

Sequences

Arithmetic Sequence (review) $+ -$

the difference between consecutive terms is constant

$$a_n = a_1 + (n-1)d; a_1 = 1^{st} \text{ term, } d = \text{common difference, } n = \text{nth term}$$

Geometric Sequence (new) $\times \div (\times \text{ fraction})$

the ratio between any term to the previous term is constant

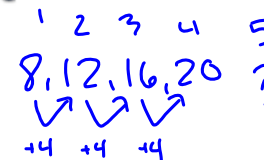
$$a_n = a_1 r^{n-1}; a_1 = 1^{st} \text{ term, } r = \text{common ratio, } n = \text{nth term}$$

Tell whether the sequence is arithmetic or geometric. Then, write the next term of the sequence.

1. 8, 12, 16, 20, ...

a) arithmetic or geometric

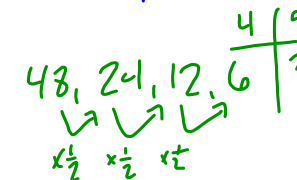
b) next term 24



2. 48, 24, 12, 6, ...

a) arithmetic or geometric

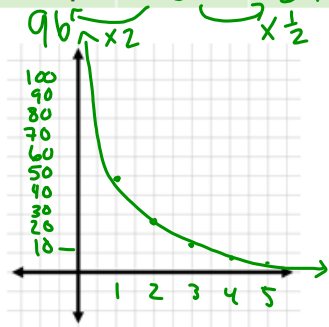
b) next term 3



Graph the Geometric Sequence

3. 48, 24, 12, 6, ...

Term # (n)	1	2	3	4	5
Term (y)	48	24	12	6	3



$$y = a(b)^x$$

$$y = 96\left(\frac{1}{2}\right)^x$$

Write a Rule

4. Write a rule for the geometric sequence then find a_{10}

a. Geometric Sequence: 2, -6, 18, -54, 162, ...

b. Common Ratio: -3

c. Rule: $a_n = a_1 r^{n-1}$

$$a_n = 2(-3)^{n-1}$$

d. $a_{10} = 2(-3)^{10-1}$

$$a_{10} = 2(-3)^9$$

$$a_{10} = 2(-19,683)$$

$$a_{10} = -39,366$$