A Sequence Is a Function

A sequence is a list in order and a function: term number in, term out. Whole-number inputs only, so dots. Adding gives arithmetic; multiplying gives geometric.

1 THE VOCABULARY
Words we use

Sequence a list of numbers in a set order.
Term one number in the list.
Term number its position: 1st, 2nd, 3rd. The input.
a_n the nth term (say a sub n). Same as f(n).
Discrete separate dots: whole-number inputs only.
Arithmetic, geometric adds the same amount; multiplies by the same number.

- Watch out for these.
- Reading a_4 as a times 4. The 4 is a label for the position.
- Connecting the dots. There is no term number 2.5.
- Giving the domain as all numbers. It is whole numbers only.
- Calling every list arithmetic or geometric. Some are neither.

2 THE METHOD
Read a sequence

1. POSITIONS number the terms 1, 2, 3, ...
2. NAME A TERM a_4 is the term in position 4; f(4) is the same.
3. DOMAIN, RANGE the term numbers; the terms.
4. GRAPH dots at (term number, term). Do not connect.
5. WHICH KIND subtract: same difference is arithmetic. Divide: same ratio is geometric. Else neither.

WHY A SEQUENCE IS A FUNCTION
Each position holds exactly one term: one input, one output. The inputs are whole numbers, so the graph is dots.

3 THE THEATER
60, 68, 76, 84, ...

$a_1 = 60$, $a_4 = 84$	first and fourth terms
f(4) = 84	the same sentence: row 4 has 84 seats
domain: rows 1, 2, 3, ...	whole numbers only
range: 60, 68, 76, ...	the seat counts
differences 8, 8, 8	it adds: arithmetic, dots on a line

NEITHER
1, 4, 9, 16, 25: differences 3, 5, 7, 9 and ratios 4, 2.25, 1.78 both change. A sequence, but neither family.

SAY IT OUT LOUD
Position in, term out. Dots, not a line. Adding gives arithmetic, multiplying gives geometric.