

# Graphing

Name: \_\_\_\_\_

Date: \_\_\_\_\_

## Information: Types of Graphs

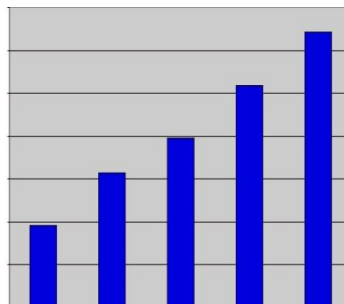
### Pie Graphs

What portion of the total does each part make up?



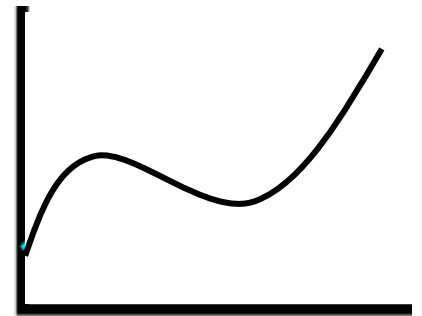
### Bar Graphs

How different are these variables to each other?



### Line Graphs

How does this variable change over time?

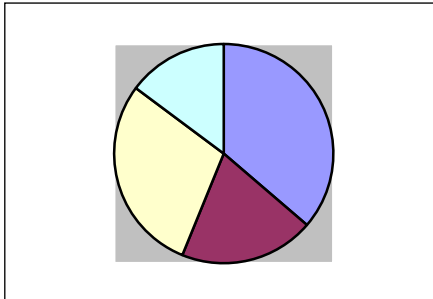


## Critical Thinking Questions

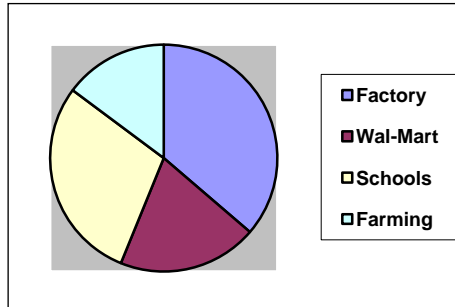
- Over half (53%) of all tablet computers sold are made by Apple, inc. Almost one fourth (23%) are made by Amazon. Google (13%) and Samsung (11%) tablets combine for the other fourth. Of the three types of graphs, which type of graph do you think would be the most helpful at communicating this information?
- Last month, Apple sold 4 million iPhones. Motorola sold 2 million Droids. HTC sold 3 million Evo phones. Which type of graph would be most helpful in presenting this information?
- In January, Apple sold 2.4 million iPhones. In March, Apple sold 1.2 million iPhones. May sales were extra strong with 18.2 million iPhones being sold. In July, the company sold 14.4 million. Apple sold 3.1 million iPhones in September and 2.2 million in November. Which type of graph would be most helpful in presenting this information?

4. Consider the following graphs. Which is the most meaningful?

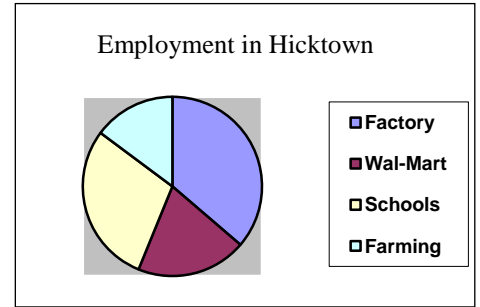
Graph A



Graph B



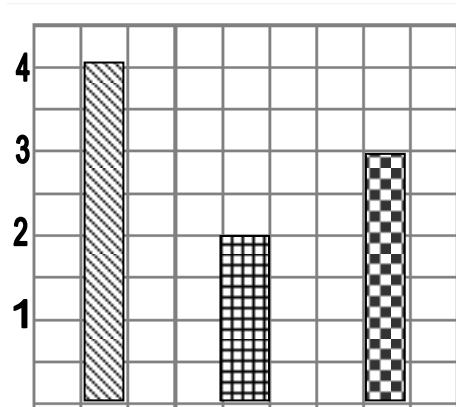
Graph C



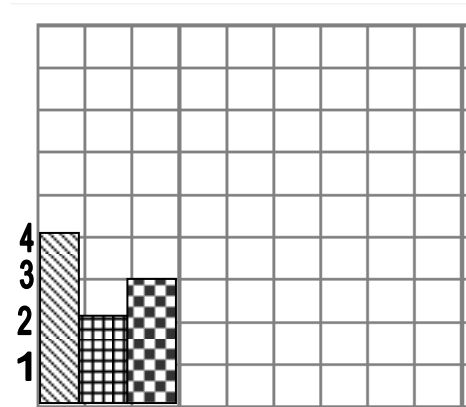
5. The answer to the previous question was probably obvious. When evaluating a good graph, what are things you look for?

