

1.4 – Geometric Sequences

Specific Sequence # 2 – Geometric Sequence

– **geometric sequence** → a sequence where the _____ between _____ terms is a constant, called _____, the _____

Example 1: Complete each problem.

a.) Is the given sequence geometric? 3 , 9 , 27 , 81 , ... If so, what is the value of r?	b.) Is the given sequence geometric? 96 , - 24 , 6 , - 1.5, ... If so, what is the value of r?	c.) A geometric sequence has $a_1 = 4$ and $r = 6$. What is the fourth term of the sequence?
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“Nth Term Formula” of Geometric Sequence: Used to find ANY term of a geometric sequence

Consider a geometric sequence whose first term is _____ and whose common ratio is _____:

a_1	→	1st term (a_1)
_____	→	2nd term ($a_2 =$ _____)
_____ = _____	→	3rd term ($a_3 =$ _____)
_____ = _____	→	4th term ($a_4 =$ _____)
_____ = _____	→	5th term ($a_5 =$ _____)

(General) n^{th} term Formula: _____ → some important notes about this formula...

- formula will always be an _____
- do not multiply _____ and _____ together to simplify the formula
- put _____ around any “r” that’s a _____ or _____

Example 2: Find what is indicated for each geometric sequence.

a.) $a_1 = 2$ and $r = 4$, find the 8^{th} term	b.) Find a_5 for the sequence $- 1 , \frac{1}{4} , -\frac{1}{16} , \dots$	c.) Write the nth term formula (equation) for the sequence 3 , - 36 , 432 , ...
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Example 3: Considering all given sequences are geometric – Find what is asked.

a.) The 7 th term of the sequence is 62,500 and the common ratio is 5. What is the first term?	b.) What is the common ratio for the sequence where the first term is 96 and the 6 th term is 3?
c.) Which term is 78,732 in the sequence of 4 , 12 , 36 , 108 , ...?	d.) The fifth term in the sequence is 768 and the ninth term is 196,608. What is the third term of the sequence?

– **geometric means** → represent the _____ of a geometric sequence

Ex: Circle the 4 geometric means between 2 and 468: 2 , 6 , 18 , 54 , 162 , 468 , ...

Example 4: Complete each problem. Assume both sequences are geometric.

a.) Find the three geometric means for – 6 , _____ , _____ , _____ , – 486	b.) Find the two geometric means between – 20 and 1280.
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