

Solutions

Award method and answer marks as indicated; accept equivalent correct methods.

2.1

- Add 4 each time: **21, 25**.

2.2

- $u_n = 6 + 5(n - 1) = \mathbf{5n + 1}$.

2.3

- Subtract squares 1, 4, 9, 16: the difference is 2, so $u_n = n^2 + 2$.

2.4

- $u_5 = 5^3 - 1 = 125 - 1 = \mathbf{124}$.

3.1

(a)

- $u_n = 7 + 4(n - 1) = \mathbf{4n + 3}$.

(b)

- $u_{30} = 4(30) + 3 = \mathbf{123}$.

(c)

- $4n + 3 = 100$ gives $n = 97/4 = 24.25$. **No**, a pattern number must be a positive integer.

3.2

(a)

- These are one more than successive squares.
- The next terms are **26 and 37**, and $u_n = \mathbf{n^2 + 1}$.

(b)

- For 50, $n^2 = 49$ gives $n = 7$, so **50 is a term**.
- For 60, $n^2 = 59$ lies strictly between 7^2 and 8^2 ; there is no integer index, so **60 is not a term**.