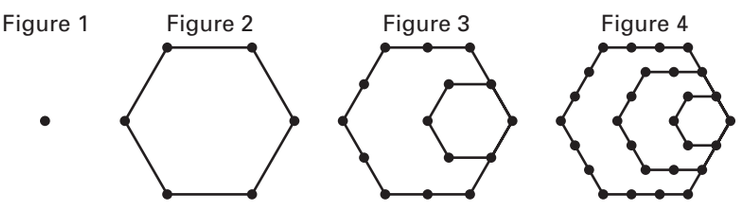
Name _____ Date _____

Objective 10
TEKS 8.16.A Review

8.16.A Make conjectures from patterns or sets of examples and nonexamples.

Number Pattern	Geometric Patterns	Patterns in Graphs
Patterns may involve addition, subtraction, multiplication, division, squares, or percents.	Figures may be related by increasing or decreasing numbers of lines or dots, by the types of figures, or by transformations.	The graphs of linear functions may be related by patterns in the slope or in the *y*-intercept.

EXAMPLE The pattern below represents hexagonal numbers. How many dots will be in the fifth figure?



The number pattern of dots is 1, 6, 15, and 28. The pattern increases by adding 5 dots, then 9, then 13 to the previous number. The common difference between 1, 5, 9, and 13 is 4. If you add 4 to 13, you will get the next number, 17, to add to 28. Since $28 + 17 = 45$, the next figure will have 45 dots.

Check Draw a figure to check the number of dots.

YOU DO IT The table shows the growth of a town in Idaho. If the town continues to grow according to the pattern in the table, what will be the population in 2010?

Year	1970	1980	1990	2000
Population	2000	3600	6120	9792

The population increased by **1600**, then **2520**, then **3672**.

To find the percent of increase for 1980, divide 1600 by 2000. For 1990, divide **2520** by **3600**. For 2000, divide **3672** by **6120**.

Percent increase in population: 1980: **80%**; 1990: **70%**; 2000: **60%**.

According to the pattern, the population will increase by **50%** in 2010.

The population of the town will be **14,688** in 2010.