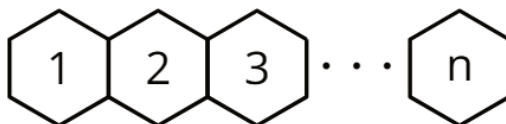


Lesson 9 Practice Problems

1. A party will have hexagonal tables placed together with space for one person on each open side:



- a. Complete this table showing the number of people $P(n)$ who can sit at n tables.

n	1	2	3	4	5
$P(n)$	6				

- b. Describe how the number of people who can sit at the tables changes with each step.
- c. Explain why $P(3.2)$ does not make sense in this scenario.
- d. Define P recursively and for the n^{th} term.

2. Diego is making a stack of pennies. He starts with 5 and then adds them 1 at a time. A penny is 1.52 mm thick.

- a. Complete the table with the height of the stack $h(n)$, in mm, after n pennies have been added.
- b. Does $h(1.52)$ make sense? Explain how you know.

n	$h(n)$
0	7.6
1	
2	
3	

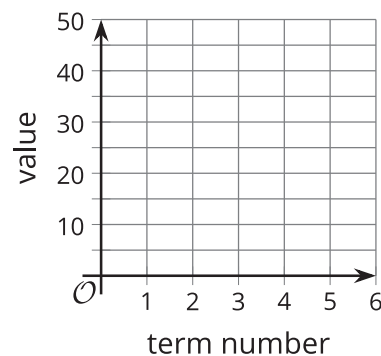
3. A piece of paper has an area of 80 square inches. A person cuts off $\frac{1}{4}$ of the piece of paper. Then a second person cuts off $\frac{1}{4}$ of the remaining paper. A third person cuts off $\frac{1}{4}$ what is left, and so on.

- Complete the table where $A(n)$ is the area, in square inches, of the remaining paper after the n^{th} person cuts off their fraction.
- Define A for the n^{th} term.
- What is a reasonable domain for the function A ? Explain how you know.

n	$A(n)$
0	80
1	
2	
3	

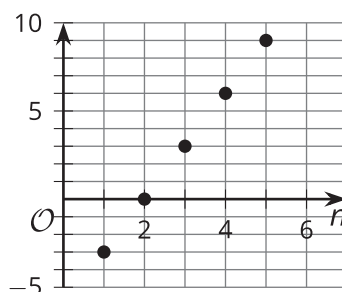
4. Here is the recursive definition of a sequence: $f(1) = 35$, $f(n) = f(n - 1) - 8$ for $n \geq 2$.

- List the first 5 terms of the sequence.
- Graph the value of each term as a function of the term number.



(From Unit 1, Lesson 7.)

5. Here is a graph of sequence q . Define q recursively using function notation.



(From Unit 1, Lesson 6.)

6. Here is a recursive definition for a sequence f : $f(0) = 19$, $f(n) = f(n - 1) - 6$ for $n \geq 1$. The definition for the n^{th} term is $f(n) = 19 - 6 \cdot n$ for $n \geq 0$.

a. Explain how you know that these definitions represent the same sequence.

b. Select a definition to calculate $f(20)$, and explain why you chose it.

(From Unit 1, Lesson 8.)

7. An arithmetic sequence j starts 20, 16, . . . Explain how you would calculate the value of the 500th term.

(From Unit 1, Lesson 8.)