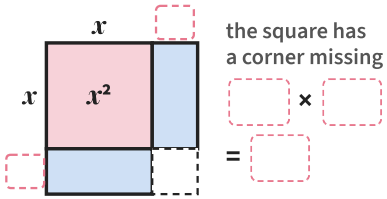
Completing the square

1

Complete the square for $x^2 + 8x + 3$



the square has a corner missing

□ × □ = □

halve the number of x

□

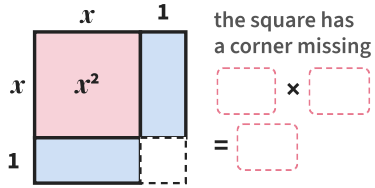
$(x + \square)^2 - \square + 3$

Turning point (,)

Answer _____

2

Complete the square for $x^2 + 2x + 6$



the square has a corner missing

□ × □ = □

halve the number of x

1

$(x + \square)^2 - \square + 6$

Turning point (,)

Answer _____

3

Complete the square for

$x^2 - 12x + 30$

halve the number of x

□

$(x - \square)^2 - \square + 30$

Turning point (,)

Answer _____

4

Complete the square for

$x^2 + 14x + 40$

□

$(x + \square)^2 - \square + 40$

Turning point (,)

Answer _____

5

Complete the square for $x^2 + 7x + 10$

Half of 7 is a fraction. Keep it as a fraction.

_____

_____

Turning point (,)

Answer _____

6

Find the smallest value of

$x^2 - 4x + 11$ and the value of x that gives it.

_____

Answer _____

7

Sam writes

$x^2 + 10x + 1 = (x + 5)^2 - 24$

He says the turning point is (5, −24).

Explain his mistake and give the right turning point.

_____

Answer _____

8

Solve $x^2 - 4x - 2 = 0$ by completing the square. Give your answers in surd form.

_____

_____

$x =$ _____

Completing the square *further practice*

9

Complete the square for $x^2 - 8x + 1$. Then write down the turning point of $y = x^2 - 8x + 1$.

Answer _____

10

Write $x^2 - 3x + 5$ in the form $(x + p)^2 + q$. Then write down its turning point.

Answer _____

11

Find the turning point of the graph of $y = x^2 + 12x + 20$ without drawing it.

Answer _____

12

The temperature in a greenhouse, T°C, t hours after midnight is $T = t^2 - 10t + 32$. Find the lowest temperature, and the time it happens.

Answer _____

13

Show that $x^2 + 6x + 12$ is positive for every value of x.

Answer _____

14

Solve $x^2 - 8x + 5 = 0$ by completing the square. Give your answers in surd form.

Answer _____

15

Ayo says the turning point of $y = x^2 - 2x + 4$ is below the x axis.
Is she right? Show how you know.

Answer _____

16

Leah writes $x^2 + 12x + 5 = (x + 6)^2 + 5$.
Explain her mistake.
Then complete the square correctly.

Answer _____