# Unit 1 Lesson 5: Sequences are Functions

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

**Student Task Statement**

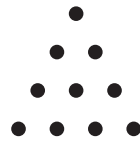Describe how to produce one step of the pattern from the previous step.
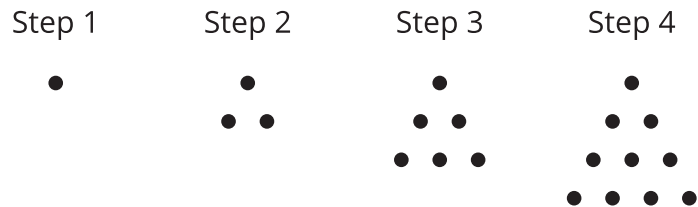
Step 1        Step 2        Step 3        Step 4

## 2 Bowling for Triangles (Part 2)

### Student Task Statement

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

| Step 1 | Step 2 | Step 3 | Step 4 |

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.

| $n$ | $D(n)$ |
|---|---|
| 1 | 1 |
| 2 | $D(1) + 2 = 3$ |
| 3 | $D(2) + 3 = 6$ |
| 4 | |
| 5 | |

3. Following the pattern in the table, write an equation for $D(n)$ 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, . . .