Rules for growing patterns

6 questions | 12 marks

Equivalent correct methods earn the corresponding marks.

1. Use "$\text{term number} \times 4$, then add 1" to find term 5. [1 mark]

$5 \times 4 + 1 = 21$.

Answer: 21.

2. A sequence starts at 3 and increases by 2. Find term 6. [2 marks]

The terms are 3,5,7,9,11,13; there are five increases.

Answer: 13.

3. Check whether "$\text{term number} \times 2$, then add 3" produces 5,7,9 for terms 1,2,3. [2 marks]

$1 \times 2 + 3 = 5$; $2 \times 2 + 3 = 7$; $3 \times 2 + 3 = 9$.

Answer: Yes.

4. A rule is "$\text{input} \div 2$, then add 0.5". Find the output for input 8. [1 mark]

$8 \div 2 + 0.5 = 4.5$.

Answer: 4.5.

5. A row of joined squares uses 4 sticks at stage 1, 7 at stage 2 and 10 at stage 3. Each extra square adds 3 sticks. How many sticks at stage 8? [3 marks]

Start with 4 and add seven groups of 3: $4 + 21 = 25$.

Answer: 25 sticks.

6. A table gives 6,10,14 for terms 1,2,3. Give a term-number rule and test it. [3 marks]

$1 \times 4 + 2 = 6$; $2 \times 4 + 2 = 10$; $3 \times 4 + 2 = 14$.

Answer: Multiply the term number by 4, then add 2.