

10.3 Displaying Data (part 2)

Types of Graphs:

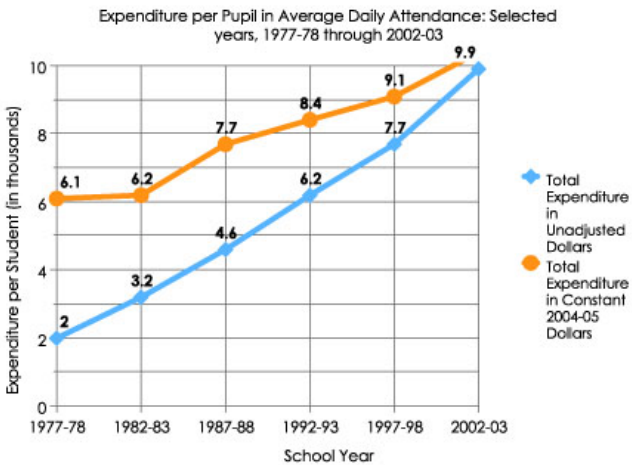
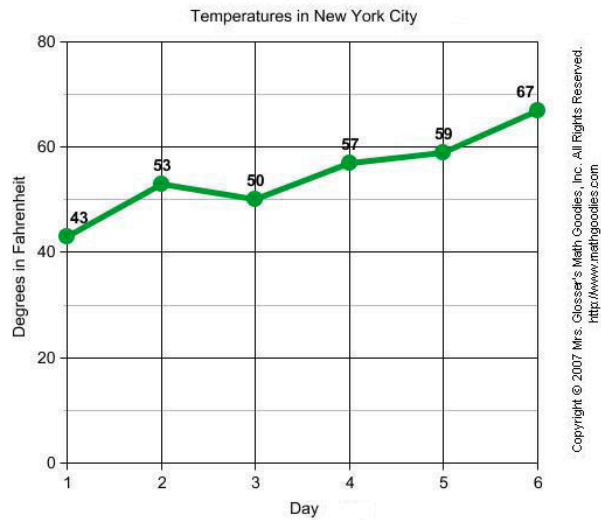
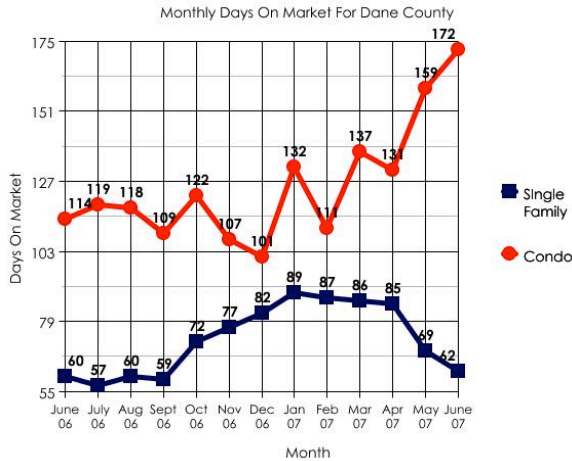
1. Pictographs
2. Line Plots
3. Stem and Leaf Plots
4. Histograms
5. Bar Graphs
6. Circle Graphs (a.k.a. Pie Charts)
7. Line Graphs
8. Scatter Plots

(Note: The first six in this list were covered in section 10.2.)

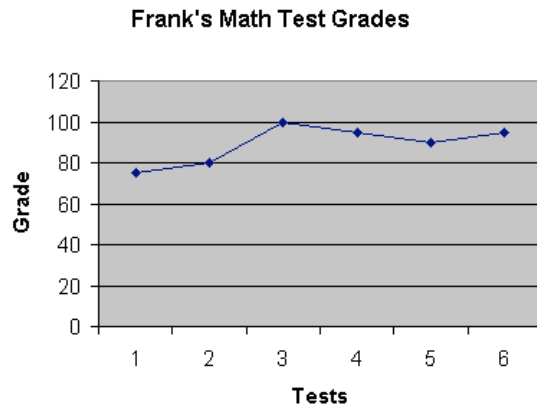
Ideas about when to use certain graphs:

- Bar Graph (or pictograph or line plot)--use to compare numbers of data items in grouped categories; for discrete data; order of categories on horizontal axis doesn't matter (vertical axis is then the frequency) (Note: for a line plot, every data value is represented as a point/dot/circle/x.)
- Histogram--use to compare numbers of data items grouped in numerical intervals; for continuous data; order of intervals on horizontal axis matters (vertical axis is then the frequency)
- Stem and Leaf Plot--use to show each and every data value and to group data into intervals visually
- Scatterplot--use to show relationship between two different variables (frequency of data is not on one axis here)
- Line Graph--use to show how data values change over time; usually used for continuous data (connect the dots)
- Circle Graph (a.k.a. Pie Chart)--use to show the division of the whole into its parts

