Maths

Complete the Square (a = 1)

Miss Davies

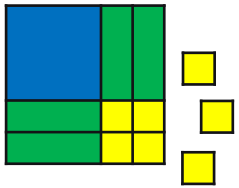
Please note some slides do have colour images on them

Complete the square ($a = 1$)

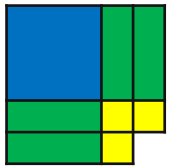
1. The algebra tiles show that $x^2 + 4x + 4 = (x + 2)^2$

Use this to write each of the expressions in the form $(x + a)^2 + b$ where a and b are integers.

a) $x^2 + 4x + 7$



b) $x^2 + 4x + 3$



2. Write each of the following in the form $(x + a)^2 + b$ where a and b are integers.

a) $x^2 + 6x + 11$

b) $x^2 + 10x - 1$

c) $x^2 + 20x + 76$

Complete the square ($a = 1$)

3. Write each of the following in the form $(x + a)^2 + b$ where a and b are integers.

a) $x^2 - 16x + 72$

b) $x^2 - 40x + 350$

c) $x^2 - 12x + 76$

4. Write each of the following in the form $(x + a)^2 + b$ where a and b are integers.

a) $x^2 - \frac{1}{2}x + 1$

b) $x^2 - \frac{2}{5}x - 1$

5. $x^2 + 4px - 7p$ can be written in the form $(x + a)^2 - b$. Write an expression for a and b in terms of p.

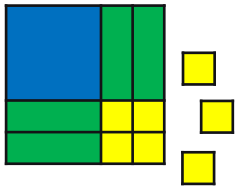
Answers

Complete the square ($a = 1$)

1. The algebra tiles show that $x^2 + 4x + 4 = (x + 2)^2$

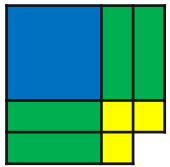
Use this to write each of the expressions in the form $(x + a)^2 + b$ where a and b are integers.

a) $x^2 + 4x + 7$



$(x + 2)^2 + 3$

b) $x^2 + 4x + 3$



$(x + 2)^2 - 1$

2. Write each of the following in the form $(x + a)^2 + b$ where a and b are integers.

a) $x^2 + 6x + 11$ $(x + 3)^2 + 2$

b) $x^2 + 10x - 1$ $(x + 5)^2 - 26$

c) $x^2 + 20x + 76$ $(x + 10)^2 - 24$

Complete the square ($a = 1$)

3. Write each of the following in the form $(x + a)^2 + b$ where a and b are integers.

a) $x^2 - 16x + 72$ $(x - 8)^2 + 8$

b) $x^2 - 40x + 350$ $(x - 20)^2 - 50$

c) $x^2 - 12x + 76$ $(x - 6)^2 + 40$

4. Write each of the following in the form $(x + a)^2 + b$ where a and b are integers.

a) $x^2 - \frac{1}{2}x + 1$ $(x - \frac{1}{4})^2 + \frac{15}{16}$

b) $x^2 - \frac{2}{5}x - 1$ $(x - \frac{1}{5})^2 - \frac{26}{25}$

5. $x^2 + 4px - 7p$ can be written in the form $(x + a)^2 - b$. Write an expression for a and b in terms of p.

$a = 2p, b = 4p^2 - 7p$