

# Algebra 2

## 11-03 Analyzing Geometric Sequences and Series

### Geometric Sequence

- Created by \_\_\_\_\_ by a common \_\_\_\_\_ ( $r$ )

Are these geometric sequences?

1, 2, 6, 24, 120, ...

96, 48, 24, 12, 6, ...

### Formula for $n^{\text{th}}$ term

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

- \_\_\_\_\_

Write a rule for the  $n^{\text{th}}$  term and find  $a_8$ .

5, 2, 0.8, 0.32, ...

112, 56, 28, 14, ...

One term of a geometric sequence is  $a_4 = 3$  and  $r = 3$ . Write the rule for the  $n^{\text{th}}$  term.

One term of a geometric sequence is  $a_4 = -192$  and  $r = 4$ . Write the rule for the  $n^{\text{th}}$  term.

If two terms of a geometric sequence are  $a_2 = -4$  and  $a_6 = -1024$ , write rule for the  $n^{\text{th}}$  term.

**Sum of geometric series**

$$S_n = a_1 \left( \frac{1 - r^n}{1 - r} \right)$$

Find the sum of the first 10 terms of

$$4 + 2 + 1 + \frac{1}{2} + \dots$$

$$\sum_{i=1}^8 5 \left( \frac{1}{3} \right)^{i-1}$$

You tell the Gospel to your friends. Four of your friends tell the Gospel to their friends, then four of each of their friends tells the Gospel, and so on. Find the total number of people who told the Gospel to others after the eighth round.

616 #1, 5, 13, 17, 19, 23, 27, 31, 35, 37, 41, 43, 44, 47, 53, 63, 65, 66, 68, 70 = 20