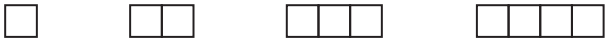
Name _____ Date _____ Class _____

Additional Practice

Investigation 1

Thinking With Mathematical Models

1. Toothpicks were used to make the pattern below.



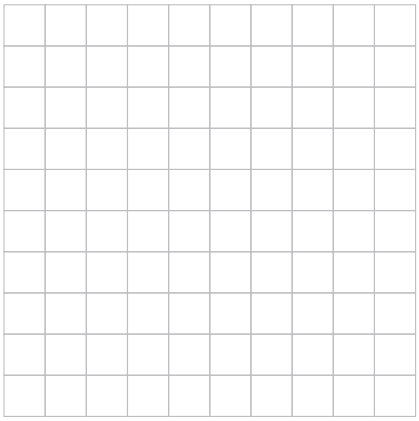
a. How many toothpicks will be in the 5th figure? In the 6th figure?

b. Write an equation for the number of toothpicks t needed to make the nth figure.

c. Identify and describe the figure in this pattern that can be made with exactly 100 toothpicks.

d. Describe the pattern in words.

e. Make a graph of the data.



f. Is the pattern linear or not linear? Explain.

2. Toothpicks were used to make the pattern below.

a. How many toothpicks will be in the 5th figure? In the 6th figure?

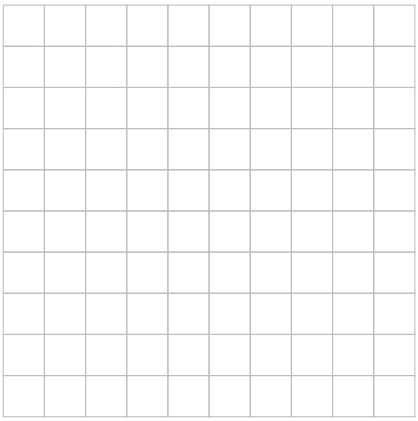
b. Write an equation for the number of toothpicks t needed to make the nth figure.

Additional Practice *(continued)*

c. Identify and describe the figure in this pattern that can be made with exactly 61 toothpicks.

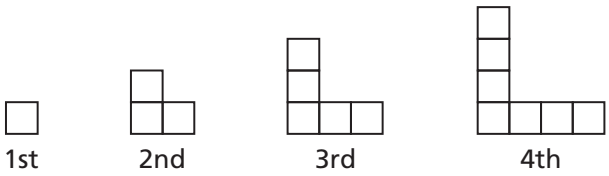
d. Describe the pattern in words.

e. Make a graph of the data.



f. Is the pattern linear or not linear? Explain.

3. Square tiles were used to make the pattern below.



a. How many tiles will be in the 5th figure? In the 6th figure?

b. Write an equation for the number of tiles t needed to make the nth figure.

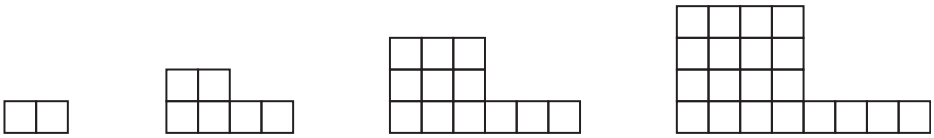
c. Identify and describe the figure in this pattern that can be made with exactly 25 tiles.

d. Describe the pattern in words.

e. Make a graph of the data.

f. Is the pattern linear or not linear? Explain.

4. Square tiles were used to make the pattern below.



a. How many tiles will be in the 5th figure? In the 6th figure?

b. Write an equation for the number of tiles t needed to make the nth figure.

c. Identify and describe the figure in this pattern that can be made with exactly 420 tiles.

d. Describe the pattern in words.

e. Make a graph of the data.

f. Is the pattern linear or not linear? Explain.

Additional Practice *(continued)*

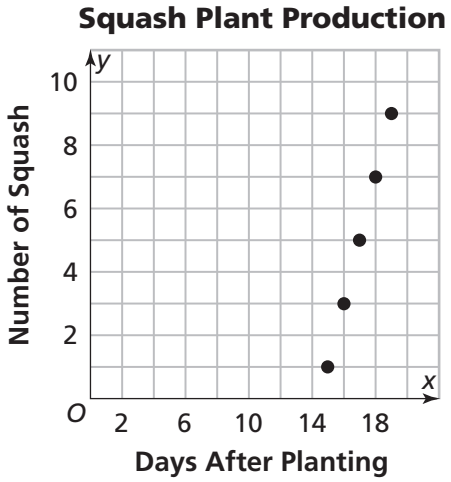
5. a. A group of students used construction paper for their bridges. The table below shows their results. Make a graph of the data. Describe the relationship between breaking weight and thickness (number of layers).

Bridge-Thickness Data

Thickness (layers)	1	2	3	4	5	6
Breaking Weight (pennies)	24	38	50	67	78	93

b. Predict the breaking weight of a bridge made from 14 layers of construction paper.

6. a. Complete the table using the graph:



Day	15	16	17	18	19
Total Number of Squash					

b. If the pattern continues, what is the total number of squash that would be produced by day 22? By day 26?

Additional Practice *(continued)*

c. Describe the pattern in words. What can you say about the number of squash produced each day?

d. Describe the pattern with an equation. What does the coefficient of x mean in this situation?

7. Betty went to the store to buy pepper. There were three different jars on the shelf:

1 ounce jar costs $0.65, 4 ounce jar costs $1.40, 8 ounce jar costs $2.40

a. Make a table and draw a graph for these data.

b. Predict the cost of 2 ounces, 3 ounces, and 6 ounces.

c. Describe the pattern in words. What can you say about the cost of a jar? What can you say about the cost of an ounce of pepper alone?

d. Describe the pattern with an equation. What information do the variables and numbers represent?