FOUNDATION & HIGHER

HIGHER EXTENDS

Name ..... Class .....

A18: Quadratic equations

Solve by factorising, completing the square and the formula

20 marks · 25 minutes · Non-calculator

1) Solve $x^2 - 5x - 14 = 0$

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[Question 1: 2 marks]

2) Solve $3x^2 + 10x - 8 = 0$

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[Question 2: 3 marks]

3) By completing the square, solve $x^2 + 4x - 7 = 0$. Give your answers in surd form.

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[Question 3: 2 marks]

4) Use the quadratic formula to solve $2x^2 - 3x - 4 = 0$. Give your answers in surd form.

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[Question 4: 3 marks]

5) Solve $x^2 = 6x$

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[Question 5: 2 marks]

6) Solve $x^2 - 16 = 0$

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[Question 6: 1 marks]

7) Solve $x(x + 3) = 28$

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[Question 7: 3 marks]

8) Solve $2x^2 + 5x - 1 = 0$. Give your answers in surd form.

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[Question 8: 2 marks]

9) Solve $4x^2 - 9 = 0$

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[Question 9: 2 marks]

End of paper – 20 marks in total

Answers and brief mark scheme

Q	Answer	Method / notes
1	$x = 7,\ x = -2$	$(x - 7)(x + 2)$ (M1); A1.
2	$x = \frac{2}{3},\ x = -4$	$(3x - 2)(x + 4)$ (M2, or M1 for brackets giving two terms); A1.
3	$x = -2 \pm \sqrt{11}$	$(x + 2)^2 = 11$ (M1); A1.
4	$x = \frac{3 \pm \sqrt{41}}{4}$	Correct substitution (M1); $\sqrt{9 + 32}$ (M1); A1.
5	$x = 0,\ x = 6$	$x(x - 6) = 0$ (M1); both (A1).
6	$x = \pm 4$	B1.
7	$x = 4,\ x = -7$	$x^2 + 3x - 28 = 0$ (M1); $(x + 7)(x - 4)$ (M1); A1.
8	$x = \frac{-5 \pm \sqrt{33}}{4}$	Correct substitution into the formula (M1); A1.
9	$x = \pm\frac{3}{2}$	$x^2 = \frac{9}{4}$ (M1); A1.