

READY, SET, GO!

Name \_\_\_\_\_

Date \_\_\_\_\_

## READY

Topic: Arithmetic and geometric sequences

**For each set of sequences, find the first five terms. Compare arithmetic sequences and geometric sequences. Which grows faster? When?**

1. Arithmetic sequence:  $f(1) = 2$ , common difference,  $d = 3$

Geometric sequence:  $g(1) = 2$ , common ratio,  $r = 3$

Arithmetic:

$$f(1) =$$

$$f(2) =$$

$$f(3) =$$

$$f(4) =$$

$$f(5) =$$

Geometric:

$$g(1) =$$

$$g(2) =$$

$$g(3) =$$

$$g(4) =$$

$$g(5) =$$

Which value do you think will be more,  $f(100)$  or  $g(100)$ ? Why?

2. Arithmetic sequence:  $f(1) = 2$ , common difference,  $d = 10$

Geometric sequence:  $g(1) = 128$ , common ratio,  $r = \frac{1}{2}$

Arithmetic:

$$f(1) =$$

$$f(2) =$$

$$f(3) =$$

$$f(4) =$$

$$f(5) =$$

Geometric:

$$g(1) =$$

$$g(2) =$$

$$g(3) =$$

$$g(4) =$$

$$g(5) =$$

Which value do you think will be more,  $f(100)$  or  $g(100)$ ? Why?

3. Arithmetic sequence:  $f(1) = 20$ ,  $d = 10$

Geometric sequence:  $g(1) = 2$ ,  $r = 2$

Arithmetic:

$$f(1) =$$

$$f(2) =$$

$$f(3) =$$

$$f(4) =$$

$$f(5) =$$

Geometric:

$$g(1) =$$

$$g(2) =$$

$$g(3) =$$

$$g(4) =$$

$$g(5) =$$

Which value do you think will be more,  $f(100)$  or  $g(100)$ ? Why?

4. Arithmetic sequence:  $f(1) = 50$ , common difference,  $d = -10$

Geometric sequence:  $g(1) = 1$ , common ratio,  $r = 2$

Arithmetic:

$$f(1) =$$

$$f(2) =$$

$$f(3) =$$

$$f(4) =$$

$$f(5) =$$

Geometric:

$$g(1) =$$

$$g(2) =$$

$$g(3) =$$

$$g(4) =$$

$$g(5) =$$

Which value do you think will be more,  $f(100)$  or  $g(100)$ ? Why?

5. Arithmetic sequence:  $f(1) = 64$ , common difference,  $d = -2$

Geometric sequence:  $g(1) = 64$ , common ratio,  $r = \frac{1}{2}$

Arithmetic:

$$f(1) =$$

$$f(2) =$$

$$f(3) =$$

$$f(4) =$$

$$f(5) =$$

Geometric:

$$g(1) =$$

$$g(2) =$$

$$g(3) =$$

$$g(4) =$$

$$g(5) =$$

Which value do you think will be more,  $f(100)$  or  $g(100)$ ? Why?

6. Considering arithmetic and geometric sequences would there ever be a time that a geometric sequence does not out grow an arithmetic sequence in the long run as the number of terms of the sequences becomes really large. When?

## SET

Topic: Geometric sequences

Each of the tables below represents a *geometric* sequence. Find the missing terms in the sequence, showing your method.

6. Table 1

$x$	1	2	3
$y$	3		12

7. Table 2

$x$	$y$
1	2
2	
3	
4	54

8. Table 3

$x$	$y$
1	5
2	
3	20
4	

9. Table 4

$x$	$y$
1	4
2	
3	
4	
5	324

## GO

Topic: Explicit equations of geometric sequences

**Given the following information, determine the explicit equation for each geometric sequence.**

10.  $f(1) = 8$ , common ratio,  $r = 2$

11.  $f(1) = 4$ ,  $f(n) = 3f(n - 1)$

12.  $f(n) = 4f(n - 1)$ ;  $f(1) = \frac{5}{3}$

13. Which geometric sequence above has the greatest value at  $f(100)$ ?