Warm Up

State the pattern for each step.

- 3, 6, 12, 24, 48, 96,…
- 81, 27, 9, 3, 1, ⅓,…
- -2, 4, -8, 16, -32, 64, -128

Geometric Sequences

Geometric Sequences

An geometric sequence is defined as a sequence in which there is a **common ratio** between consecutive terms.

Common Ratio = 2

$$5, 10, 20, 40, 80, 160, 320, \ldots$$

Is the given sequence geometric? If so, identify the common ratio.

5, 15, 45, 135, …

15, 30, 45, 60, …

6, -24, 96, -384, …

8, 20, 32, 44, …

1, 2, 4, 8, …

7, 0.7, 0.07, 0.007, …

10, 4, 1.6, 0.64, …

Geometric Sequence Formula

The 1st number in the sequence.

The same as the n in a_n. If you're looking for the 5th number in the sequence, n = 5.

$$a_n = a_1 \bullet r^{(n-1)}$$

The "nth" number in the sequence. Ex. a_5 is the 5th number in the sequence.

The common ratio.

Example 1:

$$a_n = a_1 \bullet r^{(n-1)}$$

Given the sequence 4, 28, 196, 1372, 9604,…, find the 7^{th} term.

Example 2:

$a_n = a_1 \bullet r^{(n-1)}$

Given the sequence -2, 6, -18, 54, -162,…, find the 17^{th} term.