

Name: _____

ASM Tuition Academy
COMPLETING THE SQUARE

Instructions:

- Use **black** ink or ball-point pen.
- Answer all questions.
- Answer the questions in the spaces provided
- there may be more space than you need.
- Diagrams are **NOT** accurately drawn, unless otherwise indicated.
- You must **show all you're working out**.

Information:

- The marks for each question are shown in brackets
- use this as a guide as to how much time to spend on each question.

Advice:

- Read each question carefully before you start to answer it.
- Keep an eye on time.
- Try to answer every question.
- Check your answers if you have time at the end.

Q1-

(a) Write $x^2 - 8x + 1$ in the form $(x + a)^2 + b$ where a and b are integers.

(b) Hence, or otherwise, write down the coordinates of the turning point of the graph of $y = x^2 - 8x + 1$

(Total for Question 1 is 3 marks)

Q2

(a) Write $x^2 + 10x + 5$ in the form $(x + a)^2 + b$ where a and b are integers.

(b) Hence, or otherwise, write down the coordinates of the turning point of the graph of $y = x^2 + 10x + 5$

(Total for Question 2 is 3 marks)

Q3

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

(b) Hence, or otherwise, write down the coordinates of the turning point of the graph of $y = x^2 + 4x + 2$

(Total for Question 3 is 3 marks)

Q4

(a) Write $x^2 - 4x - 1$ in the form $(x + a)^2 + b$ where a and b are integers.

(b) Hence, or otherwise, write down the coordinates of the turning point of the graph of $y = x^2 - 4x - 1$

(Total for Question 4 is 3 marks)

Q5

By completing the square, find the coordinates of the turning point of the curve with the equation $y = x^2 + 10x + 3$

You must show all your working

(Total for Question 5 is 3 marks)

Q6

By completing the square, find the coordinates of the turning point of the curve with the equation $y = x^2 + 12x - 6$

You must show all your working

(Total for Question 6 is 3 marks)

Q7

By completing the square, find the coordinates of the turning point of the curve with the equation $y = x^2 + 3x - 9$

You must show all your working

(Total for Question 7 is 3 marks)

Q8

By completing the square, find the coordinates of the turning point of the curve with the equation $y = x^2 - x + 10$

You must show all your working

(Total for Question 8 is 3 marks)

Q9

(a) Write $2x^2 - 12x + 25$ in the form $a(x + b)^2 + c$ where a , b , and c are integers.

(3)

(b) Hence, or otherwise, write down the coordinates of the turning point of the graph of $y = 2x^2 - 12x + 25$

(1)

(Total for Question 9 is 4 marks)

Q10

(a) Write $2x^2 + 16x + 28$ in the form $a(x + b)^2 + c$ where a , b , and c are integers.

(3)

(b) Hence, or otherwise, write down the coordinates of the turning point of the graph of $y = 2x^2 + 16x + 28$

(1)

(Total for Question 10 is 4 marks)

Q11

(a) Write $3x^2 - 6x + 9$ in the form $a(x + b)^2 + c$ where a , b , and c are integers.

(3)

(b) Hence, or otherwise, write down the coordinates of the turning point of the graph of $y = 3x^2 - 6x + 9$

(1)

(Total for Question 11 is 4 marks)

Q12

(a) Write $3x^2 - 30x + 66$ in the form $a(x + b)^2 + c$ where a , b , and c are integers.

(3)

(b) Hence, or otherwise, write down the coordinates of the turning point of the graph of $y = 3x^2 - 30x + 66$

(1)

(Total for Question 12 is 4 marks)

Q13

By completing the square, solve $x^2 + 10x - 5 = 0$

Provide your answers in surd form

(Total for Question 13 is 5 marks)

Q14

By completing the square, solve $y^2 + 5y + 4.25 = 0$

Provide your answers in surd form

(Total for Question 14 is 5 marks)