

Exponential relationship Geometric Sequences

If a sequence of values follows a pattern of

multiplying a fixed amount times each term to arrive at the following term, it is referred to as a **geometric sequence**.

The number multiplied each time is called the common ratio, r , referring to the fact that the ratio of the second term to the first term yields this common multiple.

Formula to find any term of a geometric sequence:

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

where a_1 is the first term of the sequence, r is the common ratio, and n is the number of the term to find.

Write a formula for the geometric sequence 2, 6, 18, 54, ...
 $a_1 = 2$ $r = 3$ $a_n = 2(3)^{n-1}$

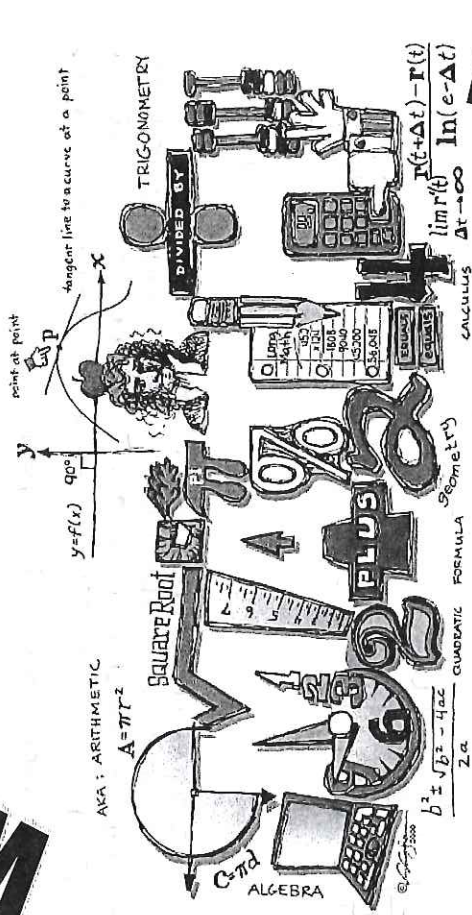
Find the common ratio for the geometric sequence whose formula is $a_n = 5(3)^{n-1}$.
 $r = 3$

Find a_8 for a geometric sequence where $a_1 = 0.5$ and $r = 4$.
 $a_n = 0.5(4)^{n-1}$ $a_8 = 0.5(4)^{8-1}$ $a_8 = 8192$

Find the 11th term of the sequence $1, -\frac{1}{2}, \frac{1}{4}, -\frac{1}{8}, \dots$
 $a_n = 1(-\frac{1}{2})^{n-1}$ $a_{11} = \frac{1}{1024}$

A ball is dropped from a height of 8 feet. The ball bounces to 80% of its previous height with each bounce. How high (to the nearest tenth of a foot) does the ball bounce on the fifth bounce?
 $a_1 = 8$ $a_5 = 8(.8)^{5-1}$
 $r = .8$ $a_5 = 3.68$

We saved the...



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Algebra I ~ Unit 11 Radicals & Sequences

Name: _____