Unicorn Race: Quadratics Practice Test

Time: 40 min Total: 23 marks Two-sided: questions continue on the back

QUAD-P1

NAME or INITIALS (BLOCK CAPITALS, one letter per box)

ANSWER KEY — not for students, do not scan

ANSWERS — write each final answer in its box. Only these boxes are marked.

1	$(x+3)(x+4)$	2	$(x-7)(x+2)$	3	$3(x-2)(x+2)$
4	$(2x-1)(x+3)$	5	$x=2,\ x=4$	6	$x=\frac{3}{2},\ x=-2$
7	$x=1\pm\sqrt{6}$	8	$(x+4)^2-11$	9	$(2,\ -3)$
10	-23	11	6	12	12

1 Factorise: **1 mark**

$$x^2+7x+12$$

$$(x+3)(x+4)$$

answer in box 1 on the front

2 Factorise: **1 mark**

$$x^2-5x-14$$

$$(x-7)(x+2)$$

answer in box 2 on the front

3 Factorise fully: **2 marks**

$$3x^2-12$$

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

answer in box 3 on the front

4 Factorise: **2 marks**

$$2x^2+5x-3$$

$$(2x-1)(x+3)$$

answer in box 4 on the front

5 Solve: **2 marks**

$$x^2-6x+8=0$$

$$x=2,\ x=4$$

answer in box 5 on the front

Questions continue on the back. Only the answer boxes above are marked.

6 Solve: **2 marks**

$$2x^2 + x - 6 = 0$$

$$\boldsymbol{x = \frac{3}{2},\ x = -2}$$

answer in box 6 on the front

7 Solve, giving your answers in exact form: **3 marks**

$$x^2 - 2x - 5 = 0$$

$$\boldsymbol{x = 1 \pm \sqrt{6}}$$

answer in box 7 on the front

8 Write in the form $(x+h)^2 + k$: **2 marks**

$$x^2 + 8x + 5$$

$$\boldsymbol{(x+4)^2 - 11}$$

answer in box 8 on the front

9 Find the coordinates of the vertex of the parabola **2 marks**

$$y = x^2 - 4x + 1$$

$$\boldsymbol{(2,\ -3)}$$

answer in box 9 on the front

10 Find the value of the discriminant of **1 mark**

$$2x^2 - 3x + 4$$

$$\boldsymbol{-23}$$

answer in box 10 on the front

11 This equation has exactly one real solution, and $k > 0$. Find k. **2 marks**

$$x^2 + kx + 9 = 0$$

$$\boldsymbol{6}$$

answer in box 11 on the front

12 The product of two consecutive positive integers is 156. Find the smaller integer. **3 marks**

$$\boldsymbol{12}$$

answer in box 12 on the front