

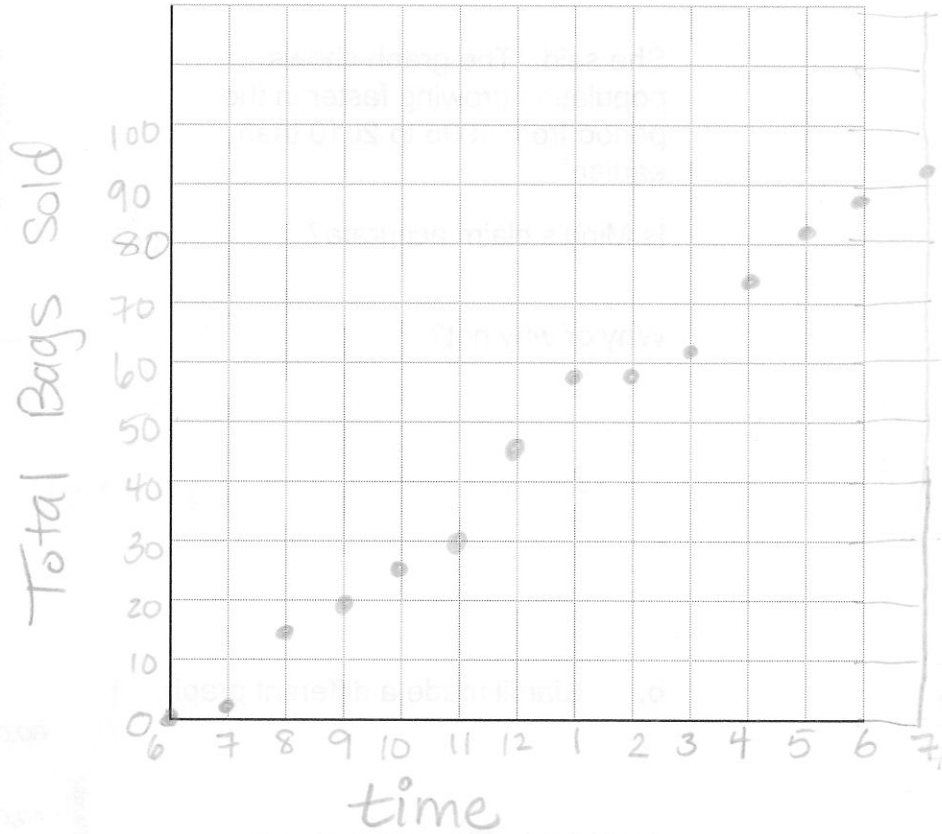
ACE Problems

Name Mrs. Pyne answers
 Date _____ Hour _____

1. A convenience store has been keeping track of its popcorn sales. The table below shows the total number of bags sold beginning at 6:00 A.M. on a particular day.

Popcorn Sales

Time	Total Bags Sold
6:00 A.M.	0
7:00 A.M.	3
8:00 A.M.	15
9:00 A.M.	20
10:00 A.M.	26
11:00 A.M.	30
noon	45
1:00 P.M.	58
2:00 P.M.	58
3:00 P.M.	62
4:00 P.M.	74
5:00 P.M.	83
6:00 P.M.	88
7:00 P.M.	92



- a. Make a coordinate graph of these data.
 Explain your choice of labels and scales on each axis.
Time is on the x-axis, because it is the independent variable. The number of bags sold (y) depends on time.
- b. Describe the pattern of change in the number of bags of popcorn sold during the day.
The number of bags sold increases throughout the day, but varies depending on the hour.
- c. During which hour did the store sell the most popcorn? 11 to noon
 During which hour did it sell the least popcorn? 1 to 2

