## Unit 1 Lesson 5: Sequences are Functions

### 1 Bowling for Triangles (Part 1) (Warm up)

#### Student Task Statement

Describe how to produce one step of the pattern from the previous step.



### 2 Bowling for Triangles (Part 2)

#### Student Task Statement

Here is a visual pattern of dots. The number of dots $D\left(n\right)$ is a function of the step number $n$.



1. What values make sense for $n$ in this situation? What values don't make sense for $n$?
2. Complete the table for Steps 1 to 5.

| * $n$
 | * $D\left(n\right)$
 |
| --- | --- |
| * 1
 | * 1
 |
| * 2
 | * $D\left(1\right)+2=3$
 |
| * 3
 | * $D\left(2\right)+3=6$
 |
| * 4
 | *
 |
| * 5
 | *
 |

1. Following the pattern in the table, write an equation for $D\left(n\right)$ in terms of the previous step. Be prepared to explain your reasoning.

### 3 Let's Define Some Sequences

#### Student Task Statement

Use the first 5 terms of each sequence to state if the sequence is arithmetic, geometric, or neither. Next, define the sequence recursively using function notation.

1. $A$: 30, 40, 50, 60, 70, . . .
2. $B$: 80, 40, 20, 10, 5, 2.5, . . .
3. $C$: 1, 2, 4, 8, 16, 32, . . .
4. $D$: $1,\frac{1}{2},\frac{1}{4},\frac{1}{8},\frac{1}{16},$ . . .
5. $E$: 20, 13, 6, -1, -8, . . .
6. $F$: 1, 3, 7, 15, 31, . . .



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