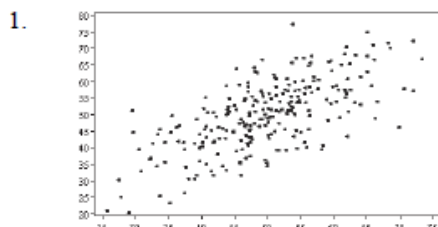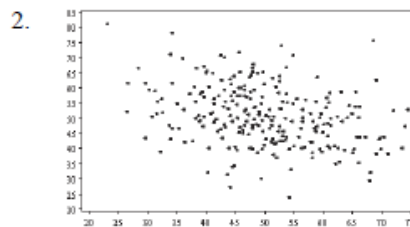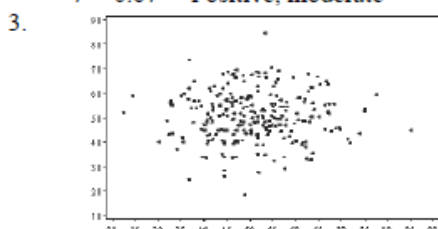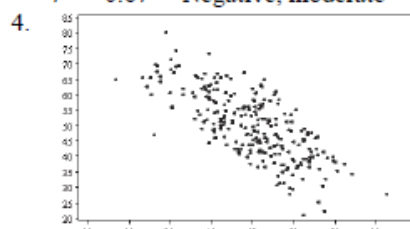# Answers:

1.

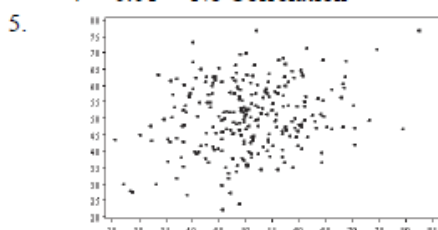$r = 0.67$ Positive, moderate

2.

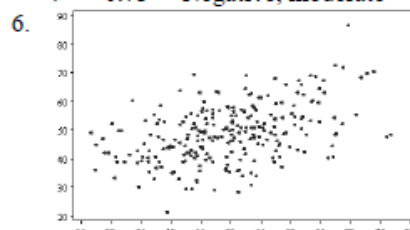$r = -0.67$ Negative, moderate

3.

$r = 0.01$ No Correlation

4.

$r = -0.73$ Negative, moderate
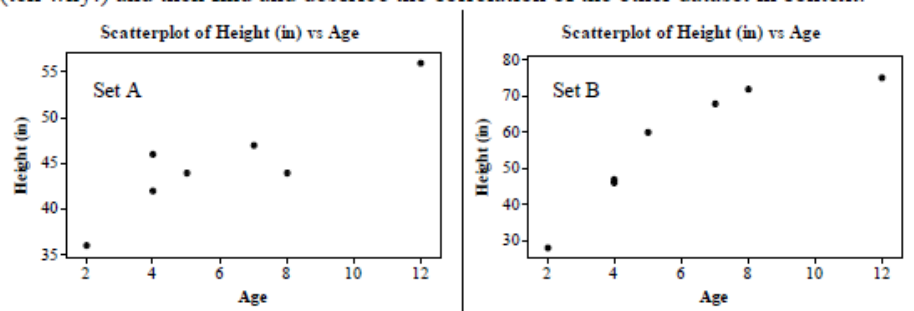
5.

$r = 0.22$ Positive, weak

6.

$r = 0.45$ Positive, moderate

7. One of the following two data sets is NOT appropriate for finding r. Figure out which one (tell why!) and then find and describe the correlation of the other dataset in context.

Scatterplot of Height (in) vs Age — Set A

Scatterplot of Height (in) vs Age — Set B

Set B is NOT appropriate for finding r since the scatterplot shows a strong, curved, positive association between height and age. Set A shows a moderate, linear, positive association between height and age, with $r = 0.892$.

Test Tomorrow!

correlation vs association

correlation does not mean causation

corr. coefficient

    between -1 and 1

    between quant. variables

    no units
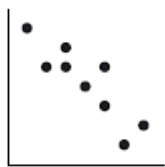
pos. vs. neg. correlation

describe scatterplots - form, strength, direction, unusual features

1. After conducting a marketing study to see what consumers thought about a new tinted contact lens they were developing, an eyewear company reported, "Consumer satisfaction is strongly correlated with eye color." Comment on this observation.
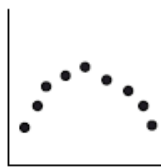
   There may be an association between customer satisfaction and eye color, but these are both categorical variables so they cannot be "correlated."

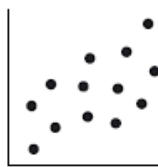2. On the axes below, sketch a scatterplot described:

   a. a strong negative   b. a strong association,   c. a weak but
      association   but r is near 0   positive association

3. A school board study found a moderately strong negative association between the number of hours high school seniors worked at part–time jobs after school hours and the students' grade point averages.

   a. Explain in this context what "negative association" means.

      Students who worked more hours tended to have lower grades.

   b. Hoping to improve student performance, the school board passed a resolution urging parents to limit the number of hours students be allowed to work. Do you agree or disagree with the school board's reasoning. Explain.

      They are mistakenly attributing the association to cause and effect. Maybe students with low grades are more likely to seek jobs, or maybe there is some other factor in their home life that leads both to lower grades and to the desire or need to work.

4. Researchers investigating the association between the size and strength of muscles measured the forearm circumference (in inches) of 20 teenage boys. Then they measured the strength of the boys' grips (in pounds). Their data are plotted below.
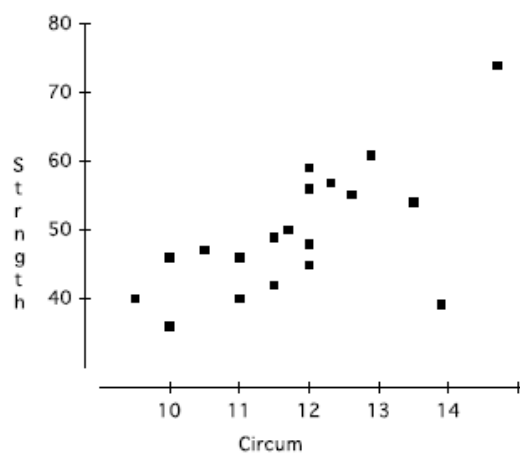
a. Write a few sentences describing the association in context.

There is a moderate, linear, positive association between forearm circumference and grip strength. Students with greater forearm circumference tend to have higher grip strengths.

b. Which value of r represents this correlation: –0.76, –0.22, 0.22, or 0.65? ___0.65___.