Predicting and explaining patterns

6 questions | 13 marks

Equivalent correct methods earn the corresponding marks.

1. A pattern starts with 8 at step 1 and adds 5 each step. Find step 5. [2 marks]

There are four jumps.

$8 + 4 \times 5 = 28$.

Answer: 28

2. Complete the table for a rule that doubles each time. [2 marks]

Step	Value
1	3
2	6
3	?
4	?

$3 \times 2 = 6$; $6 \times 2 = 12$; $12 \times 2 = 24$.

Answer: Step 3: 12; step 4: 24

3. Linked tables seat 4 people at step 1. Each extra table adds 2 seats. How many seats do 7 linked tables provide? [2 marks]

Seven tables are six additions after the first.

$4 + 6 \times 2 = 16.$

Answer: 16 seats

4. A learner predicts that 21 follows 2, 6, 10, 14, 18. Check using the constant-addition rule. [2 marks]

Each jump adds 4.

$18 + 4 = 22.$

Answer: 22, not 21.

5. A tank starts with 10 litres. Each round adds 6 litres. It holds 40 litres. How many complete rounds fill it exactly? [2 marks]

$40 - 10 = 30$ litres are needed.

$30 \div 6 = 5.$

Answer: 5 rounds

6. Make a constant-addition pattern with 9 at step 1 and 21 at step 4. State the rule and all four terms. [3 marks]

There are three equal jumps.

$21 - 9 = 12;\ 12 \div 3 = 4.$

Answer: Add 4: 9, 13, 17, 21.