1 Write down the next two terms and the term-to-term rule.

(a) $5, 12, 19, 26, \ldots$ (1)

(b) $48, 24, 12, 6, \ldots$ (1)

(c) $7, 3, -1, -5, \ldots$ (1)

(3 marks)

2 Find the nth term.

(a) $6, 13, 20, 27, \ldots$ (1)

(b) $11, 15, 19, 23, \ldots$ (1)

(c) $40, 36, 32, 28, \ldots$ (1)

(d) $\frac{1}{2}, 1, 1\frac{1}{2}, 2, \ldots$ (1)

(4 marks)

3 A pattern is made of 5 rows of cubes, each as long as the pattern number, with 2 extra cubes.

(a) How many cubes in patterns 1, 2 and 3? (1)

(b) Write down the nth term (1)

(c) Justify your rule by describing the pattern (2)

(4 marks)

4 A sequence has nth term $8n - 3$.

(a) Find the 12th term (1)

(b) Which position holds the term 69? (1)

(c) Is 100 a term of this sequence? Show your working. (2)

(4 marks)

5 Match each description to its rule.

A starts at 7, adds 4 B 4 per pattern, 7 fixed C starts at 4, adds 7

P $4n + 3$ Q $7n - 3$ R $4n + 7$

(a) A matches (1)

(b) B matches (1)

(c) C matches (1)

(3 marks)

6 A pattern has nth term $6n + 5$. A pupil has 70 cubes.

(a) Can they build a complete pattern with exactly 70 cubes? Show your working. (2)

(b) What is the largest complete pattern they can build, and how many cubes are left over? (2)

(4 marks)