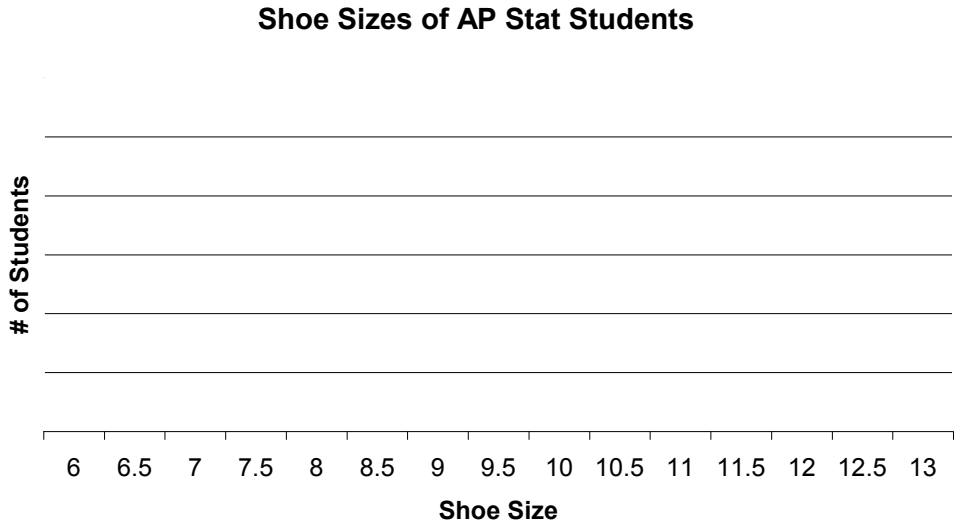
Notes: Displaying Quantitative Data

A bar chart or pie chart is often used to display categorical data. These types of displays, however, are not appropriate for quantitative data. Quantitative data is often displayed using either a histogram, dot plot, or a stem-and-leaf plot.

In a histogram, the interval corresponding to the width of each bar is called a bin. A histogram displays the bin counts as the height of the bars (like a bar chart). Unlike a bar chart, however, the bars in a histogram touch one another. An empty space between bars represents a gap in data values. If a value falls on the border between two consecutive bars, it is placed in the bin on the right.



A relative frequency histogram displays the proportion of cases in each bin instead of the count.

Histograms are useful when working with large sets of data, and they can easily be constructed using a graphing calculator. A disadvantage of histograms is that they do not show individual values.

Be sure to choose an appropriate bin width when constructing a histogram. As a general rule of thumb, your histogram should contain about 10 bars.

A stem-and-leaf plot is similar to a histogram, but it shows individual values rather than bars. It may be necessary to split stems if the range of data values is small.

Number of Pairs of Shoes Owned

0
0
1
1
2
2
3
3

KEY:

A back-to-back stem-and-leaf plot can be useful when comparing two distributions.

Number of Pairs of Shoes Owned

Male	Female
	0
	0
	1
	1
	2
	2
	3
	3

KEY:

The stems of the stem-and-leaf plot correspond to the bins of a histogram. You may only use one digit for the leaves. Round or truncate your values if necessary.

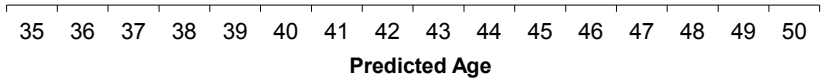
Stem-and-leaf plots are useful when working with sets of data that are small to moderate in size, and when you want to display individual values.

How would you setup the following stem-and-leaf plots?

- quiz scores (out of 100)
- student GPA's
- student weights
- SAT scores
- weights of cattle (1000-2000 pounds)

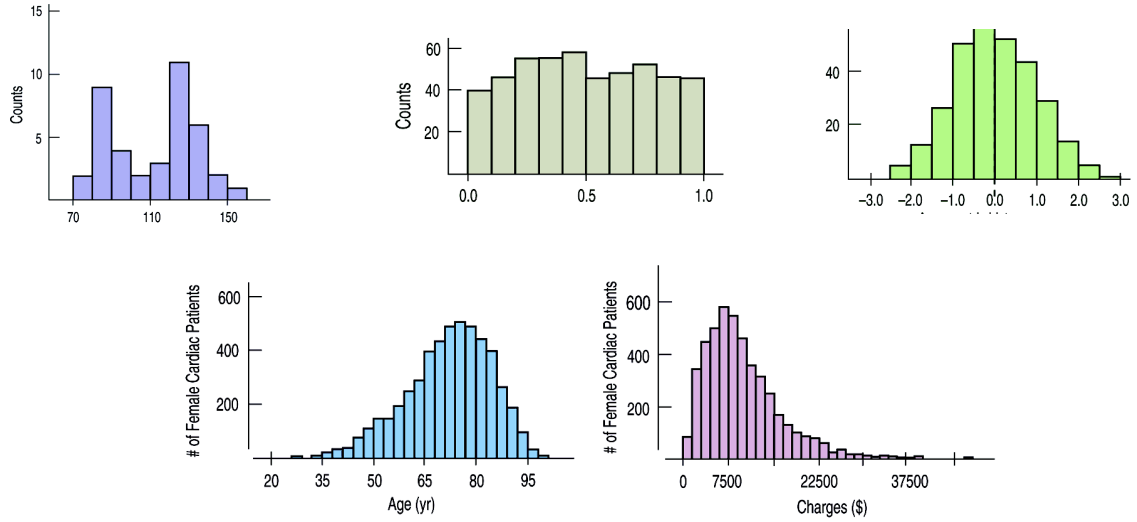
Dot plots may also be used to display quantitative variables. Dot plots are useful when working with small sets of data.

Guess Mr. Howatt's Age



When describing a distribution, you should tell about three things: shape, center, and spread. You should also mention any unusual features, like outliers or gaps.

Identify the shapes of the following distributions:



When comparing two or more distributions, compare the shapes, centers, and spreads, and compare any unusual features. It is important, when comparing distributions, that their graphs be constructed using the same scale.

You can sometimes make a skewed distribution appear more symmetric by re-expressing (or transforming) your data.