in the form $a \pm \sqrt{b}$ where a and b are integers.

(3 marks)

Answer _____

- 8 a. Write $3 + 8x - x^2$ in the form $a - (x - b)^2$, where a and b are integers.
b. Hence write down the coordinates of the maximum point of the curve $y = 3 + 8x - x^2$

(4 marks)

Answer _____

9

a. Write $2x^2 + 12x + 5$ in the form $a(x + b)^2 + c$, where a , b and c are integers.

b. Hence write down the coordinates of the turning point of the curve $y = 2x^2 + 12x + 5$ (4 marks)

Answer _____

10

a. Write $3x^2 - 12x + 5$ in the form $a(x - b)^2 + c$, where a , b and c are integers.

b. Hence solve $3x^2 - 12x + 5 = 0$

Give your answers in the form $p \pm \frac{\sqrt{q}}{r}$ where p , q and r are integers.

(5 marks)

Answer _____

11

$$f(x) = 2x^2 - 8x + 3$$

a. Write $f(x)$ in the form $a(x - b)^2 + c$, where a , b and c are integers.

b. Hence solve $f(x) = 0$, giving your answers in the form $p \pm \frac{\sqrt{q}}{2}$

c. Priya says that the minimum point of the curve $y = f(x)$ is $(-2, -5)$.

Explain the mistake Priya has made and write down the correct minimum point.

(7 marks)

Answer _____

End of questions | Total 40 marks