

Name:

Date:

U2, D1 – FUNCTIONS AND TABLES

Algebra 1

Aim: Given a figure or table, SWBAT define a functional relationship and use it to predict values.

Think About It: Emari was waiting for his friend at a café, got bored, and started to make patterns out of toothpicks while he waited. Explain what is happening below and use any method to determine how many toothpicks would be in Pattern 10. Explain how you determined the answer.



Pattern 1
4 toothpicks



Pattern 2
7 toothpicks



Pattern 3
10 toothpicks

CFS

- o Variables are identified as inputs and outputs
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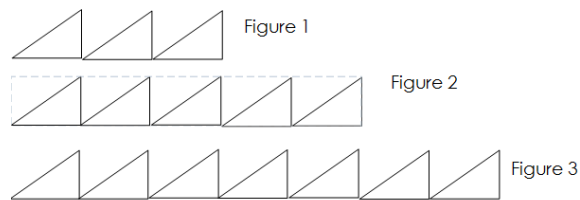
Big Idea:

Interaction with New Material:

Ex. 1) Use the table to determine the total area of 10 squares.

# Squares	Total Area
2	100
4	200
6	300

Ex. 2) Determine the number of triangles in the 27th figure.



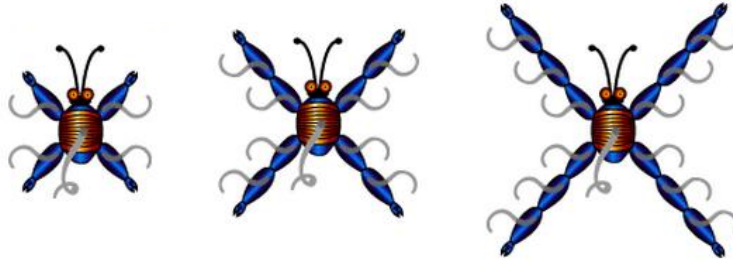
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Partner Practice:

(Low Difficulty)

1. Zorkian Ziders grow a single hair from each body segment (legs and torso), including the body. Assume the Ziders continue to grow in the same pattern.



- a. Create a table that shows the number of hairs on the first 8 Ziders.

- b. Write an equation showing the relationship between the pattern number, p , and the number of hairs, h , and use it to determine the number of hairs on Zider #50.

2. Given the pattern below, create a table for the first 8 figures and use it to create an equation to predict the number of dots on the 100th figure.

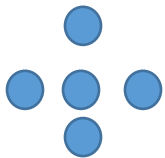


Figure 1

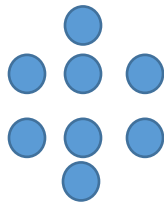


Figure 2

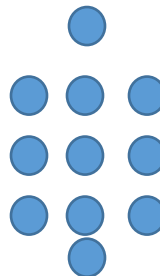


Figure 3

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(Medium Difficulty)

3. Consider the pattern in the set of figures shown here. How many squares will there be in the 13th figure? Explain your reasoning.

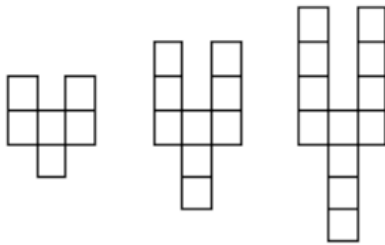


Figure 1

Figure 2

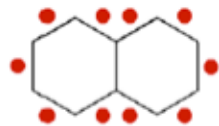
Figure 3

4. Erlinda and Chris are on the dance committee and are in charge of setting up tables and chairs. Erlinda just found out the hall where the tables will be located is long and narrow. There is not enough room to spread the tables out. Chris suggests pushing the tables together in a row. He makes diagrams showing arrangements of tables and chairs. Write an equation that relates the number of people that can be seated, p , in terms of the total number of tables used, n .

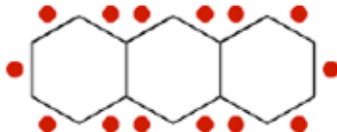
1 hexagonal table



2 hexagonal tables pushed together



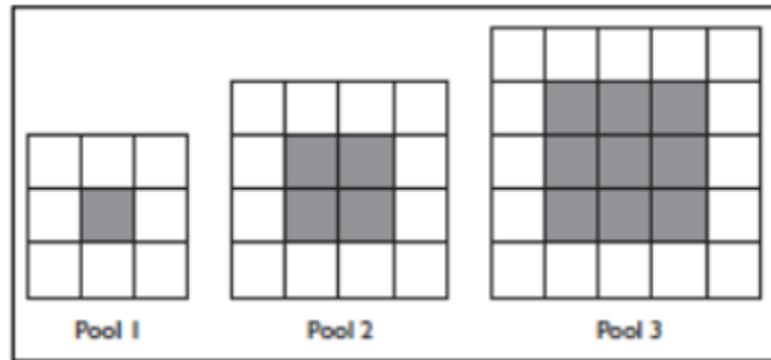
3 hexagonal tables pushed together



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5. You are designing a square swimming pool. Each pool has a square center that is the area of the water. You use blue tiles to represent the water. Around each pool there is a border of white tiles. Below are pictures of the three smallest pools that you can design with the blue tiles for the interior and white for the border.



- a. Suppose you want to create a pool with a side length of 12 white tiles. How many total white tiles will you need?
- b. How many blue pool tiles would you need for a pool with side length of 20 white tiles?
- c. What was different about your approach to part a and b? Explain.

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(Hard Difficulty)

6. A party rental company has three different shapes of tables; triangular, trapezoidal and octagonal. Triangular tables cost \$6 per table, trapezoidal tables cost \$9 per table, and octagonal tables cost \$15 per table to rent. If you want to throw a party with 100 people using the configurations of each table shown below, which table is going to be the most cost effective?

Triangular tables:



Trapezoidal tables:



Octagonal tables:



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U2, D1 EXIT TICKET

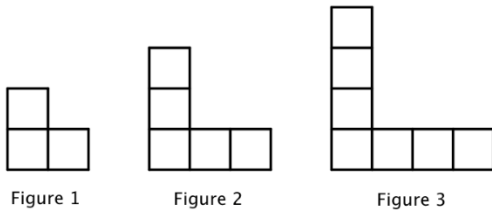
Algebra 1

Aim: Given a figure or table, SWBAT define a functional relationship and use it to predict values

Self-Assessment	I mastered the learning objective today.	I am almost there.	Need more practice and feedback.
Teacher Feedback	You mastered the learning objective today.	You are almost there.	You need more practice and feedback.

Examine the tile pattern below.

- a. Sketch Figures 4 and 5.



- b. How does the pattern grow? Explain your thinking.

- c. How many tiles will there be in Figure 0 (the figure before Figure 1)? Explain how you know.

- d. Make a table showing the number of tiles for Figure 0 through Figure 9.

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