



# **Geometric Sequences Foldable**

Thank you for buying my game!

Please stop back to my store and let me know how the game went.

<http://www.teacherspayteachers.com/Store/Foresta-Math>

Facebook:

Pinterest: <https://pinterest.com/forestamath>

Email: [forestamath@aol.com](mailto:forestamath@aol.com)

Website: <http://forestamath.com>

Polka Dot Frame Shades by Mercedes Hutchens

<http://www.teacherspayteachers.com/Store/Mercedes-Hutchens>

### Instructions

Print or copy page 3 and 4 so you have a double sided foldable.

Put page 3 (the side that says Geometric Sequences) in half hamburger style. Cut the foldable on the dotted gray lines. Do not cut all the way to the middle.

Open and fold the foldable one portion at a time.

Fill in the information for the foldable from page 5.

The foldable can be glued in a notebook or a piece of construction paper.

# **Geometric Sequences**

**What is a Geometric Sequence?**

**How to find the common ratio**

**How to write an  $n$ th term explicit geometric formula**

**How to find the 6th term using an explicit formula**

**How to write an  $n$ th term recursive geometric formula**

**How to find the first 3 terms using a recursive formula**

A geometric sequence is a sequence of numbers where each term after the first is found by multiplying the previous term.

Example  
3, 6, 12, 24, ...  
x2 x2 x2

To find the common ratio divide the second term by the previous term.

Example  
5, -10, 20, -40, ...

$$\begin{aligned}r &= -10/5 = -2 \\r &= 20/(-10) = -2 \\r &= -40/20 = -2\end{aligned}$$

The explicit rule for the  $n$ th term of a geometric sequence with a common ratio  $r$  is  $a_n = a_1 \cdot r^{n-1}$

Example  
2, 6, 18, 54, ...

$$\begin{aligned}a_1 &= 2 \\r &= 6/2 = 3 \\a_n &= a_1 \cdot r^{n-1} \\a_n &= 2(3)^{n-1}\end{aligned}$$

To find the 6th term of a sequence, substitute your value of  $n$  into your explicit formula.

Example  
Find the 6th term given  $a_n = 3(2)^{n-1}$

$$\begin{aligned}a_n &= 3(2)^{n-1} \\a_6 &= 3(2)^{6-1} \\a_6 &= 3(2)^5 \\a_6 &= 3(32) = 96\end{aligned}$$

The recursive rule for the  $n$ th term of a geometric sequence with a common ratio  $r$  is

$$a_1 = a_1, a_n = r \cdot a_{n-1}$$

Example  
4, 8, 16, 32 ...

$$\begin{aligned}r &= 8/4 = 2 \\a_1 &= 4 \\a_n &= 2 \cdot a_{n-1}\end{aligned}$$

To find the first four terms of the sequence start with your first term. Then, use the formula to find the next three terms.

Example

$$\begin{aligned}a_1 &= 3 \\a_n &= 2 \cdot a_{n-1}\end{aligned}$$

$$\begin{aligned}a_1 &= 3 \\a_2 &= 2 \cdot a_1 = 2(3) = 6 \\a_3 &= 2 \cdot a_2 = 2(6) = 12 \\a_4 &= 2 \cdot a_3 = 2(12) = 24\end{aligned}$$