Class Examples

1. Propose two variables, and have students imagine and describe what they think a scatterplot might look like. Some examples:
   - Drug dosage and degree of pain relief
     Answer: The association is likely to be strong, positive and curved. Assuming, of course, that the drug is an effective pain reliever, as the dosage increases, the degree of pain relief will increase. Eventually, the association is likely to level off, until no further pain relief is possible, since the pain will be gone.
   - Calories consumed and weight loss
     Answer: The association is likely to be moderate, negative and linear. As fewer calories are consumed, more weight is likely to be lost. The association will not be strong, since some people lose weight easier than others, and there are other variables involved like overall health, exercise and beginning weight.
   - Hours of sleep and score on a test
     Answer: The association is likely weak, positive and possibly linear. Generally, a well-rested person is expected to score higher on a test. The relationship is weak, since there are other variables involved. Maybe a person got less sleep because they were up studying.
   - Shoe size and grade point average
     Answer: There is no association between shoe size and GPA. The scatterplot is likely to be randomly scattered.
   - Time for a mile run and age
     Answer: The association between time for a mile run and age is likely to be moderate and curved, with no dominant direction. The very young will likely have high run times. Run times are likely to be the lowest for people in their late teens or early twenties. Older people are likely to have high run times.
   - Age of car and cost of repairs
     Answer: The association between age of car and cost of repairs is positive, moderate, and linear. As cars get older, they usually require more repairs.
2. Look at actual scatterplots, and elicit good descriptions. There are many examples in our text, in *ActivStats*, in *Workshop Statistics*, and much data is available on the web.
3. Collect data on heights and weights. Use your data to make scatterplots and find correlations now. You can re-use these data to look at regression, linear modeling, residuals, and R^2 later on, too. If some students object to listing their weights anonymously, you could alternatively collect data on height/shoe size, height/handspan (thumb to little finger, fully spread), or – depending on your region of the country – math/verbal SAT (ACT) scores. A sample of a class worksheet based height/weight data is included, preceding the Chapter 7 quizzes.
4. Help students develop a feel for how the number calculated as correlation relates to the pattern they see in the scatterplot. *ActivStats* has several appropriate activities.
5. Show students that one point can change the correlation dramatically. We don't discuss influential points formally yet, but you can begin to develop some ideas. Points near the center of the scatterplot have little effect, points that fit the pattern increase the strength of the correlation (and more so the farther the point is from the center), and points that don't fit the pattern decrease (and can even reverse the sign of) the correlation. Again, *ActivStats* has very effective tools.