2. When Ming and Jamil studied growth in the population of their city, they found these data:

Population of Okemos

Year	1970	1980	1990	1995	2000	2005	2010
Population (1000's)	20	25	30	35	40	45	50

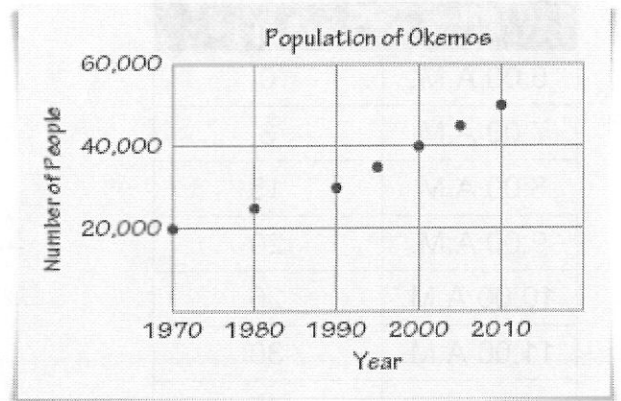
- a. Ming made this graph:

She said, "The graph shows population growing faster in the period from 1995 to 2010 than earlier."

Is Ming's claim accurate?

Why or why not?

Yes, the graph is steeper between those years, than the previous years.



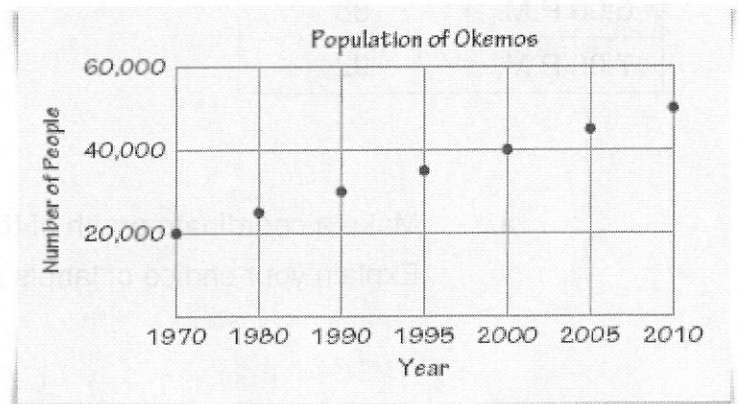
- b. Jamil made a different graph.

Jamil said, "The graph shows population growing at a steady rate."

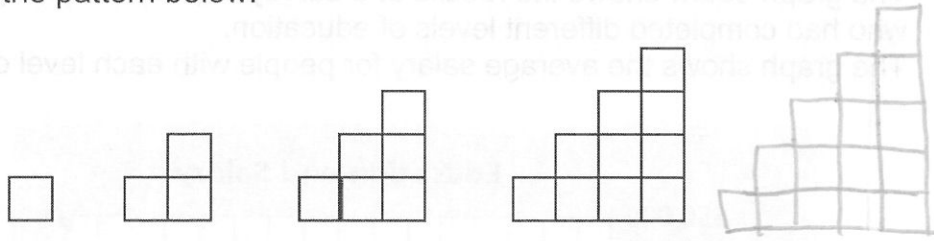
Is his claim accurate?

Why or why not?

No, Jamil's x-axis scale does not increase by the same amount - it switches from intervals of 10's to 5's.



14. Consider the pattern below.



a. Draw the next shape in the geometric pattern.

b. Make a table of (number of squares in bottom row, total number of squares) data for the first ten shapes in the pattern.

