



# Sequences

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|   |    |  |                  |  |
|---|----|--|------------------|--|
| 1 | 18 | (a) 4324 cao<br>(b) (i) 4, 9<br>(ii) $(n+1)^2$ or $n^2 + 2n + 1$<br>(c) $\frac{2}{3}n(n+1)(2n+1)$ oe | 2<br>2<br>1<br>2 | <b>M1</b> $\frac{1}{6} \times 23 \times 24 \times 47$ or better<br><b>B1</b> either correct<br><b>M1</b> recognising $V_n = 4T_n$                          |
| 2 | 9  | (a) $\sqrt{(2n-1)}$<br>(b) $\sqrt{57}$ or 7.55   | 2<br>1ft         | <b>M1</b> $\sqrt{(2n+k)}$ or $2n-1$<br>From their (a)  |
| 3 | 3  | $17 - 4n$  | 2                | <b>B1</b> for $\pm 4n$ seen  |
| 4 | 9  | (a) $\frac{n}{n+2}$ oe final answer<br>(b) $n^2 - 1$ oe final answer                                 | 1<br>2           | <b>B1</b> for any quadratic in final answer  |
| 5 | 20 | (a) -3<br>(b) $39 - 7n$ oe<br>(c) 53   | 1<br>2<br>2      | <b>M1</b> for $-7n [+k]$<br><b>M1</b> for <i>their</i> (b) = -332 shown provided <i>their</i> (b) is linear and their answer for (c) is a positive integer |
| 6 | 11 | (a) 608400 cao<br>(b) $2n^2(n+1)^2$ oe   | 2<br>1           | <b>M1</b> for $\frac{1}{4} \times 39^2 \times (39+1)^2$  |
| 7 | 11 | (a) $4n$ oe final answer<br>(b) $3n^2 + 8$ oe final answer   | 1<br>2           | <b>M1</b> for a quadratic expression as final answer or $3n^2 + 8$ oe in working   |
| 8 | 8  | $2n^2 + 3$ oe final answer   | 2                | <b>M1</b> for a quadratic expression as final answer<br>or $2n^2 + 3$ oe in working  |
| 9 | 5  | $18 - 5n$ oe   | 2                | <b>M1</b> for $5n$ or $-5n$  |

|    |    |     |  |                              |  |
|----|----|-----|--|------------------------------|--|
| 10 | 20 | (a) | $9a + 3b$  | 1                            |  |
|    |    | (b) | $36a + 6b = 96$ or $9a + 3b = 21$<br><br>for correct method to eliminate one variable<br><br>$a = 3$<br>$b = -2$ | B1<br><br>M1<br><br>A1<br>A1 | If M0 A0 A0 scored SC1 for<br><br>2 values satisfying $36a + 6b = 96$ or $9a + 3b = 21$ or<br>if no working shown, but 2 correct answers given |
| 11 | 15 | (a) | $-3$   | 1                            |  |
|    |    | (b) | $9 - 2n$ oe  | 2                            | B1 for $-2n + k$ or $dn + 9$ where $d \neq 0$  |
| 12 | 18 | (a) | $3n + 13$ oe final answer  | 2                            | M1 for $3n + c$ or $kn + 13$   |
|    |    | (b) | $3^{n-1}$ oe final answer  | 2                            | M1 for recognition of terms being powers of 3  |
| 13 | 19 | (a) | $6n + 1$ oe final answer   | 2                            | B1 for $6n + c$ or for $kn + 1$ ( $k \neq 0$ )   |
|    |    | (b) | $(n + 2)^2$ final answer   | 2                            | M1 for any quadratic expression or reaching second difference of 2   |
| 14 | 3  |     | $[a =] 15$<br>$[b =] -27$  | 2                            | B1 for each<br>or SC1 for reversed answers   |

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