Rules for growing patterns

6 questions | 12 marks

Equivalent correct methods earn the corresponding marks.

1. Use “term number ×4, then add 1” to find term 5. [1 mark]

5×4+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 “term number ×2, then add 3” produces 5,7,9 for terms 1,2,3. [2 marks]

1×2+3=5; 2×2+3=7; 3×2+3=9.

Answer: Yes.

4. A rule is “input ÷2, then add 0.5”. Find the output for input 8. [1 mark]

8÷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]

1×4+2=6; 2×4+2=10; 3×4+2=14.

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