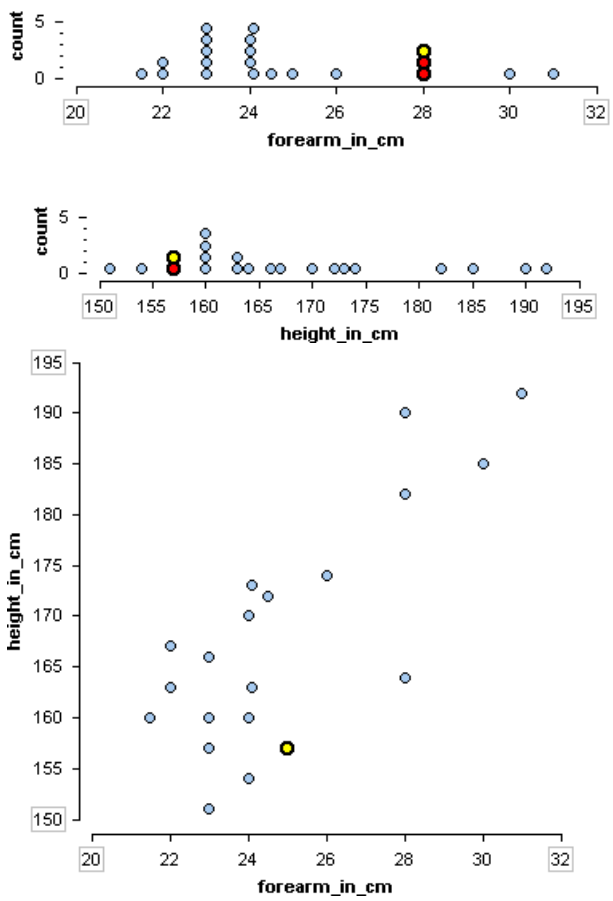
	forearm...	height_i...
1	23.0	151.000
2	21.5	160.000
3	24.0	170.000
4	24.5	172.000
5	31.0	192.000
6	23.0	166.000
7	28.0	182.000
8	26.0	174.000
9	28.0	190.000
10	28.0	164.000
11	24.1	163.000
12	23.0	160.000
13	22.0	167.000
14	22.0	163.000
15	23.0	157.000
16	30.0	185.000
17	23.0	160.000
18	24.0	160.000
19	24.0	154.000
20	25.0	157.000
21	24.1	173.000
22	22.0	158.080



1. One dot is highlighted in the scatterplot. Describe what we know about this person. Find this person's measurements in each dotplot.

2. Three dots are highlighted in the forearm dotplot. What do these 3 people have in common? Find these people in the other two graphs.

3. Find another group of people in the scatterplot who have the same forearm measurement.

4. Two dots are highlighted in the height dotplot. What do these 2 people have in common? Find these people in the other two graphs.

5. Find another group of people in the scatterplot who are the same height.

6. Find the two people in the scatterplot who differ the most in their forearm measurements.

7. Find the two people in the scatterplot who differ the most in their heights.

The average forearm length for this data is 24.8 cm. The average height is 167.6 cm. Mark these averages on the scatterplot with lines.

1. Find someone in the scatterplot who has a shorter than average forearm. Is this person also shorter than average in height?

2. Find another person who has a shorter than average forearm and who is also shorter than average in height. Are there lots of these people to choose from? Circle all the people who fit this description.

3. Find someone in the data set who has a longer than average forearm and who is also above average in height. Are there lots of these people to choose from? Circle all the people who fit this description.

4. Find someone who has a longer than average forearm but who is also shorter than average. Are there lots of these people to choose from?

Statisticians describe the association between two variables as "positive" or "negative"

Here is the definition given in one statistics textbook:

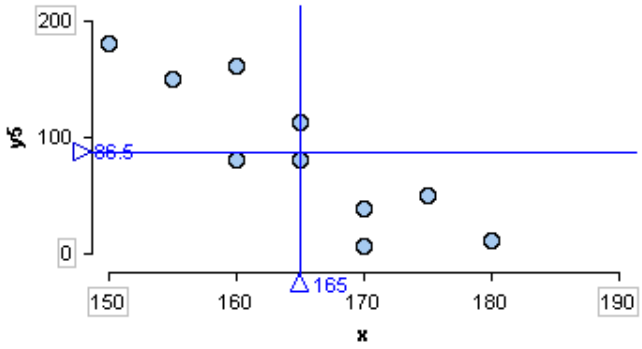
Two variables are **positively associated** when above-average values of one tend to accompany above average values of the other, and below average values also tend to occur together.

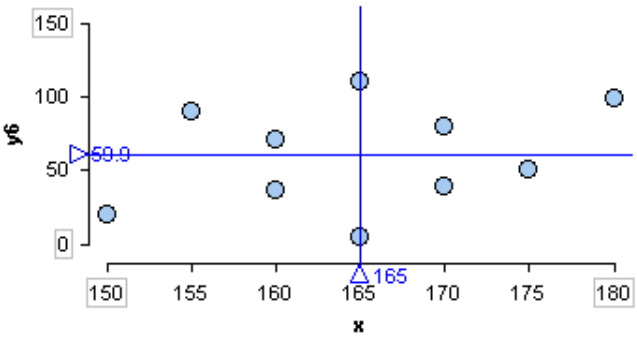
Two variables are **negatively associated** when above-average values of one tend to accompany below average values of the other, and vice versa.

