### Lesson 10 Practice Problems

1. A sequence is defined by $f\left(0\right)=3,f\left(n\right)=2⋅f\left(n−1\right)$ for $n\geq 1$. Write a definition for the $n^{th}$ term of $f$.
2. A geometric sequence, $g\left(n\right)$ starts 20, 60, . . . Define $g$ recursively and for the $n^{th}$ term.
3. A geometric sequence $g$ starts at 500 and has a growth factor of 0.6. Sketch a graph of $g$ showing the first 5 terms.
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* (From Unit 1, Lesson 7.)
	1. An arithmetic sequence has $a\left(1\right)=4$ and $a\left(2\right)=16$. Explain or show how to find the value of $a\left(15\right)$
	2. A geometric sequence has $g\left(0\right)=4$ and $g\left(1\right)=16$. Explain or show how to find the value of $g\left(15\right)$.
* (From Unit 1, Lesson 8.)
1. A piece of paper has an area of 96 square inches.
	1. Complete the table with the area of the piece of paper $A\left(n\right)$, in square inches, after it is folded in half $n$ times.
	2. Define $A$ for the $n^{th}$ term.
	3. What is a reasonable domain for the function $A$? Explain how you know.

| * $n$
 | * $A\left(n\right)$
 |
| --- | --- |
| * 0
 | * 96
 |
| * 1
 | *
 |
| * 2
 | *
 |
| * 3
 | *
 |

* (From Unit 1, Lesson 9.)
1. Here is a growing pattern:
* 
	1. Describe how the number of dots increases from Stage 1 to Stage 3.
	2. Write a definition for sequence $D$, so that $D\left(n\right)$ is the number of dots in Stage $n$.
	3. Is $D$ a geometric sequence, an arithmetic sequence, or neither? Explain how you know.
* (From Unit 1, Lesson 9.)
1. A paper clip weighs 0.5 grams and an empty envelope weighs 6.75 grams.
	1. Han adds paper clips one at a time to an empty envelope. Complete the table with the weight of the envelope $w\left(n\right)$, in grams, after $n$ paper clips have been added.
	2. Does $w\left(10.25\right)$ make sense? Explain how you know.

| * $n$
 | * $w\left(n\right)$
 |
| --- | --- |
| * 0
 | * $6.75$
 |
| * 1
 | *
 |
| * 2
 | *
 |
| * 3
 | *
 |

* (From Unit 1, Lesson 9.)



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