1. A population is a collection of object under investigation. A sample is a subset of the population. The frequency of any particular value is the number of times that value occurs in the data set. The relative frequency of a value is the proportion of times the value occurs.

2. Let us consider following multivariate data. It can be downloaded from http://www.stat.wisc.edu/~mchung/teaching/data/312score.data

```r
score <- read.table("d:/stat324/312score.data", header=T)
> score
  mid1 mid2 hw final
1   93 100 97  96
2   96  97 98  94
3   96 100 98  86
   ...
48  24  87  90  22
49  56  80  28  33

> plot(score$mid1, score$mid2)
> hist(score$mid1)

To find out more about hist command, use
> help(hist). It will display a new window with detailed information about hist.
```

3. The sample mean is a summary measure of location.

```r
> mean(score$mid1)
[1] 74.10204
> mean(score$mid2)
[1] 87.57143
> mean(score$final)
[1] 54.42857

Figure 1: Left: scatter plot of midterm1 vs. midterm2, middle: histogram of the first midterm, right: histogram of the final exam score
```
4. The sample variance is a summary measure of variability.

```r
> var(score$mid1)
[1] 552.6352
> sd(score$mid1)
[1] 23.50819
> sd(score$mid2)
[1] 10.56330
> sd(score$final)
[1] 19.04818
```

5. The sample median is obtained by ordering from data from smallest to largest and taking the middle value.

```r
> median(score$final)
[1] 54
> boxplot(score$mid1, score$mid2, score$hw, score$final)
```

![Boxplot of midterm, homework and final exam scores.](image)

6. Importing example and exercise data. In order to load Example 1.5 data into R, follow the following command lines. Data is the percentage of binge drinkers on 140 campuses across the United States.

```r
> library(Devore6)
> data(xmp01.05)
> attach(xmp01.05)
> xmp01.05
   bingePct
1     4
2     11
.
.
.
140    68
```

To load Exercise 1.14 data, use command `data(ex01.14)`.

**Assigned Problems** Exercise 1.24. Exercise 1.56. Use R to generate figures. Click R figures with the right mouse button to save and print them.