

## COMPLETING THE SQUARE – PRACTICE QUESTIONS



1.

The equation  $x^2 + 4x + 9$  can be written in the form  $(x + a)^2 + b$ .  
Find  $a$  and  $b$ .

2.

Complete the square:  $x^2 + 10x - 1$

3.

Complete the square:  $x^2 - 8x + 13$

4.

Complete the square:  $x^2 + 12x + 45$

5.

Complete the square:  $x^2 - 6x - 17$

6.

Complete the square:  $x^2 - 20x + 97$

7.

Complete the square:  $x^2 + 3x + 7$

8.

Complete the square:  $x^2 + 5x + 11$

9.

Complete the square:  $x^2 - 7x + 12$

10.

Complete the square:  $x^2 - 9x - 4$

11.

Complete the square:  $x^2 + 5x + 1$

12.

Find the co-ordinates of the minimum point of the graph  $y = x^2 + 10x + 29$ .

13.

Find the co-ordinates of the minimum point of the graph  $y = x^2 - 4x - 53$ .

14.

Find the co-ordinates of the minimum point of the graph  $y = x^2 + 5x - 5$ .

15.

Find the co-ordinates of the minimum point of the graph  $y = x^2 + 9x - 8$ .

16.

The equation  $2x^2 + 8x + 7$  can be written in the form  $a(x + b)^2 + c$ .  
Find  $a$ ,  $b$  and  $c$ .

17.

Complete the square:  $2x^2 + 4x - 11$

18.

Complete the square:  $3x^2 + 12x - 13$

19.

Complete the square:  $2x^2 - 16x + 39$

20.

Complete the square:  $2x^2 + 6x + 11$

21.

By completing the square, show that a solution to the equation  $x^2 + 8x + 1 = 0$  is  $\sqrt{15} - 4$ .

22.

By completing the square, show that a solution to the equation  $x^2 + 7x + 9 = 0$  is  $\frac{\sqrt{13}-7}{2}$ .

23.

By completing the square, show that a solution to the equation  $2x^2 - 6x + \frac{5}{2} = 0$  is  $\frac{5}{2}$ .

24.

(a) Find the co-ordinates of the minimum point of the graph  $y - 2 = 3x^2 + 24x + 5$ .

(b) Hence find the equation of the line of symmetry of the graph  $y - 2 = 3x^2 + 24x + 5$ .