

# Assignment

## Write

Complete each sentence.

1. A sequence which terminates is called a(n) \_\_\_\_\_ .
2. A(n) \_\_\_\_\_ is an individual number, figure, or letter in a sequence.
3. A(n) \_\_\_\_\_ is a pattern involving an ordered arrangement of numbers, geometric figures, letters, or other objects.
4. A sequence which continues forever is called a(n) \_\_\_\_\_ .

## Remember

An arithmetic sequence is a sequence of numbers in which the difference between any two consecutive terms is a constant.

A geometric sequence is a sequence of numbers in which the ratio between any two consecutive terms is a constant.

## Practice

Consider the first 2 terms of the sequence 28, 14, . . .

1. Determine whether the sequence is arithmetic or geometric. Explain your reasoning.
2. Suppose the sequence 28, 14, . . . is arithmetic.
  - a. Determine the common difference.
  - b. List the next 3 terms in the sequence. Explain your reasoning.
  - c. Determine whether the sequence is finite or infinite. Explain your reasoning.
3. Suppose the sequence 28, 14, . . . is geometric.
  - a. Determine the common ratio.
  - b. List the next 3 terms in the sequence. Explain your reasoning.
  - c. Determine whether the sequence is finite or infinite. Explain your reasoning.
4. Using the first two terms 28 and 14, write the next 3 terms of a sequence that is neither arithmetic nor geometric.

## Stretch

Consider the first 2 terms of the sequence  $-6, 18, \dots$

1. Determine the next 5 terms in the sequence if the sequence is arithmetic. Then write a function to represent the arithmetic sequence.
2. Determine the next 5 terms in the sequence if the sequence is geometric. Then write a function to represent the geometric sequence.

## Review

- Juan updates his blog regularly with trivia questions for readers to answer. The month he started this, there were 8 trivia questions on his blog. The next month, there were 19 trivia questions on his blog. The month after that, there were 30 trivia questions on his blog.
  - Think about the number of trivia questions on Juan's blog each month. Describe the pattern.
  - Determine how many trivia questions will be on Juan's blog during months 4, 5, and 6.
  - Represent the number of trivia questions on Juan's blog for the first 6 months as a numeric sequence. Then represent the sequence using a table of values.
- Contestants on a popular game show have an opportunity to randomly select a cash prize in 6 hidden containers. The highest possible cash prize is \$25,000. The next highest prize is \$5000, and the one after that is \$1000.
  - Think about how the value of the prize changes from one container to the next. Describe the pattern.
  - Determine the prize values in the remaining containers.
  - Represent the prize values in all six containers as a numeric sequence. Then represent the sequence using a table of values.
- Enter each function into your graphing calculator to determine the shape of its graph. Then complete the table based on the characteristics of the function family.

Function	Function Family	Increasing/ Decreasing	Absolute Maximum/ Minimum	Curve/ Line
$h(x) = 5 \cdot 2^x$				
$g(x) = 30x - 550$				