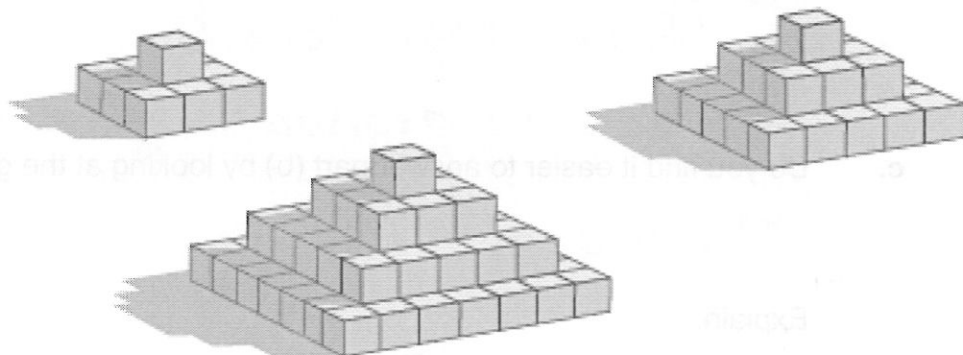
Number of squares in bottom row	1	2	3	4	5	6	7	8	9	10
Total number of squares	1	3	6	10	15	21	28	36	45	55

c. Describe the pattern of increase in total number of squares as the length of the bottom row increases.

Each time, you add the number of squares in the bottom row to the previous

15. Make a table to show how the total number of cubes in these pyramids changes as the width of the base changes from 3 to 5 to 7.

Then use the pattern in those numbers to predict the number of cubes for pyramids with base width of 9, 11, 13, and 15.

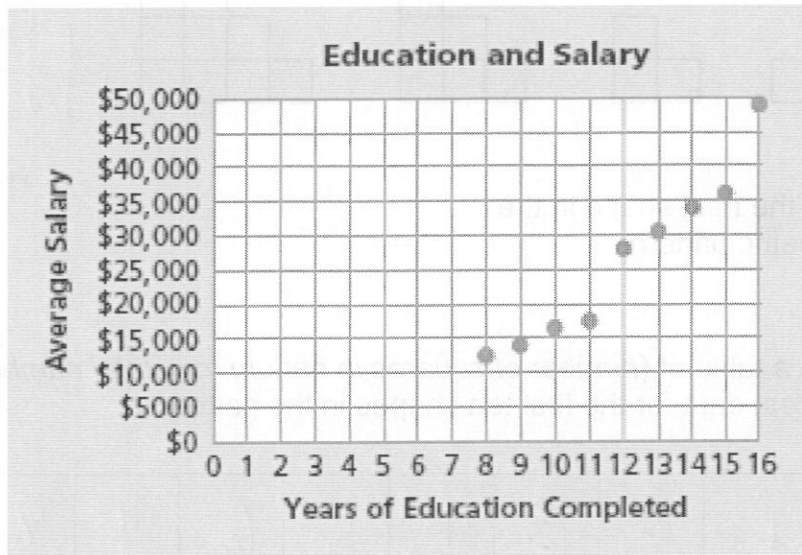


Width of Base	3	5	7	9	11	13	15
Total number of cubes	10	35	84	165	286	455	670

$$\begin{array}{r}
 35 \\
 +49 \\
 \hline
 84
 \end{array}
 \qquad
 \begin{array}{r}
 84 \\
 +81 \\
 \hline
 165
 \end{array}
 \qquad
 \begin{array}{r}
 165 \\
 +121 \\
 \hline
 286
 \end{array}
 \qquad
 \begin{array}{r}
 286 \\
 +169 \\
 \hline
 455
 \end{array}$$

$$\begin{array}{r}
 455 \\
 +215 \\
 \hline
 670
 \end{array}$$

20. The graph below shows the results of a survey of people over age 25 who had completed different levels of education. The graph shows the average salary for people with each level of education.



- a. Make a table that shows the information in the graph.

Years of Education	8	9	10	11	12	13	14	15	16
Average Salary	12.5	14	16	17.5	28	30	34	36	49

(Thousands)

- b. After how many years of education do salaries take a big jump? 15 → 16
 Why do you think this happens? OR
 12 years of school is graduating 11 → 12 from high school
 16 years is graduating from college.
- c. Do you find it easier to answer part (b) by looking at the graph or at your table?

The graph.

Explain.

The graph clearly shows a "jump", while to figure out part (b) with the table, you need to do some math (0)!