2.4  a. Whole population.
     b. Sample

2.7  a. Gender and self-reported fastest ever driven speed.
     b. Students in a statistics class.
     c. The answer may vary. If you think the students represent a larger group of individuals, it is sample data. If interest is only in this group of students, or if you think these students do not represent any larger group, it is population data.

2.8  a. $n = 2391$.
     b. Individuals aged 65 years or older.
     c. Frequency of attending religious services, frequency of praying, blood pressure, smoking habits, alcohol use habits, and extent of social network.
     d. Sample data. They used the data to make generalizations about a larger population.

2.9  a. Treatment used (placebo or aspirin) and whether individual died from heart attack or not.
     b. Male physicians between 40 and 84 years old.
     c. $n = 22,071$.
     d. Sample data. The used the data to make generalizations about a larger population.

2.11 a. Categorical.
     b. Quantitative.
     c. Quantitative.
     d. Categorical.

2.14 a. Not continuous. A student could not miss 4.631 classes for example.
     b. Continuous. With an accurate enough measuring instrument, any measurement is possible.
     c. Continuous. With an accurate enough time piece, any length of time is possible.
     d. Not continuous. The number of coins in a pocket would be a whole number (discrete).

2.15 a. Explanatory variable is amount person walks or runs per day; response variable is the performance on the lung test.
     b. Explanatory variable is age of the respondent; response variable is feeling about religious importance.
     c. Explanatory variable is score on the final exam; response variable is final course grade.
     d. Explanatory variable is gender; response variable is opinion about the death penalty.

2.17 a. Gender and pulse rate.
     b. Gender is categorical, pulse rate is quantitative.
     c. Is there a difference between the mean pulse rates of men and women? The sample mean pulse rate for each sex would be useful.
2.24  

a. The explanatory variable is gender and the response variable is how they feel about their weight.

<table>
<thead>
<tr>
<th>Feelings About Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
</tr>
<tr>
<td>Female</td>
</tr>
<tr>
<td>Male</td>
</tr>
</tbody>
</table>

c. Feeling overweight: 38/143 = .266, or 26.6%; right weight: 99/149 = .672, or 69.2%; underweight: 6/149 = .042, or 4.2%.

d. Feeling overweight: 18/78 = .231, or 2.31%; right weight: 35/78 = .449, or 44.9%; underweight: 25/78 = .321 or 32.1%.

e. Males are more likely than females to feel that they are underweight; females are more likely than males to say that their weight is about right.

2.25

Figure for Exercise 2.25

2.29  

For each part of this problem, a bar chart comparing percentages provides the clearest visual display. Notice that each part involves a comparison of groups (or years) with regard to the percentage with a specified trait. The percentage not having the trait in each group could be calculated and included in a graph, but we think the comparisons are clearer if this is not done in parts (a) and (b). In part (c), there may be merit to showing the percentages that do and do not take part in regular activity.

a. 

Figure for Exercise 2.29a
c. The first bar chart shown below displays only the given information. The second bar chart displays the percentages that do and do not take part in regular activity.
2.30 The pie chart may more effectively show that there are three age groups with large percentages, and it may be faster to read these percentages than with the bar chart. One problem, however, is that the age groups are shown in a circular pattern, an unnatural way to view the age. The bar chart gives a better sense of the distribution of ages because the ages are shown along a more natural horizontal number line.