Lesson 8 Practice Problems

1. A sequence is defined by $f(0) = -20$, $f(n) = f(n-1) - 5$ for $n \geq 1$.

   a. Explain why $f(1) = -20 - 5$.

   b. Explain why $f(3) = -20 - 5 - 5 - 5$.

   c. Complete the expression: $f(10) = -20 -$ _____. Explain your reasoning.

2. A sequence is defined by $f(0) = -4$, $f(n) = f(n-1) - 2$ for $n \geq 1$. Write a definition for the n^{th} term of the sequence.

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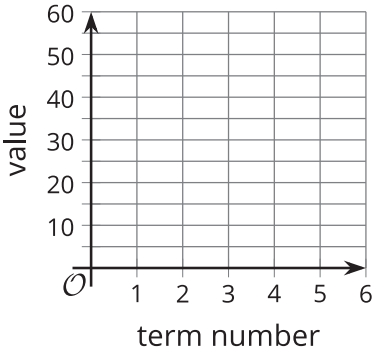
3. Here is the recursive definition of a sequence: $f(1) = 3, f(n) = 2 \cdot f(n-1)$ for $n \geq 2$.

   a. Find the first 5 terms of the sequence.

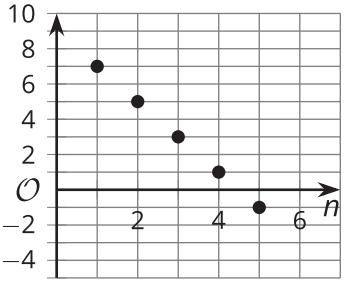
   b. Graph the value of the term as a function of the term number.

   c. Is the sequence arithmetic, geometric, or neither? Explain how you know.



(From Unit 1, Lesson 7.)

4. Here is a graph of sequence M. Define M recursively using function notation.



(From Unit 1, Lesson 6.)

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5. Write the first five terms of each sequence. Determine whether each sequence is arithmetic, geometric, or neither.

   a. $a(1) = 5, a(n) = a(n-1) + 3$ for $n \geq 2$.

   b. $b(1) = 1, b(n) = 3 \cdot b(n-1)$ for $n \geq 2$.

   c. $c(1) = 3, c(n) = -c(n-1) + 1$ for $n \geq 2$.

   d. $d(1) = 5, d(n) = d(n-1) + n$ for $n \geq 2$.

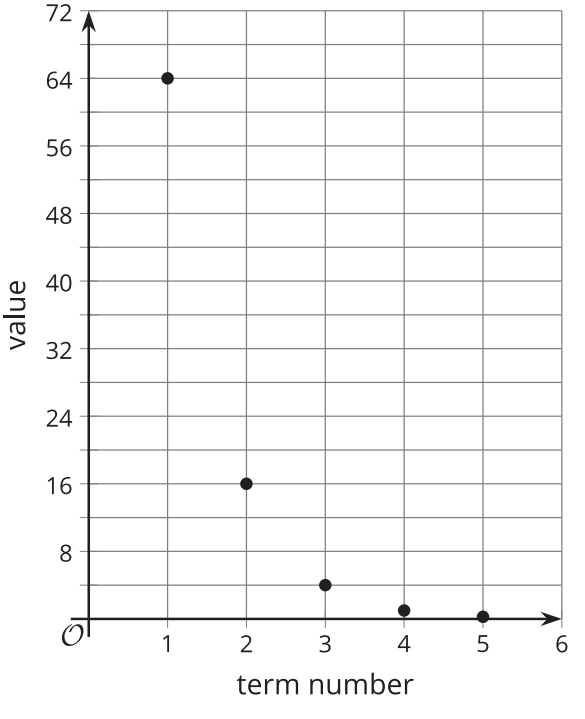
(From Unit 1, Lesson 5.)

6. Here is the graph of a sequence:

   a. Is this sequence arithmetic or geometric? Explain how you know.

   b. List at least the first five terms of the sequence.

   c. Write a recursive definition of the sequence.



(From Unit 1, Lesson 7.)

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