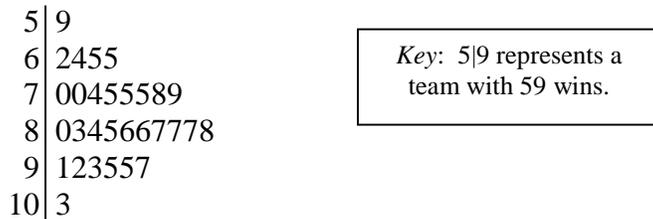## Section 2.1 and 2.2
1. Wins in Major League Baseball
The stemplot below shows the number of wins for each of the 30 Major League Baseball teams in 2009.

```
 5 9
 6 2455
 7 00455589
 8 0345667778
 9 123557
10 3
```

Key: 5|9 represents a team with 59 wins.

Find the percentiles for the following teams:
(a) The Colorado Rockies, who won 92 games.
(b) The New York Yankees, who won 103 games.
(c) The Kansas City Royals and Cleveland Indians, who both won 65 games.

2. Wins in MLB
Here is a table showing the distribution of wins in MLB in 2009. Complete other columns.

Wins in MLB	Frequency	Relative Frequency	Cumulative Frequency	Cumulative Relative Frequency
55 to < 62	1			
62 to < 69	4			
69 to < 76	6			
76 to < 83	3			
83 to < 90	9			
90 to < 97	5			
97 to < 104	2			

3. Home run kings
The single-season home run record for major league baseball has been set just three times since Babe Ruth hit 60 home runs in 1927. Roger Maris hit 61 in 1961, Mark McGwire hit 70 in 1998 and Barry Bonds hit 73 in 2001. In an absolute sense, Barry Bonds had the best performance of these four players, since he hit the most home runs in a single season. However, in a relative sense this may not be true. Baseball historians suggest that hitting a home run has been easier in some eras than others. This is due to many factors, including quality of batters, quality of pitchers, hardness of the baseball, dimensions of ballparks, and possible use of performance-enhancing drugs. To make a fair comparison, we should see how these performances rate relative to others hitters during the same year.
Compute the standardized scores for each performance. Which player had the most outstanding performance relative to his peers?

Year	Player	HR	Mean	SD	z-score
1927	Babe Ruth	60	7.2	9.7	
1961	Roger Maris	61	18.8	13.4	
1998	Mark McGwire	70	20.7	12.7	
2001	Barry Bonds	73	21.4	13.2	

4. Taxi Cabs
In 2010, Taxi Cabs in New York City charged an initial fee of $2.50 plus $2 per mile. In equation form, $fare = 2.50 + 2(miles)$. At the end of a month a businessman collects all of his taxi cab receipts and calculates some numerical summaries. The mean fare he paid was $15.45 with a standard deviation of $10.20. What are the mean and standard deviation of the lengths of his cab rides in miles?

5. Batting Averages
The batting averages for Major League Baseball players in 2009, the mean of the 432 batting averages was 0.261 with a standard deviation of 0.034. Suppose that the distribution is exactly Normal with $\mu = 0.261$ and $\sigma = 0.034$.

(a) Sketch a Normal density curve for this distribution of batting averages. Label the points that are 1, 2, and 3 standard deviations from the mean.
(b) What percent of the batting averages are above 0.329? Show your work.
(c) What percent of the batting averages are between 0.227 and .295? Show your work.

6. Serving Speed
In the 2008 Wimbledon tennis tournament, Rafael Nadal averaged 115 miles per hour (mph) on his first serves[1]. Assume that the distribution of his first serve speeds is Normal with a mean of 115 mph and a standard deviation of 6 mph. About what proportion of his first serves would you expect to exceed 120 mph?

7. No Space in the Fridge?
The measurements listed below describe the useable capacity (in cubic feet) of a sample of 36 side-by-side refrigerators. <source: Consumer Reports, May 2010> Are the data close to Normal?

> 12.9 13.7 14.1 14.2 14.5 14.5 14.6 14.7 15.1 15.2 15.3 15.3
> 15.3 15.3 15.5 15.6 15.6 15.8 16.0 16.0 16.2 16.2 16.3 16.4
> 16.5 16.6 16.6 16.6 16.8 17.0 17.0 17.2 17.4 17.4 17.9 18.4

8. State land areas
Problem: The histogram and Normal probability plot below display the land areas for the 50 states. Is this distribution approximately Normal?