large values than values that are exceptionally small. With annual incomes, for example, it's impossible to get values below zero, but there are a few people who earn millions or billions of dollars in a year. Annual incomes therefore tend to be skewed to the right.

Assessing Normality: Normal Quantile Plot Some really important methods presented in later chapters have a requirement that sample data must be from a population having a normal distribution. We can see that a histogram is often helpful in determining whether the normality requirement is satisfied. However, histograms are not very helpful with small data sets. Section 6-6 discusses methods for *assessing normality*—that is, determining whether the sample data are from a normally distributed population. Section 6-6 includes a procedure for constructing *normal quantile plots*, which involve plotting transformed sample values. Normal quantile plots are easy to generate using technology such as STATDISK, Minitab, XLSTAT, StatCrunch, or a TI-83/84 Plus calculator. Interpretation of a normal quantile plot is based on the following criteria:

> **Criteria for Assessing Normality with a Normal Quantile Plot**
>
> **Normal Distribution:** The population distribution is normal if the pattern of the points in the normal quantile plot is reasonably close to a straight line, and the points do not show some systematic pattern that is not a straight-line pattern.
>
> **Not a Normal Distribution:** The population distribution is *not* normal if the normal quantile plot has either or both of these two conditions:
>
> • The points do not lie reasonably close to a straight line.
>
> • The points show some *systematic pattern* that is not a straight-line pattern.
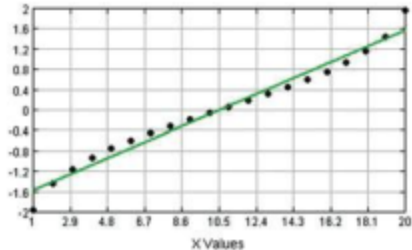
The following are examples of normal quantile plots. Procedures for creating such plots are described in Section 6-6.
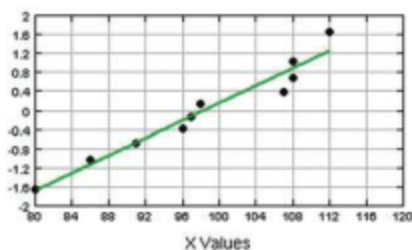
Normal Distribution: The points are reasonably close to a straight-line pattern, and there is no other systematic pattern that is not a straight-line pattern.
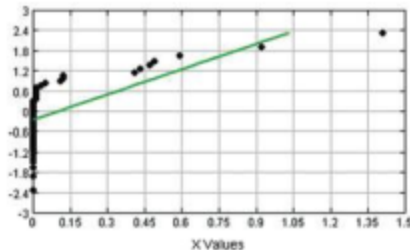
Not a Normal Distribution: The points do not lie reasonably close to a straight line.

Not a Normal Distribution: The points show a systematic pattern that is not a straight-line pattern.

using TECHNOLOGY

Statistical software packages are effective for generating histograms. Throughout this text, we make frequent reference to STATDISK, Minitab, Excel, the TI-83/84 Plus calculator, and StatCrunch, and all of these technologies can generate histograms. The detailed instructions can vary from easy to complex, so we provide some relevant comments below. For detailed instructions, see the STATDISK, Minitab, Excel, SPSS, SAS, and TI-83/84 Plus manuals that are supplements to this book.

STATDISK Enter or open the data in the STATDISK Data Window, click **Data**, click **Histogram,** and then click on the **Plot** button. To use your own class width and starting point, click on the "User defined" button before clicking on Plot. Click on the **Turn labels on** button to see the frequency for each class. (In addition to generating a histogram, this is also an easy way to identify the entries in a frequency distribution.)