Prepare

1. Context

What do the data mean? What is the goal of study?

2. Source of the Data

Are the data from a source with a special interest so that there is pressure to obtain results that are favorable to the source?

3. Sampling Method

Were the data collected in a way that is unbiased, or were the data collected in a way that is biased (such as a procedure in which respondents volunteer to participate)?

Analyze

1. Graph the Data

2. Explore the Data

Are there any outliers (numbers very far away from almost all of the other data)? What important statistics summarize the data (such as the mean and standard deviation described in later)?

How are the data distributed?

Are there missing data?

Did many selected subjects refuse to respond?

3. Apply Statistical Methods

Use technology to obtain results.

Conclude

1. Statistical Significance

Do the results have statistical significance? Do the results have practical significance?

Figure 1-2 Statistical Thinking

Prepare

Context Let's consider the data in Table 1-1. (The data are from Data Set 6 in Appendix B.) The data in Table 1-1 consist of measured IQ scores and measured brain volumes from 10 different subjects. The data are matched in the sense that each individual "IQ/brain volume" pair of values is from the same subject. The first subject had a measured IQ score of 96 and a brain volume of 1005 cm³. The format of Table 1-1 suggests the following goal: Determine whether there is a relationship between IQ score and brain volume. This goal suggests a possible hypothesis: People with larger brains tend to have higher IQ scores.

Table 1-1 IQ Scores and Brain Volumes (cm3)

IQ	96	87	101	103	127	96	88	85	97	124
Brain Volume (cm³)	1005	1035	1281	1051	1034	1079	1104	1439	1029	1160