

Warmup

Write the recursive and explicit formulas for each. Fill in the missing terms as well.

1) 13, 20, 27, ...

Arithmetic

$$d = +7$$

$$A_1 = 13$$

Rec: $A_1 = 13$

$$A_n = A_{n-1} + 7$$

~~Exp~~

$$A_n = 13 + 7(n-1)$$

$$13 + 7n - 7$$

$$(6 + 7n)$$

Must simplify

2)

X	Y
2	800
3	400
4	200
5	100
6	50
	25

geo

$$\frac{25}{400} = \frac{1}{16}$$

$r = \frac{1}{2}$

$A_1 = 800$

4 jumps

Rec

$$A_1 = 800$$

$$A_n = \frac{1}{2}(A_{n-1})$$

Exp

$$A_n = 800\left(\frac{1}{2}\right)^{n-1}$$

What Comes Next? What Comes Later?

A Practice Understanding Task

For each of the following tables,

- describe how to find the next term in the sequence,
- write a recursive rule for the function,
- describe how the features identified in the recursive rule can be used to write an explicit rule for the function, and
- write an explicit rule for the function.
- identify if the function is arithmetic, geometric or neither

Function A

- How to find the next term: _____ $\times 2$
- Recursive rule: $A_1 = 5$ $A_n = 2(A_{n-1})$
- To find the n^{th} term: _____
- Explicit rule: $A_n = 5(2)^{n-1}$
- Arithmetic, geometric, or neither? _____

x	y
1	5
2	10
3	20
4	40
5	?
...	...
n	?

Function B

- How to find the next term: _____
- Recursive rule: _____
- To find the n^{th} term: _____
- Explicit rule: _____
- Arithmetic, geometric, or neither? _____

x	y
1	-8
2	-17
3	-26
4	-35
5	-44
6	-53
...	...
n	?



Function D

- To find the next term: _____
- Recursive rule: _____
- To find the n^{th} term: _____
- Explicit rule: _____
- Arithmetic, geometric, or neither? _____

x	y
1	3
2	15
3	27
4	39
5	51
6	?
...	...
n	?

Function F

- To find the next term: _____
- Recursive rule: _____
- To find the n^{th} term: _____
- Explicit rule: _____
- Arithmetic, geometric, or neither? _____

x	y
0	3
1	4
2	7
3	12
4	19
5	?
...	...
n	?

Function G

- To find the next term: _____
- Recursive rule: _____
- To find the n^{th} term: _____
- Explicit rule: _____
- Arithmetic, geometric, or neither? _____

x	y
1	10
2	2
3	$\frac{2}{5}$
4	$\frac{2}{25}$
5	$\frac{2}{125}$
6	$\frac{2}{625}$
...	...
n	?

In each of the problems below I share some of the information that I know about a sequence. Your job is to add all the things that you know about the sequence from the information that I have given. Depending on the sequence, some of the things you may be able to figure out for the sequence are:

- a table;
- a graph;
- an explicit equation;
- a recursive formula;
- the constant ratio or constant difference between consecutive terms;
- any terms that are missing;
- the type of sequence;
- a story context.

a. I know that: the recursive formula for the sequence is $f(1) = -12$, $f(n) = f(n-1) + 4$

What do you know?

Rec
 $A_1 = -12$
 $A_n = A_{n-1} + 4$

Exp
 $a_1 = -12$ $d = 4$
 $A_n = -12 + 4(n-1)$
 $-12 + 4n - 4$
 $-16 + 4n$

Arithmetic
 $A_1 = -12$ $A_5 = 4$
 $A_2 = -8$
 $A_3 = -4$
 $A_4 = 0$

b. I know that: the first 5 terms of the sequence are 0, -6, -12, -18, -24 ...

What do you know?

c. I know that: the sequence is arithmetic and $f(3) = 10$ and $f(7) = 26$

What do you know?

I know that: the sequence is a model for the perimeter of the following figures:

d.

Figure 1



Figure 2



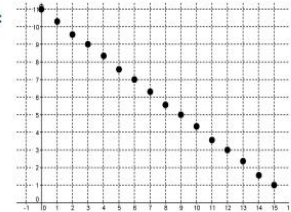
Figure 3



Length of each side = 1

What do you know?

I know that: a graph of the sequence is:
 What do you know?



e.

I know that: the sequence models the value of a car that originally cost \$26,500, but loses 10% of its value each year.

What do you know?

f.