Math 1 Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**4-1 Geometric Sequences** Date\_\_\_\_\_\_\_\_

*Learning goals:*

* I can convert a sequence into a recursive or explicit formula.
* I can use a formula to find missing terms in a sequence.
* I can determine the common difference/ratio from a sequence.
* I can identify linear and exponential situations and distinguish between the two.
* I can construct a linear or exponential function from an arithmetic sequence, table of values or verbal description.

RECALL:

**Arithmetic Sequences** Recursive:  Explicit: 

1. Continue the following sequences:

 a. 4, 8, 12, \_\_\_\_\_\_\_,\_\_\_\_\_\_\_\_,\_\_\_\_\_\_\_\_,\_\_\_\_\_\_\_\_,…

b. -2, 10, 22, \_\_\_\_\_\_\_,\_\_\_\_\_\_\_\_,\_\_\_\_\_\_\_\_,\_\_\_\_\_\_\_\_,…

c. 8, -15, -38, \_\_\_\_\_\_\_,\_\_\_\_\_\_\_\_,\_\_\_\_\_\_\_\_,\_\_\_\_\_\_\_\_,…

d. 2.3, 5.7, 9.1, \_\_\_\_\_\_\_,\_\_\_\_\_\_\_\_,\_\_\_\_\_\_\_\_,\_\_\_\_\_\_\_\_,…

2. Write a recursive and explicit rule for the sequence in part d.

 Recursive Explicit

3. In your own words, define an ***arithmetic sequence.***

 **Geometric Sequences** Recursive:  Explicit: 

A ***geometric sequence*** is a sequence in which each term after the first is found by multiplying the previous term by a constant. In any geometric sequence, the *constant or common ratio* is found by dividing any term by the previous term. The *n*th term of a geometric sequence with first term and constant ratio *r* is given by the formula 

Consider the sequence 

The *explicit formula* for this sequence is 

The *recursive formula* for this sequence is 

A. Determine which of the following sequences are geometric. If it is a geometric sequence, find the common ratio.

 **Example:** 4, 20, 100, 500

 1. 7, 14, 28, 56, . . .

1. 2, 4, 6, 8, . . .
2. 3, 9, 27, 54, . . .
3. 9, 6, 4, 

B. Find the next two terms for each **geometric sequence**:

 **Example:** 729, 243, 81, \_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_

 1. 20, 30, 45, \_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_

 2. 90, 30, 10, \_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_

1. 2, 6, 18, \_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_

C. Find the first four terms of each **geometric sequence** described below:

 **Example:** 

 1. 

 2. 

 3. 

D. Find the *n*th term of each **geometric sequence** described below:

 **Example:** 

 1. 

 2. 

 3. 

E. Find the missing terms of the following **geometric sequences**:

 **Example:** 3, \_\_\_\_\_\_, \_\_\_\_\_\_, \_\_\_\_\_\_, 48

 1. 243, \_\_\_\_\_\_, \_\_\_\_\_\_, \_\_\_\_\_\_, \_\_\_\_\_\_, 1