6. Below are two graphs using the data from question 2.

Graph A



Graph B



- Which of the graphs do you find to be the most helpful and easy to read? Why?
- The y-axis (vertical) contains the numbers 1-4 but it does not have labeled units. If you were making the graph, which of the following labels would you use? (Add your labeled units to the graph you chose in part a.)
  - number of phones sold
  - number of phones made
  - dozens of phones sold
  - millions of phones sold
- The x-axis isn't labeled at all. Add labels to the x-axis of the graph you chose in part a.
- Write a title for the graph. Your title should be a short phrase that describes what the graph is trying to tell someone.

## Information: Drawing Good Graphs

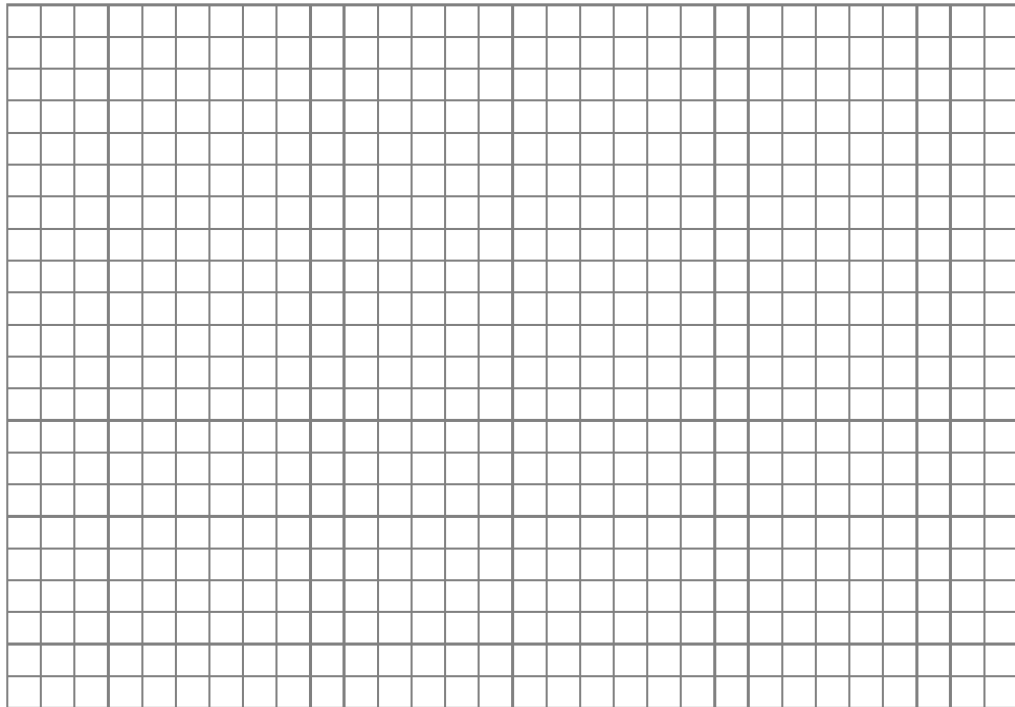
In questions 5 and 6 we definitely see important characteristics of good graphs. The next several questions will focus on line graphs. A line graph often has time on the x-axis. (The x-axis is horizontal. The y-axis is vertical, up and down.)

### The “Good Graph Checklist”:

- ✓ Descriptive titles!
- ✓ Labels!
- ✓ Graph takes up most of the graph paper!

## Critical Thinking Questions

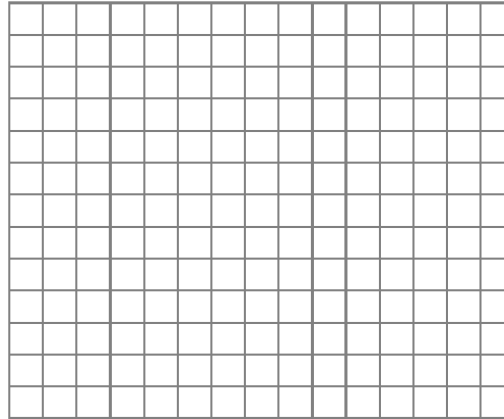
7. Consider the data given in question 3. Also consider your answer. Hopefully you chose a line graph as the best type of graph for the data. A line graph is the best choice when you want to represent what happens over a period of time. In this case, we are trying to represent how the sales of iPhones changes over time. Use the data in question 3 to draw your own line graph below. Be sure to label the x and the y axis and title your graph.



