

Factorising Harder Quadratics

For AQA GCSE Mathematics (8300) • Higher tier

Name _____

Total marks: **27**

Answer **all** questions in the spaces provided. Show your working: marks are given for correct method.

1 Fill in the boxes to complete each factorisation.

(a) $3x^2 + 7x + 2 = (3x + \boxed{})(x + \boxed{})$

[1 mark]

(b) $3x^2 - 7x - 6 = (3x + \boxed{})(x - \boxed{})$

[1 mark]

2 Factorise

(a) $2x^2 + 11x + 5$

[2 marks]

Answer _____

(b) $3x^2 - 10x + 8$

[2 marks]

Answer _____

(c) $6x^2 + x - 2$

[2 marks]

Answer _____

3 Factorise fully

(a) $4x^2 - 25$

[1 mark]

Answer _____

(b) $12x^2 - 27$

[2 marks]

Answer _____

(c) $9x^2 - 16y^2$

[1 mark]

Answer _____

4 Circle the factorisation of $2x^2 - x - 15$

[1 mark]

$(2x - 5)(x + 3)$

$(2x + 5)(x - 3)$

$(2x - 3)(x + 5)$

$(2x + 3)(x - 5)$

5 Solve $3x^2 + 5x - 2 = 0$

[3 marks]

Answer _____

6 Factorise $6x^2 - 11x - 35$

[2 marks]

Answer _____

7 Factorise fully

(a) $x^3 - 36x$

[2 marks]

Answer _____

(b) $4x^2 - 14x - 30$

[2 marks]

Answer _____

8 A rectangle has area $(6x^2 + 13x + 6) \text{ cm}^2$.
The width of the rectangle is $(2x + 3) \text{ cm}$.
Work out an expression for the length.

[2 marks]

Answer _____ cm

9 (a) Factorise fully $3n^2 + 10n + 8$

[2 marks]

Answer _____

(b) n is an odd number.

Is $3n^2 + 10n + 8$ always odd, always even, or could it be either?

Tick one box and give a reason for your answer.

[1 mark]

☐ Always odd

☐ Always even

☐ Could be either
