Sections 9.1 & 9.2

Objectives for Graphical Representations – Students will:

- create stem and leaf plots, box and whisker plots
- interpret histograms, bar graphs, line graphs, pie charts, pictograph
- identify ways graphs can be misleading
- describe and compute the median, mean, mode, and midrange
- compute and interpret the standard deviation

Quote for the day:

"Too often we give children answers to remember rather than problems to solve"
-Roger Lewin

Create a stem and leaf plot of Test 3 scores. Given 55, 72, 90, 88, 91, 65, 90, 75, 71, 90, 80, 86, 74, 36, 84, 90, 63

Another type of graph that would be appropriate to represent this data is

_____ because the data is _____

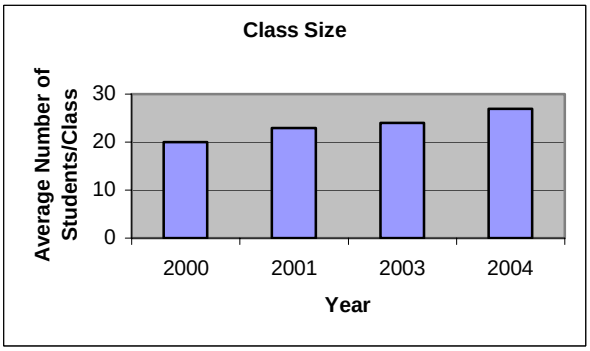
Draw a pie graph/circle graph of the following of MSUM recycling

Plastics	3000 lbs
Paper	9700 lbs
Aluminum	1100 lbs

Misleading Graphs

Scaling – In the first bar graph the years are in _____ order graph they are in _____ order?

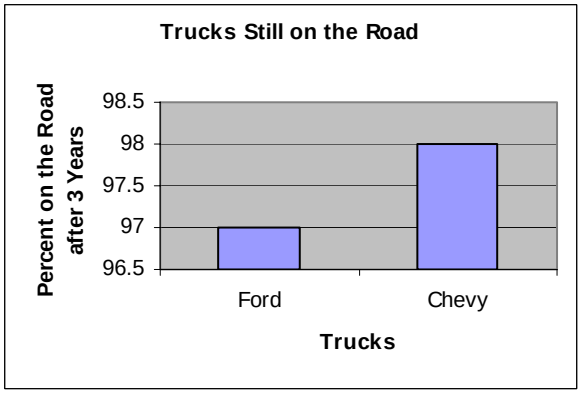
1.



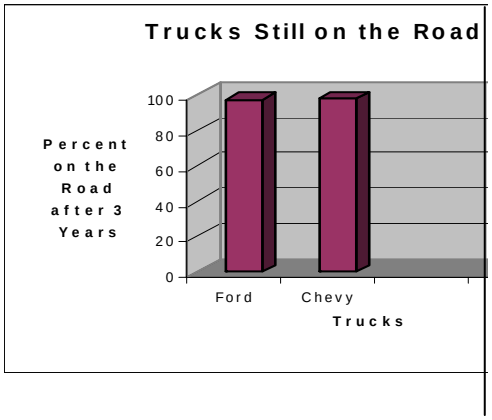
2.

_____ refers to the choice of the window that the graph uses to view the data. (The vertical axis does not start at 0 – See Graph 3.)

3.



4.



Three-Dimensional Effects can _____ (See Graph 4)

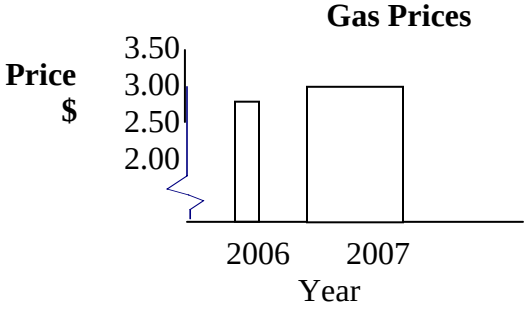
What is different and what is the same with these two graphs?_____

_____

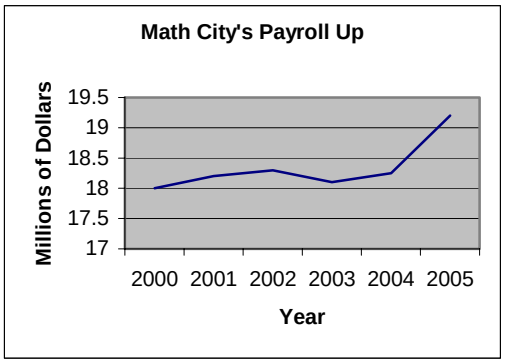
_____

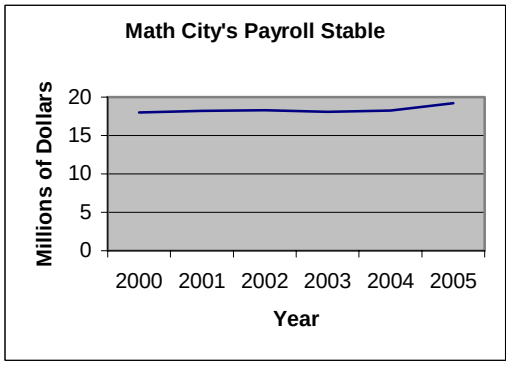
5. What is misleading about the graph below:_____

_____



6. Use the graphs below for parts a and b.





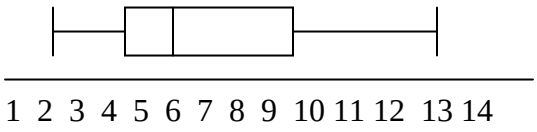
a. Is Math City's payroll down, stable, or up? Explain.

b. Which graph is the better representation? Explain.

Measures of <u>variability</u> reveal the spread of the data. Two common measures are range and standard deviation.

The Range is _____

Given the box plot find the following:



a) Range _____

b) Interquartile range (IQR) _____

Standard deviation is the average difference a data value is away from the mean. It is a good way to describe the variability of the data.

Standard Deviation represented by the symbol s can be calculated using 5 steps.

Step 1: Calculate the mean
Step 2: Find the deviation from the mean
Step 3: Square the deviation from the mean (makes everything positive)
Step 4: Find the average of the square deviations (Variance)
Step 5: Square root this value to counteract what you did when you squared in step 2.

Example 9 Find the standard deviation of five hourly pay values:
{\$6, \$6.5, \$7, \$7, \$7.5}

Data Value x	**Step 2**: Deviation from Mean $(x-\bar{x})$	**Step 3:** Square deviation $(x-\bar{x})^2$

Step 1: Find the mean

Step 4.
Find the average of the square deviations (called the **variance)**

$$v = \frac{\sum (x-\bar{x})^2}{n}$$

Step 5: The standard deviation is the square root the variance.

$$s = \sqrt{v}$$

Find the standard deviation for the given set of data. (These are tip amounts earned in a shift)

{20, 22, 26, 26, 28, 34}

List the steps

Step 1:

Step 2:

Step 3:

Step 4:

Step 5

Explain what the standard deviation represents.

Explain how to find the following measures of central tendency:

Mean

Mode

Median

Midrange

Make up a data set that would have a different value for each central tendency measure, & find each.