

The following sequences are **geometric**:

a. $18, 54, 162, \dots$

b. $1, \frac{1}{2}, \frac{1}{4}, \dots$

c. $10, -5, \frac{5}{2}, \dots$

d. $a_1, a_1r, a_1r^2, a_1r^3, \dots$

1. List the next three terms of each sequence above and explain what you did to get those terms.

a.

b.

c.

d.

2. In your own words, define what a geometric sequence is.

3. Determine a general formula for each sequence that will allow you to find **any** term (even the 20th term) without listing them all out. In other words, if you want to find the 20th term, you should be able to plug in 20 for your variable and get the answer. Try your idea(s) on the terms listed and make sure it works. Please define any variables you have in your formulas!

a.

b.

c.

d.

(Your answer to 3d should be the general formula for finding any term of a geometric sequence.)

4. Find the 10th term of 1, 2, 4, 8, ...

5. Find the 6th term of a sequence that has $a_1 = 300$ and $r = -\frac{1}{2}$.

6. Find n for the sequence that has $a_n = 256$, $a_1 = 1$, and $r = 4$.

7. Find r for the sequence that has $a_1 = 3$ and $a_9 = 768$

8. Find the 10th term of a geometric sequence that has $a_7 = 320$ and $a_{12} = 10,240$