Quadratics and Parabolas - Practice 2

Name: _____ Date: _____

16 questions | 47 marks | 60 minutes

A second paper combining tables, graph sketches and explanation.

A scientific calculator may be used.

1. Expand $(x-5)(x+2)$. [2 marks]

2. Expand $(3x-1)^2$. [2 marks]

3. Factorise $x^2+2x-24$. [2 marks]

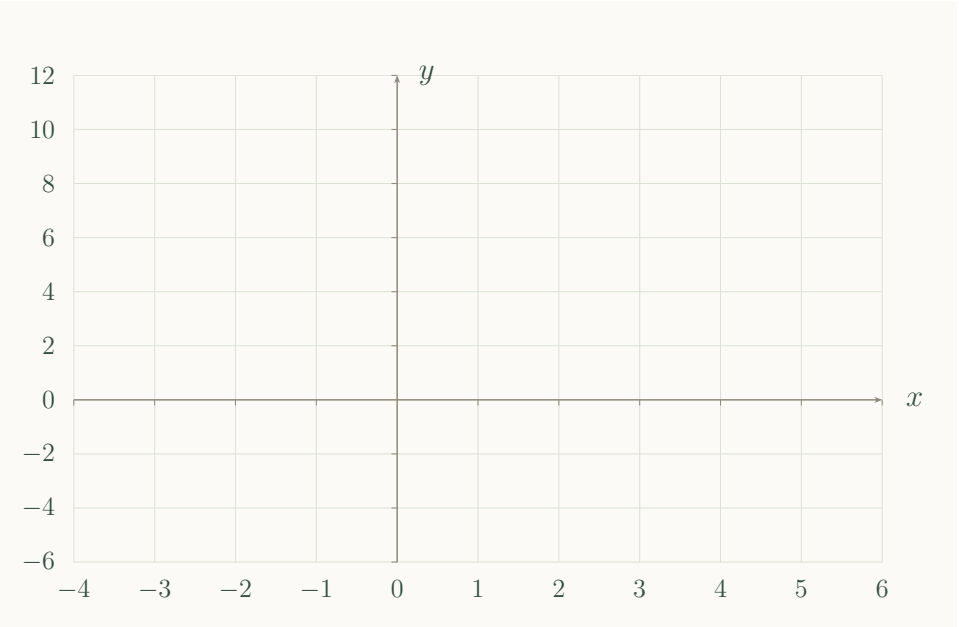
4. Factorise $x^2 - 10x + 25$. [2 marks]

5. Solve $x^2 + 4x = 12$. [3 marks]

6. Solve $(x - 3)^2 = 0$. How many distinct real solutions are there? [2 marks]

7. Complete a table for $y = -x^2 + 2x + 3$ at $x = -1, 0, 1, 2, 3$. [3 marks]

8. Plot $(-1, 0), (0, 3), (1, 4), (2, 3), (3, 0)$ and sketch the quadratic curve. [4 marks]



9. For $y = 2(x-1)^2 - 3$, give the turn and compare it with $y = (x-1)^2 - 3$. [3 marks]

10. Find the axis and turning point of $y = (x+3)(x-5)$. [3 marks]

11. Which output list could come from a quadratic rule? Explain using changes. [3 marks]

Equal input steps

x	A	B
0	1	1
1	3	2
2	5	5
3	7	10

12. Check $x^2 - 4x - 21 = (x - 7)(x + 3)$ by expansion. [2 marks]

13. Two positive lengths differ by 4 cm and have product $77\ \text{cm}^2$. Find them. [4 marks]

14. Expand $(x+2)^2 - x^2$. Is the result quadratic or linear? [3 marks]

15. Use $f(x) = x^2 - 2$ to locate its positive root between consecutive tenths. [3 marks]

16. A ball has modelled height $h = -t^2 + 6t + 7$ metres, for $t \geq 0$ seconds. [6 marks]

(a) When does it reach the ground? [3 marks]

(b) Find its greatest height. [3 marks]