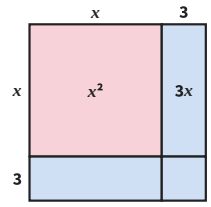
Completing the square

1

Expand $(x + 3)^2$.



$(x + 3)^2 =$ ☐

2

Expand $(x - 4)^2$.

$(x - 4)^2 =$ x^2 ☐ ☐ ☐

$=$ ☐

3

Write $x^2 + 10x + 25$ as a bracket squared.

$10 \div 2 =$ 5

$x^2 + 10x + 25 = (x$ ☐ $)^2$

4

Write $x^2 + 6x + 5$ in the form $(x + p)^2 + q$.

$6 \div 2 =$ 3

$x^2 + 6x + 5 = (x$ ☐ $)^2 -$ ☐ $+ 5$

$=$ ☐

5

Write $x^2 - 4x + 7$ in the form $(x + p)^2 + q$.

$-4 \div 2 =$ ☐

$x^2 - 4x + 7 = (x$ ☐ $)^2 -$ ☐ $+ 7$

$=$ ☐

6

Write $x^2 + 12x + 20$ in the form $(x + p)^2 + q$.

$12 \div 2 =$ ☐

$x^2 + 12x + 20 = (x$ ☐ $)^2 -$ ☐ $+ 20$

$=$ ☐

7

Write down the turning point of each curve.

(a) $y = (x - 3)^2 + 5$

Turning point (3 , ☐)

(b) $y = (x + 2)^2 - 7$

Turning point (☐ , ☐)

8

Find the turning point of $y = x^2 + 8x + 10$.

$8 \div 2 =$ ☐

$x^2 + 8x + 10 = (x$ ☐ $)^2 -$ ☐ $+ 10$

$=$ ☐

Turning point (☐ , ☐)

Completing the square *further practice*

9

Write $x^2 - 12x + 36$ as a bracket squared.

Answer _____

10

Write $x^2 + 2x + 8$ in the form $(x + p)^2 + q$.

Answer _____

11

Write $x^2 - 10x + 4$ in the form $(x + p)^2 + q$.

Answer _____

12

Find the turning point of $y = x^2 - 6x + 13$.

Answer _____

13

$x^2 + 8x + c = (x + p)^2 + 3$.

Find the values of p and c.

Answer _____

14

Find the smallest value of $x^2 + 4x + 9$, and the value of x that gives it.

Answer _____

15

Solve $x^2 + 6x - 7 = 0$ by completing the square.

Answer _____

16

Kim writes

$x^2 - 12x + 3 = (x - 6)^2 + 39$.

Explain her mistake.

Then write it correctly.

Answer _____