Quadratic and Other Sequences

GCSE Mathematics • **Higher Tier** • Grades 6–8 • Non-calculator

Name: _____ Class: _____ Total: _____ / 68

Show all your working. Marks are given for correct method as well as the final answer.

1. Write down the next two terms of 2, 6, 12, 20, ... **[2 marks]**

Answer: _____

2. Work out the second difference of 3, 8, 15, 24, 35. **[2 marks]**

Answer: _____

3. Explain how the second difference tells you the n^2 coefficient. **[2 marks]**

Answer: _____

4. Work out the nth term of 3, 8, 15, 24, 35. **[4 marks]**

Answer: _____

5. Work out the nth term of 4, 7, 12, 19, 28. **[4 marks]**

Answer: _____

6. Work out the nth term of 2, 8, 18, 32, 50. **[4 marks]**

Answer: _____

7. Work out the nth term of 0, 3, 8, 15, 24. **[4 marks]**

Answer: _____

8. Work out the nth term of 5, 12, 23, 38, 57. **[5 marks]**

Answer: _____

9. Work out the nth term of 1, 6, 15, 28, 45. **[5 marks]**

Answer: _____

10. Use the nth term $n^2 + 2n$ to work out the 10th term. **[2 marks]**

Answer: _____

11. Show that 63 is a term of the sequence with nth term $n^2 - 1$. **[3 marks]**

Answer: _____

12. Show that 50 is NOT a term of the sequence with nth term $n^2 + 2n$. **[3 marks]**

Answer: _____

13. Write down the next two terms of 3, 6, 12, 24, ... **[2 marks]**

Answer: _____

14. Write down the common ratio of 80, 40, 20, 10. **[2 marks]**

Answer: _____

15. Work out the nth term of the geometric sequence 2, 6, 18, 54. **[3 marks]**

Answer: _____

16. The first two terms of a Fibonacci-style sequence are 4 and 7. Write down the next three terms. **[2 marks]**

Answer: _____

17. Write down the nth term of $\frac{1}{2}, \frac{2}{3}, \frac{3}{4}, \frac{4}{5}$. **[3 marks]**

Answer: _____

18. A sequence has nth term $2n^2 - 3n$.

(a) Work out the first three terms. **[2 marks]**

(b) Work out the 12th term. **[2 marks]**

Answer: _____

19. A sequence starts 7, 10, 15, 22, 31.

(a) Work out the nth term. **[4 marks]**

(b) Work out the 20th term. **[2 marks]**

Answer: _____

20. A sequence has nth term $n^2 + n$.

(a) Show that every term is even. **[3 marks]**

(b) Work out which term equals 156. **[3 marks]**

Answer: _____

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