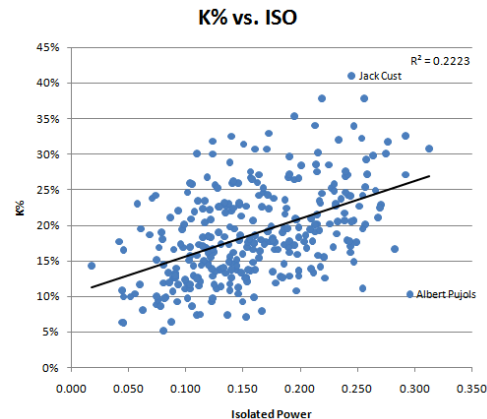
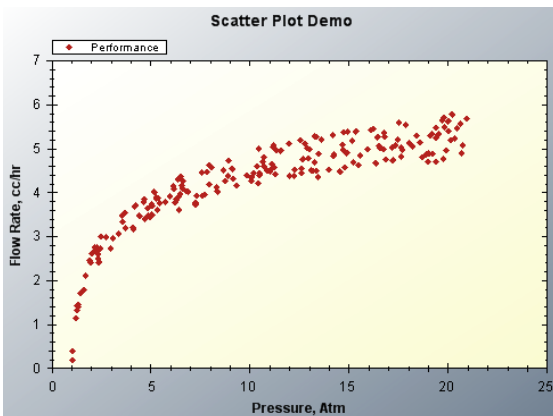
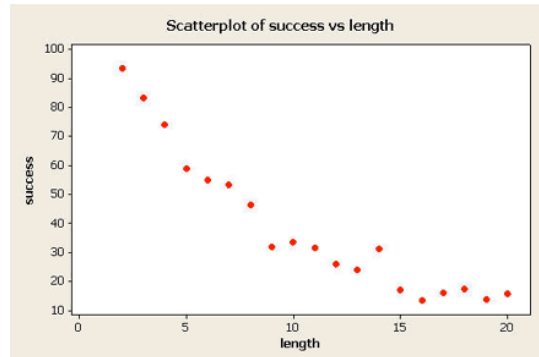
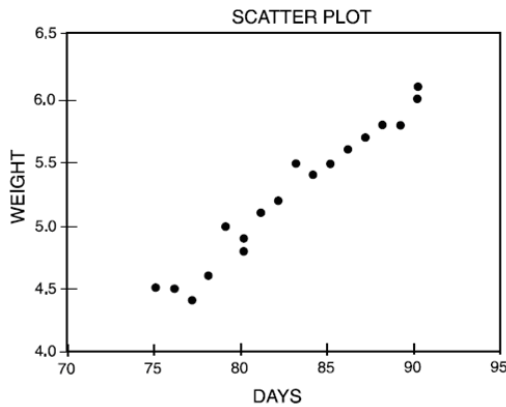
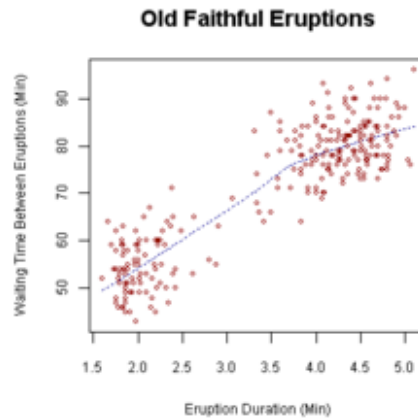
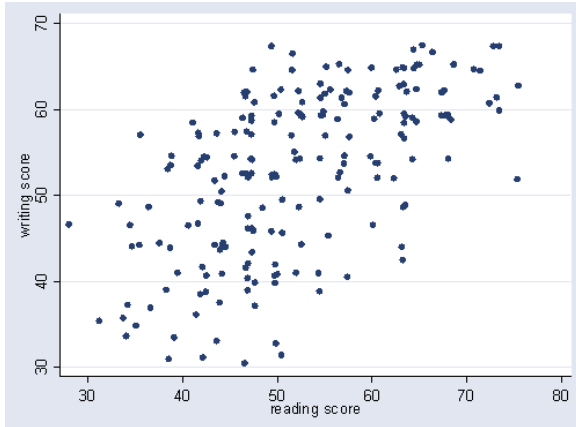
7. **Line Graphs**--plots over a period of time; connect the dots; can use a line graph or bar graph for similar types of data.



The NCES Common Core of Data (CCD) 2004-2005



8. **Scatter Plot**--pairs of numbers plotted as 2-d points to see if there is a relationship between the two variables being represented; may try to find a "best fit" line or curve through the data.