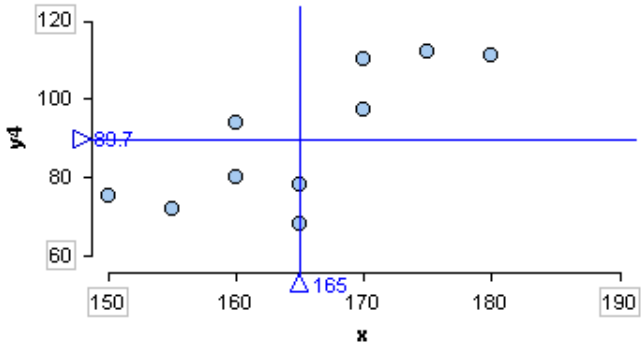
5. In the forearm-height scatterplot do you think the association is "positive" or "negative"?

6. What would people look like if the association between forearm length and height was negative? Sketch some stick people to illustrate your point.

Is there an association between x and y in these scatterplots? If so, is it positive or negative? (Mean lines are given.) Write a few notes to capture your reasoning so that you can share your thought process during the class discussion.







Sound bite:

A friend is absent today and wants to know what she missed, but she is in a hurry. Tell her in a 2-minute sound bite the main concepts discussed today.

Homework:

1. There are a variety of types of student loans. One is called the Undergraduate Stafford student loan.[1] http://www.staffordloan.com/stafford-loan-info/

   The table below gives information for the first few months of payments if you borrowed $20,000 for your education.

Month	1	2	3	4	5
Payment ($)	230.16	230.16	230.16	230.16	230.16
Principal paid ($)	116.83	117.49	118.16	118.82	119.50
Interest paid ($)	113.33	112.67	112.01	111.34	110.66
Balance remaining ($)	19883.17	19765.68	19647.53	19528.70	19409.21

   a. Is the association between Principal paid (x) and Interest paid (y) positive or negative? How can you tell? Why does this make sense? (Hint: Draw a scatterplot.)

   b. Let x = month. Which variable(s) in the table are positively associated with x = month? How can you tell? Why does this make sense? (Hint: Draw a scatterplot.)

2. From the list below choose two variables that you think will be positively associated, two variables you think will be negatively associated, and two variables you think will not show association in a scatterplot. You may reuse variables. Briefly explain your reasoning in each case.

   GPA (grade point average)
   Average weekly hours spent working at a job
   Average weekly hours spent doing homework
   Average hours of sleep a night
   Hourly wage
   Height
   Weight
   Length of the left foot
   Age of the oldest child in the student's immediate family
   Number of children in the student's immediate family
   Gender
   Race

[1] The federal government mandates the terms for Undergraduate Stafford loans: 6.8% for 10 years.

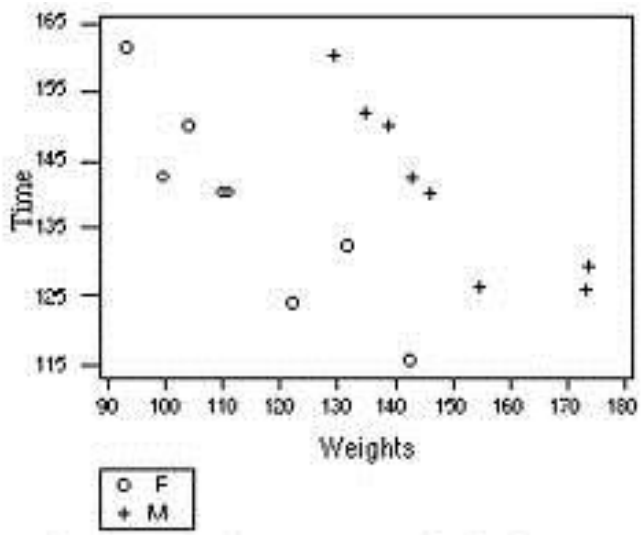
3. The data in the scatterplot below are an individual's weight and the time it takes (in seconds) on a treadmill to raise their pulse rate to 140 beats per minute. The o's correspond to females and the +'s to males.

Based on the scatterplot we conclude that:

a. There is a positive association between gender and weight because men tend to weigh more.

b. There is a negative association between weight and time for males and for females.

c. Both (a) and (b) are correct.



Briefly explain your answer to prepare for class discussion.

4. The ABC Company has been evaluating the performance of two advertising agencies. Based on the scatterplot which of the statements are true?

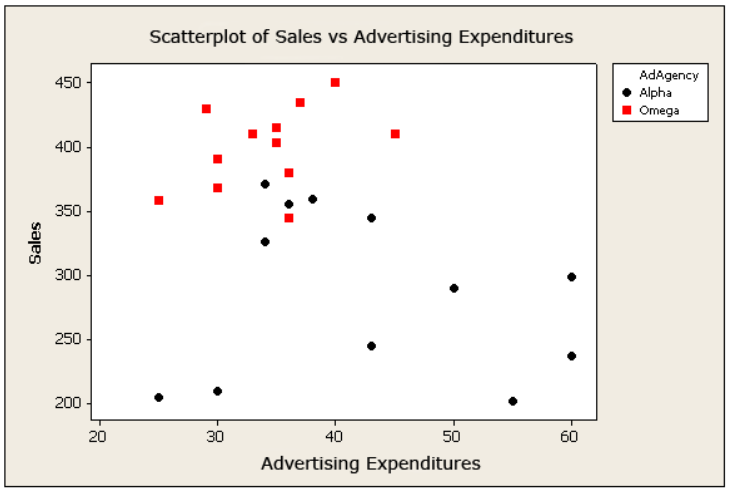
a. Sales don't depend on the advertising agency.

b. The Omega Company is better than Alpha — sales are generally higher even with less expenditure on advertising.

c. Sales don't depend on the amount of advertising.

d. There is a positive association between advertising and sales.

e. The association between advertising and sales is positive for one company and negative for the other.



Briefly explain your answer to prepare for class discussion.