A Sequence Is a Function

EDSTAR ANALYTICS | Deep Dive 5
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A sequence is a list in order. Term number in, term out: a function with whole-number inputs. a sub n is the nth term. Plot dots only.

Name _____ Date _____

Words we use

say the math word, then the plain English

WORD	PLAIN ENGLISH	WHAT YOU DO
Sequence	A list of numbers in a set order.	Read it left to right; every position has one number.
Term	One number in the list.	Name it by where it sits.
Term number (position, index)	Where a term sits in the list: 1st, 2nd, 3rd.	It is the input. Only whole numbers.
a_n, said a sub n	The nth term: the term in position n. a_1 is the first term.	Same as f(n) in function notation.
Domain and range	The inputs (term numbers) and the outputs (terms).	The domain is whole numbers only.
Discrete	Separate dots, because only whole-number inputs exist.	Plot dots. Do not connect them.

Part A Name the terms

SEQUENCE	A_1	A_4	NEXT TERM
5, 9, 13, 17, 21, ...			
81, 27, 9, 3, ...			
60, 68, 76, 84, ...			
2, 8, 32, 128, ...			

Part B The theater

60 seats in row 1, 68 in row 2, 76 in row 3, and so on, for 25 rows.

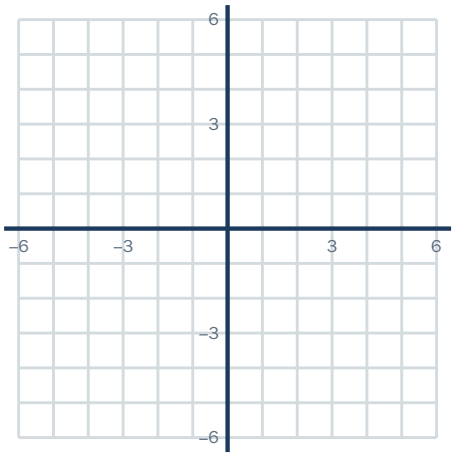
1. What is the input? What is the output? Why is this a function?

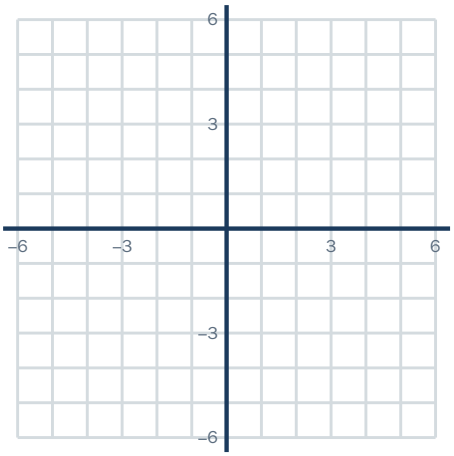
2. State the domain in words. Why are there no decimals in it?

3. Write "row 4 has 84 seats" in sequence notation and in function notation.

Part C Plot the dots

Plot the first five terms of 2, 4, 6, 8, 10 on the left grid and 1, 2, 4, 8 on the right grid (term number across, term up). Do not connect the dots.





1. Which dots sit on a line? Which sit on a curve? Why did you not connect them?

Part D Adds, multiplies, or neither?

LIST	DIFFERENCES	RATIOS	ADDS, MULTIPLIES, OR NEITHER
7, 10, 13, 16			
3, 6, 12, 24			
1, 4, 9, 16, 25			
400, 200, 100, 50			
0, 1, 1, 2, 3, 5, 8			

Part E Exit ticket

1. In 4, 11, 18, 25, ...: a_1, a_3, and the next term.

2. Why is a sequence a function, and why is its graph dots?

Answer key

Part A. 5, 17, 25. 81, 3, 1. 60, 84, 92. 2, 128, 512.

Part B. 1. Input: row number. Output: seats. Each row has exactly one seat count. 2. The whole numbers 1 to 25; there is no row 2.5. 3. $a_4 = 84$; $f(4) = 84$.

Part C. Left: (1, 2), (2, 4), (3, 6), (4, 8), (5, 10), on a line. Right: (1, 1), (2, 2), (3, 4), (4, 8), on a curve. Not connected: only whole-number term numbers exist.

Part D. Adds (difference 3). Multiplies (ratio 2). Neither (squares). Multiplies (ratio one half). Neither (Fibonacci).

Part E. 1. 4, 18, 32. 2. Each term number gives exactly one term; only whole-number inputs exist, so dots.