

1. For all values of  $x$ ,  $x^2 + 6x - 2 = (x + p)^2 + q$

Find the value of  $p$  and the value of  $q$ .

$p = \dots\dots\dots q = \dots\dots\dots$

**(Total 2 marks)**

2. Write  $x^2 + 10x + 3$  in the form  $(x + a)^2 + b$ , where  $a$  and  $b$  are constants.

.....  
**(Total 3 marks)**

3. (a) Express  $x^2 - 4x - 10$  in the form  $(x + a)^2 + b$

.....

(b) Hence write down the minimum value of  $y = x^2 - 4x - 10$

(.....),(.....)

**(Total 3 marks)**

4. The expression  $x^2 - 8x + 21$  can be written in the form  $(x - a)^2 + b$  for all values of  $x$ .

(a) Find the value of  $a$  and the value of  $b$ .

.....

The equation of a curve is  $y = f(x)$  where  $f(x) = x^2 - 8x + 21$ .

(b) Write down the coordinates of the minimum point of this curve.

(.....),(.....)

**(Total 3 marks)**

5. (a) Express  $x^2 - 6x + 10$  in the form  $(x + a)^2 + b$

.....  
(b) Hence write down the minimum value of  $y = x^2 - 6x + 10$

(.....),(.....)

**(Total 3 marks)**

6. (a) Express  $x^2 + 4x - 12$  in the form  $(x + a)^2 + b$

(b) Hence, or otherwise, solve  $x^2 + 4x - 12 = 0$

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**(Total 4 marks)**

7. By completing the square solve  $x^2 + 8x + 13 = 0$

Give your answers in surd form.

$x = \dots\dots\dots$  or  $x = \dots\dots\dots$

**(Total 5 marks)**

8. By completing the square find the minimum point of the curve  $y = x^2 + 10x + 3$

.....

**(Total 4 marks)**