

1.8 Arithmetic vs. Geometric

Date: _____

Learning Target:

Review the differences between arithmetic and geometric sequences

Sequences

Linear

Called "arithmetic"

Constant difference

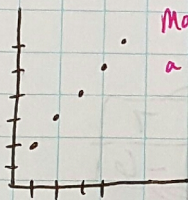
Adds / Subtracts

Table:

n	f(n)
1	6
2	9
3	12
4	15

$+3$ constant difference

Graph:



Makes a line

Exponential

Called "geometric"

Constant ratio

Multiplies / Divides

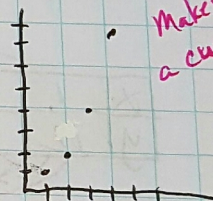
(multiply by a fraction)

Table:

n	f(n)
1	3
2	9
3	27
4	81

$\cdot 3$ constant ratio

Graph:



Makes a curve

Recursive:

$$f(n) = f(n-1) + \text{constant difference}$$

$$f(1) = \text{1st term} \quad \text{or} \quad f(0) = \text{0th term}$$

Recursive:

$$f(n) = f(n-1) \cdot \text{constant ratio}$$

$$f(1) = \text{Initial Value} \quad \text{or} \quad f(0) = \text{Initial Value}$$

Explicit:

$$f(n) = \text{1st term} + (n-1) \cdot \text{constant difference}$$

$$f(n) = \text{1st term} + \text{constant difference} \cdot (n-1)$$

Explicit:

$$f(n) = \text{1st term} \cdot \text{constant ratio}^{n-1}$$

$$f(n) = \text{1st term} \cdot \text{constant ratio}^{n-1}$$