

# QT Completing the Square



1. (a) Write  $x^2 - 6x + 1$  in the form  $(x + a)^2 + b$  where  $a$  and  $b$  are integers  
(2 marks)

(b) Hence, or otherwise, write down the coordinates of the turning point of the graph

$$y = x^2 - 6x + 1 \quad (1 \text{ mark})$$

2. (a) Write  $x^2 + 10x + 8$  in the form  $(x + a)^2 + b$  where  $a$  and  $b$  are integers  
(2 marks)

(b) Hence, or otherwise, write down the coordinates of the turning point of the graph

$$y = x^2 + 10x + 8 \quad (1 \text{ mark})$$

# QT Completing the Square



3. (a) Write  $x^2 + 3x - 7$  in the form  $(x + a)^2 + b$  where  $a$  and  $b$  are integers  
(2 marks)

(b) Hence, or otherwise, write down the coordinates of the turning point of the graph

$$y = x^2 + 3x - 7 \quad (1 \text{ mark})$$

4. (a) Write  $x^2 - 2x - 6$  in the form  $(x + a)^2 + b$  where  $a$  and  $b$  are integers  
(2 marks)

(b) Hence, or otherwise, write down the coordinates of the turning point of the graph

$$y = x^2 - 2x - 6 \quad (1 \text{ mark})$$

# QT Completing the Square



5. By completing the square, find the coordinates of the turning point of the curve with the equation  $y = x^2 + 10x - 8$ . You must show all your working.

(3 marks)

6. By completing the square, find the coordinates of the turning point of the curve with the equation  $y = x^2 - 6x + 2$ . You must show all your working.

(3 marks)

# QT Completing the Square



7. By completing the square, find the coordinates of the turning point of the curve with the equation  $y = x^2 - 5x + 1$ . You must show all your working.

(3 marks)

8. By completing the square, find the coordinates of the turning point of the curve with the equation  $y = x^2 + 0.5x + 7$ . You must show all your working.

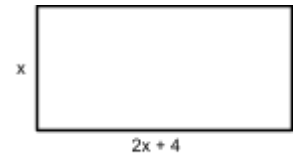
(3 marks)

# QT Completing the Square



9. A rectangle has sides of  $x$  cm and  $(2x + 4)$  cm as shown.  
The area of the rectangle is  $30$  cm<sup>2</sup>.

(a) Show that  $(x + 1)^2 - 16 = 0$  (3 marks)



(b) Hence, or otherwise, find the perimeter of the rectangle

(2 mark)

# QT Completing the Square



10. (a) Write  $2x^2 - 12x + 24$  in the form  $a(x + b)^2 + c$  where  $a$ ,  $b$  and  $c$  are integers  
(3 marks)

(b) Hence, or otherwise, write down the coordinates of the turning point of the graph

$$y = 2x^2 - 12x + 24 \quad (1 \text{ mark})$$

11. (a) Write  $2x^2 + 8x + 10$  in the form  $a(x + b)^2 + c$  where  $a$ ,  $b$  and  $c$  are integers  
(3 marks)

(b) Hence, or otherwise, write down the coordinates of the turning point of the graph

$$y = 2x^2 + 8x + 10 \quad (1 \text{ mark})$$

# QT Completing the Square



12.(a) Write  $3x^2 + 6x - 8$  in the form  $a(x + b)^2 + c$  where  $a$ ,  $b$  and  $c$  are integers  
(3 marks)

(b) Hence, or otherwise, write down the coordinates of the turning point of the graph

$$y = 3x^2 + 6x - 8 \quad (1 \text{ mark})$$

13. (a) Write  $4x^2 - 8x - 7$  in the form  $a(x + b)^2 + c$  where  $a$ ,  $b$  and  $c$  are integers  
(3 marks)

(b) Hence, or otherwise, write down the coordinates of the turning point of the graph

$$y = 4x^2 - 8x - 7 \quad (1 \text{ mark})$$

# QT Completing the Square



14. By completing the square, solve  $x^2 = 22x - 5$   
Give your answers in surd form.

(5 marks)

15. By completing the square, solve  $x^2 + 5x + \frac{17}{4} = 0$   
Give your answers in surd form.

(5 marks)