**Chapter 8, Review Problem 2:**

(a) The correlation between the age of a car and gasoline economy (fuel efficiency) will be *negative* — the larger the age of the car (the more years it has been around), the lower its fuel efficiency (on average).

(b) The correlation between the gasoline economy of cars and the income of their owners will be *positive* — the higher the income of the owner, the newer (younger) their car is likely to be, and therefore the higher its fuel efficiency.

**Chapter 9, Review Problem 8:**

*False:* All the women in the study were surveyed at (roughly) the same time, so the older women in the study were born *earlier* than the younger women in the study. Cultural and societal norms have changed over time, so that women born earlier tended to have fewer years of schooling than women born more recently. This explains the negative correlation.

**Chapter 9, Review Problem 10:**

(a) *True:* This is what the negative correlation is saying — the higher the percentage of students taking the test, the lower the average score on the test.

One explanation is that in states where the percentage of test-takers is high, the range of abilities is large, weaker students are taking the tests in greater numbers which lowers the average in the state. In States with a relatively low percentage of test-takers, it is reasonable to assume that only the strongest students are taking the test so the averages in these states will be higher.

(b) *False.* While it is possible that schools in Iowa are doing a better job teaching math than schools in Connecticut, the data that we have been given *doesn't show this.* In fact, the data we have gives a different explanation: perhaps the percentage of students taking the test in Connecticut is higher than the percentage of students taking the test in Iowa.