8. From your graph, estimate the number of iPhones sold in August.
9. Usually when Apple starts selling a new iPhone many more people purchase them. At the beginning of one of the months, Apple started selling a brand new version of the iPhone—which month do you think it was?

10. An air traffic controller was using radar to observe an airplane that was traveling to her airport. When the airplane first appeared on the radar screen it was 900 miles away. She wrote down the following data. User her data to create a line graph. As usual, time is on the horizontal x-axis. Don't forget to include titles and labels!

Time (minutes)	Distance From Airport (miles)
0	900
10	800
40	500
50	400



11. Analyze the graph you drew in the previous question to answer the following...

- a) First, choose two points on the line. Each point has an x-value and a y-value. The first one is done for you:

$$X_1 = 40 \quad Y_1 = 500 \quad X_2 = \underline{\hspace{2cm}} \quad Y_2 = \underline{\hspace{2cm}}$$

(Pick one of the time values)      (Write down the distance value that goes with the time value of X2)

- b) Use the values from part (a) to show that the **slope** of the line equals -10.

$$\text{slope} = \frac{\Delta y}{\Delta x} = \frac{Y_2 - Y_1}{X_2 - X_1} = \underline{\hspace{4cm}}$$

- c) The value of y where the line crosses the y axis is called the **y-intercept**. The y-intercept always occurs where x equals zero. What is the y-intercept of this graph?

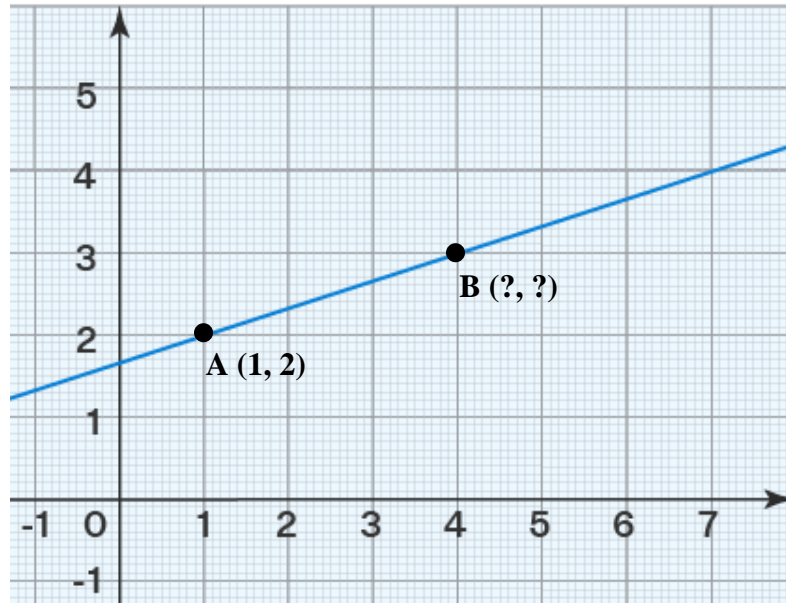
- d) The slope is given the symbol “m” and the y-intercept is given the symbol “b.” The equation for this line uses both the slope (m) and the y-intercept (b):

$$y = mx + b \quad \text{for this graph: } y = -10x + 900$$

Use the equation to prove that when  $x = 30$  then  $y = 600$ .

- e) Use the equation of the line from part (d), to find the value of y when x equals 70?

12. In the graph below two points on the line are labeled A and B.



a) The coordinates for points A and B are given in an (x, y) format. The 1<sup>st</sup> number is the x coordinate and the 2<sup>nd</sup> number is the y coordinate. Point A is located at x=1 and y=2. Give the x and y coordinates for point B.

b) Use the slope equation to find the slope of the line.

$$\text{slope} = \frac{\Delta y}{\Delta x} = \frac{Y_2 - Y_1}{X_2 - X_1} =$$

c) Estimate the y-intercept from the above graph. Write it here: \_\_\_\_\_

d) Use the slope and y-intercept to write the equation of the line in  $y=mx+b$  format.