Day 03: Recursively Defined Sequences

Name_____

Date_____Block_____

A. Write the RECURSIVE RULE for each type of sequence.

Arithmetic Sequence:

Geometric Sequence:

What is the difference between a recursive rule and recursive formula?

B. Write the first six terms of each sequence, starting with a_1.

1.) $a_1 = -18$
$a_n = a_{n-1} + 6$, where $n \geq 2$

2.) $a_1 = 0.5$
$a_n = 3a_{n-1}$, where $n \geq 2$

3.) $a_1 = 35.6$
$a_n = a_{n-1} - 4.2$, where $n \geq 2$

4.) $a_1 = 8$
$a_n = -0.5a_{n-1}$, where $n \geq 2$

5.) $a_1 = 5$
$a_n = 3a_{n-1} - 1$, where $n \geq 2$

6.) $a_1 = -2$
$a_n = 2a_{n-1} + 4$, where $n \geq 2$

C. Determine the pattern and write the next term for each of the following sequences. State whether each pattern is arithmetic, geometric, or neither. Write a recursive rule to generate each sequence that is arithmetic or geometric. Find the 8th term of each sequence.

	Sequence	Next term	Type of Sequence	Recursive Rule	8th Term
1.)	3, 6, 12, 24, . . .	_____	_____	_____	_____
2.)	3, 7, 11, 15, . . .	_____	_____	_____	_____
3.)	3, -2, -7, -12, . . .	_____	_____	_____	_____
4.)	16, 4, 1, ¼, …..	_____	_____	_____	_____

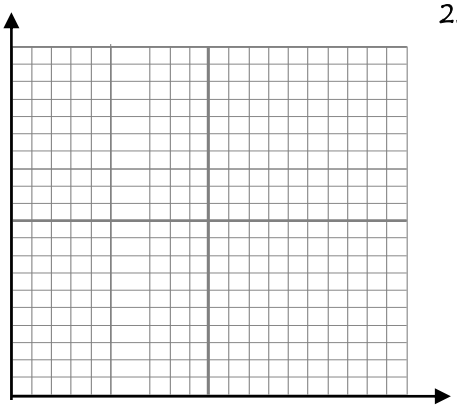
D. Write a recursive formula for each of the following sequences. Find the 15th term of each sequence.

	Sequence	Recursive Formula	15th Term
1.)	3, 6, 12, 24, . . .	_____	_____
2.)	3, 7, 11, 15, . . .	_____	_____
3.)	3, -2, -7, -12, . . .	_____	_____
4.)	16, 4, 1, ¼, …..	_____	omit____

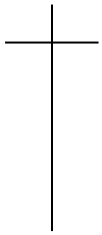
E. Graph each sequence in problems 1 – 4 on the first page. Complete each table as shown in problem 1.

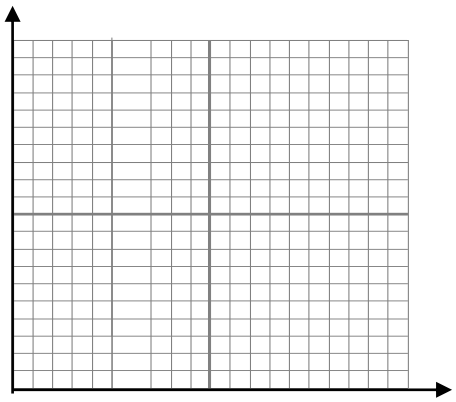
1.) 3, 6, 12, 24, . .

x	y
1	3
2	6
3	12
4	24
5	48

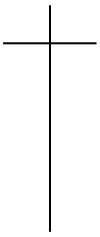


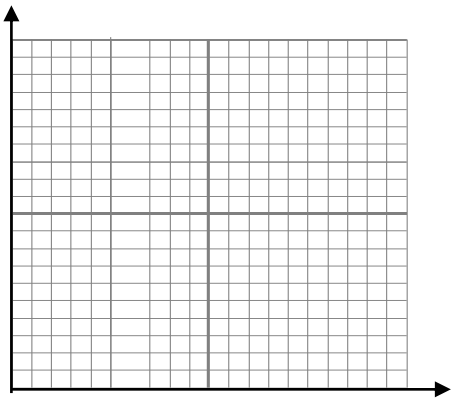
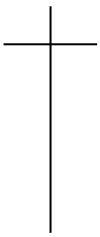
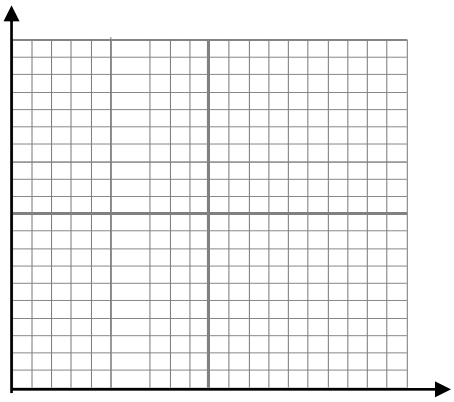
2.) 3, 7, 11, 15, . . .





3.) 3, -2, -7, -12, . . .





4.) 16, 4, 1, $\frac{1}{4}$, …..