Surname	
Other Names	
Candidate's Signature	

GCSE 9 - 1 Questions

Completing the Square

Calculator Allowed

INSTRUCTIONS TO CANDIDATES

Write your name in the space provided.

Write your answers in the spaces provided in this question paper.

Answer ALL questions.

Any working should be clearly shown in the spaces provided since marks may be awarded for partially correct solutions.

You should have a ruler, compass and protractor where required.

Total Marks :

1) Write $x^2 + 6x - 1$ in the form $(x + p)^2 + q$ [2]

Answer_____

2) Express $x^2 - 16x + 66$ in the form $(x + a)^2 + b$ where a and b are values to be found.

[2]

3) Express

$$x^2 - 8x + 7$$

in the form $(x + p)^2 + q$ [3]

Answer_____

4) *(a)* Express $x^2 + 10x + 14$ in the form $(x + a)^2 + b$, where a and b are whole numbers to be found. [3]

(b) **Hence** solve $x^2 + 10x + 14 = 0$, leaving your answers in surd form. [4]

5) *(a)* Express $x^2 + 14x + 53$ in the form $(x + a)^2 + b$ where a and b are values to be found. [2]

(b) Express $x^2 + 18x + 100$ in the form $(x + a)^2 + b$ where a and b are values to be found. [2]

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

6) **(a)** **(i)** Write

$$x^2 - 3x + 1$$

in the form $(x - a)^2 + b$, where a and b are rational. [2]

Answer_____

(ii) Express $x^2 - 4x + 5$ in the form $(x - a)^2 + b$ [3]

Answer_____

(b) Express $x^2 - 6x + 2$ in the form $(x - a)^2 + b$ [2]

Answer_____

7) *(a)* The expression $x^2 + 8x + 5$ can be written in the form $(x + a)^2 + b$, where a and b are whole numbers.
Find the values of a and b. [3]

(b) **Hence**, solve $x^2 + 8x + 5 = 0$ leaving your answer in surd form. [4]

8) *(a)* Express $x^2 + 18x + 80$ in the form $(x + a)^2 + b$, where a and b are values to be found. [2]

.....

.....

.....

.....

.....

(b) (i) Express $x^2 + 14x + 47$ in the form $(x + a)^2 + b$, where a and b are whole numbers to be found.

.....

.....

.....

.....

.....

.....

.....

[3]

(ii) Hence solve $x^2 + 14x + 47 = 0$ leaving your answer in surd form.

.....

.....

.....

.....

.....

.....

[4]

9) Express

$$6 + 4x - x^2$$

in the form $q - (x + p)^2$ [3]

Answer_____