

## Completing the Square (Tricky ones!)



## REVISE THIS TOPIC

1 Write 
$$2x^2 + 4x + 9$$
 in the form  $a(x + b)^2 + c$ 

$$2 \left[ x^2 + 2x \right] + 9$$

$$= 2 \left[ (x + 1)^2 - 1 \right] + 9$$

$$= 2(x + 1)^2 - 2 + 9$$

$$2(x+1)^{2}+7$$

(Total for Question 1 is 3 marks)

2 Write 
$$3x^2 + 12x + 10$$
 in the form  $a(x+b)^2 - c$   

$$3 \left[ x^2 + 4x \right] + 10$$

$$= 3 \left[ (x+2)^2 - 4 \right] + 10$$

$$= 3(x+2)^2 - 12 + 10$$

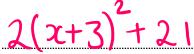
(Total for Question 2 is 3 marks)

3 Write 
$$2x^2 + 12x + 39$$
 in the form  $a(x+b)^2 + c$   

$$2\left[x^2 + 6x\right] + 39$$

$$= 2\left[(x+3)^2 - 9\right] + 39$$

$$= 2(x+3)^2 - 18 + 39$$



(Total for Question 3 is 3 marks)



4 Write 
$$5x^2 - 40x + 21$$
 in the form  $a(x-b)^2 - c$ 

$$5[x^{2}-8x]+21$$
= 5[(x-4)^{2}-16]+21
= 5(x-4)^{2}-80+21

(Total for Question 4 is 3 marks)

**5** Write 
$$9x^2 - 18x - 7$$
 in the form  $a(x - b)^2 - c$ 

$$9 [x^{2}-2x]-7$$
= 9 [(x-1)^{2}-1]-7
= 9 (x-1)^{2}-9-7

(Total for Question 5 is 3 marks)

**6** Write 
$$4x^2 + 40x - 1$$
 in the form  $a(x + b)^2 - c$ 

$$4[x^{2}+10x]-1$$
= 4[(x+5)^{2}-25]-1
= 4(x+5)^{2}-100-1

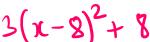
(Total for Question 6 is 3 marks)

7 Write 
$$3x^2 - 48x + 200$$
 in the form  $a(x - b)^2 + c$ 

$$3[x^{2}-16x]+200$$

$$= 3[(x-8)^{2}-64]+200$$

$$= 3(x-8)^{2}-192+200$$



(Total for Question 7 is 3 marks)



8 Write 
$$3x^2 + 9x + 10$$
 in the form  $a(x+b)^2 + c$ 

$$3\left[x^2 + 3x\right] + 10$$

$$= 3\left[(x+\frac{3}{2})^2 - \frac{27}{4}\right] + 10$$

$$= 3(x+\frac{3}{2})^2 - \frac{27}{4} + 10$$

$$= 3(x+\frac{3}{2})^2 - \frac{27}{4} + 40$$

(Total for Question 8 is 4 marks)

9 Write 
$$2x^2 + 14x - 3$$
 in the form  $a(x + b)^2 - c$ 

$$2 \left[ x^2 + 7x \right] - 3$$

$$= 2 \left[ (x + \frac{7}{2})^2 - \frac{49}{44} \right] - 3$$

$$= 2(x + \frac{7}{2})^2 - \frac{98}{4} - 3$$

$$= 2(x + \frac{7}{2})^2 - \frac{49}{4} - \frac{6}{2}$$

(Total for Question 9 is 4 marks)

10 Write 
$$6x^2 - 30x - 5$$
 in the form  $a(x - b)^2 - c$ 

$$6 \left[ x^2 - 5x \right] - 5$$

$$= 6 \left[ (x - \frac{5}{2})^2 - \frac{25}{4} \right] - 5$$

$$= 6(x - \frac{5}{2})^2 - \frac{150}{4} - 5$$

$$= 6(x - \frac{5}{2})^2 - \frac{75}{2} - \frac{15}{2}$$



(Total for Question 10 is 4 marks)

