

1.6A: Geometric Sequence

“I WILL ...

Determine if a sequence is arithmetic, geometric, or neither

Find the explicit form of a geometric sequence

Find the number of terms in a geometric sequence

Determine the ratio of a geometric sequence.”

I. Key Terms

- A. **Geometric Sequence** is where consecutive terms have a common ratio
- B. **Geometric Series** is indicated sum of the terms of a geometric sequence
- C. **Ratio** is a quantity that denotes the proportional amount or magnitude of one quantity relative to another

II. Steps

- A. **Find the common ratio**
- B. **Use the formula and determine the rule**
- C. **Evaluate for the missing variable**
- D. Equation:

III. Model Problems

Ex 1: For this geometric sequence, determine the first four terms of $a_n = 5(2)^{n-1}$	Ex 2: For this geometric sequence, determine the first four terms of $a_n = 5\left(\frac{1}{8}\right)^{n-1}$
Ex 3: Find the 7th term of this geometric sequence of 1, 3, 9, 27, 81... and the explicit rule	YT: Find the 8th term of this geometric sequence of 16, -8, 4, -2, and the explicit rule

Ex 4: Find the 8 th term of the geometric sequence with $a_3 = 36$ and $a_5 = 324$.	YT: Find the 8 th term of the geometric sequence with $a_2 = 80$ and $a_4 = 1280$
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IV. Geometric Series

- A. **Identify the number of terms, lower and upper limit, and common ratio of the summation**
- B. **Then, identify the missing terms by plugging the given equation**
- C. **Apply the geometric summation notation equation,**
_____ where a_k is the given equation,
 a_1 is the given term, and a_n is the last term

Ex 5: Find the indicated sum for the geometric series of $s_8 = 1 + 2 + 4 + 8 \dots$	Ex 6: Evaluate $\sum_{k=1}^{10} (2)^k$
YT: Find the indicated sum for the geometric series of $s_9 = -3 + -6 + -12 \dots$	