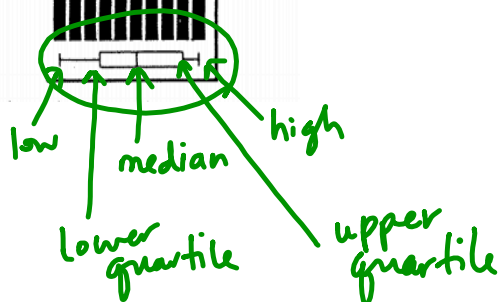
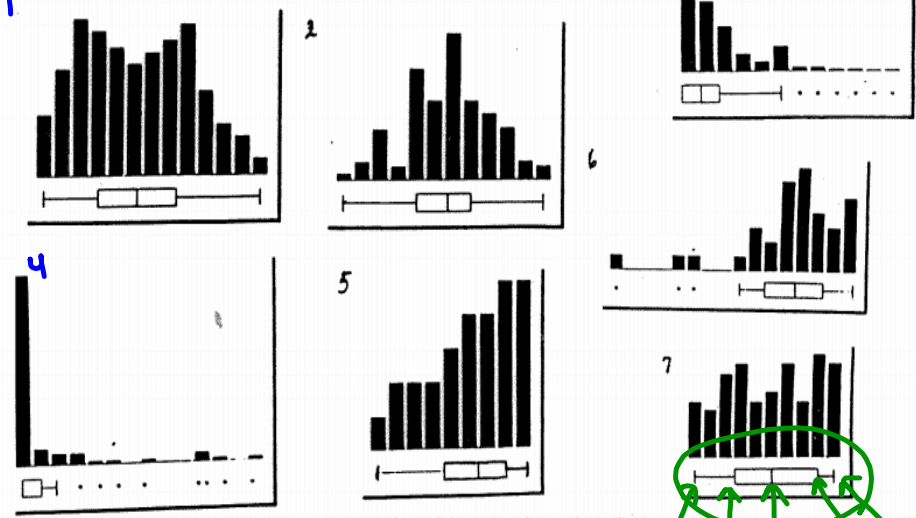
Matching graphs to variables.

1. Match these variables to their graphs.

Consider the following list of variables and graphs:

- a. age at death of a sample of 34 people 5
- b. The last digit in the social security number of 40 students. 7
- c. scores on a fairly easy examination in statistics 6
- d. number of months after going off the pill it took to get pregnant 2 or 3
- e. heights of a group of college students 1 or 2
- f. number of medals won by medal-winning countries in the 1992 Winter Olympics 3
- g. SAT scores for a group of college students 5

Use your knowledge of the variables to match the variables with the graphs.



Use the scattergrams A-F to answer all of the questions on this page.

Match the following to the scattergram which best fits the description.

B 5. Perfect positive correlation ($r=1$)

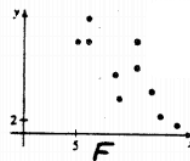
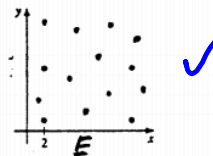
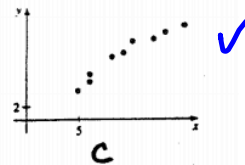
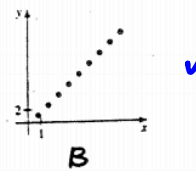
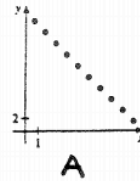
C 6. Strong positive correlation ($r = .91$)

D 7. Weak positive correlation ($r = .3$)

E 8. No correlation ($r = 0$)

F 9. Strong negative correlation ($r = -.85$)

A 10. Perfect negative correlation ($r = -1$)



Match the following variables to a suitable scattergram.

C 11. $x =$ infant age in days, $y =$ length in inches

F 12. $x =$ years smoked, $y =$ years you will live

E 13. $x =$ height in cm, $y =$ GPA

B 14. $x =$ weight in pounds, $y =$ weight in kilograms

10.3A
#9) (a) thru
 $(-2, -1)$ $(2, \frac{1}{2})$
 x_1, y_1 x_2, y_2

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{\frac{1}{2} - (-1)}{2 - (-2)}$$

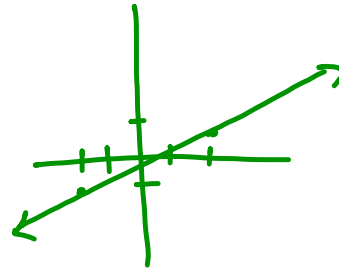
$$= \frac{\frac{3}{2}}{4} = \frac{3}{8}$$

$$y - y_1 = m(x - x_1)$$

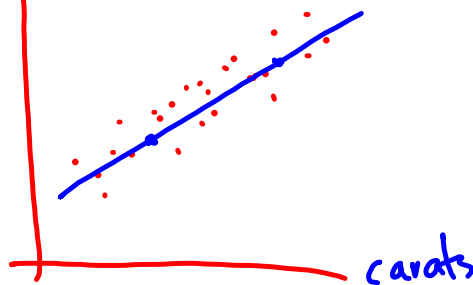
$$y - (-1) = \frac{3}{8}(x - (-2))$$

$$y + 1 = \frac{3}{8}x + \frac{3}{4}$$

$$y = \frac{3}{8}x - \frac{1}{4}$$



10.3A#10) cost



$$y = mx + b$$

to compute cost
of 0.5 carat
diamond,

plug in $x = 0.5$
& y -value is cost.