# Answers and mark guide

| Q | Answer | Working | Marks |
|---|---|---|---|
| 1 | **3, 7, 11, 15** | Subtract consecutive terms. | 2 |
| 2 | **10** | The difference of the first differences. | 2 |
| 3 | **12, 20, 30** | Substitute n = 1, 2, 3. | 2 |
| 4 | **318** | Substitute n = 10. | 2 |
| 5 | **Quadratic: the second differences are constant and non-zero** | The first differences are not constant. | 2 |
| 6 | **$4n^2 + 6n + 5$** | Second difference 8, so a = 4; subtract $4n^2$ and find the linear part. | 5 |
| 7 | **$n^2 - 2n + 7$** | Use the second difference to get the $n^2$ coefficient. | 5 |
| 8 | **1663** | Substitute n = 20. | 3 |
| 9 | **$5n^2 + 4n - 1$** | a = second difference ÷ 2 | 5 |
| 10 | **304** | Find the nth term, then substitute n = 8. | 4 |
| 11 | **Yes (term 10)** | $2n^2 + 8 = 208$ gives n = 10 | 4 |
| 12 | **7** | Solve $n^2 + 3n + 8 = 78$ | 4 |
| 13 | **73** | nt(10) − nt(9) | 4 |
| 14 | **No (n would not be a whole number)** | Solve the quadratic and check for a positive integer solution. | 5 |
| 15 | **5** | Test values of n. | 4 |
| 16 | **Shown** | nt(n+2) − 2nt(n+1) + nt(n) = 8 | 5 |
| 17 | **300** | Add the five terms. | 5 |
| 18 | **25** | 9 + 3b + c | 3 |
| 19 | **$4n^2 + 5n + 6$** | Use a = second difference ÷ 2 and the first two terms. | 6 |
| 20 | **7** | Test values. | 4 |

**My score:** _____ / **76** Questions 1–15 = 53 marks (Foundation focus)