Section 2.3 Stem-and-Leaf Displays

Objective: In this lesson you learned how to construct, use, and compare stem-and-leaf displays

Important Vocabulary

Stem-and-Leaf Display

I. Exploratory Data Analysis

Exploratory data analysis techniques are particularly useful for detecting patterns and extreme data values.

What are some key ingredients in exploratory data analysis?

- rapid implementation
- visual displays
- data simplification
- robustness ~ not influenced much by extreme data values.

II. Stem-and-Leaf Displays

A stem-and-leaf display: is a method of exploratory data analysis that is used to rank-order and arrange data into groups.

Focus Points:

- Construct a stem-and-leaf display from raw data
- Use a stem-and-leaf display to visualize data distribution
- Compare a stem-and-leaf display to a histogram

A stem-and-leaf display is a device that organizes and groups data but allows us to recover the original data if desired.

How to make a stem-and-leaf display

1. Divide each data value into two parts.
   stem - leftmost part Leaf - rightmost part
2. Align all stems in a vertical column from smallest to largest. Draw a vertical line to the right of all the stems.
3. Place all the leaves with the same stem in the same row as the stem, and arrange in increasing order.
4. Use a label to indicate the magnitude of the numbers in the display.

What do stem-and-leaf displays tell us?

- Shows all the (truncated) data in order from smallest to largest.
- helps spot extreme data values or clusters of data values.
- displays the shape of the data distribution

Section 2.3 Examples – Stem-and-Leaf Displays

(1) What does it take to win at sports? If you're talking about basketball, one sportswriter gave the answer. He listed the winning scores of the conference championship games over the last 35 years. The scores for those games follow below.

132	118	124	109	104	101	125	83	99
131	98	125	97	106	112	92	120	103
111	117	135	143	112	112	116	106	117
119	110	105	128	112	126	105	102	

To make a stem-and-leaf display, we'll use the first *two* digits as the stems.

a. Use the first *two* digits as the stem. Then order the leaves. Provide a label that shows the meaning and units of the first stem and first leaf.

08	3
09	2 7 8 9
10	1 2 3 4 5 5 6 6 9
11	0 1 2 2 2 2 7 7 8 9
12	0 4 5 5 6 8
13	1 2 5
14	3

Key 08|3 = 083 or 83

b. Looking at the distribution, would you say that it is fairly symmetrical?

Yes, stem 11 has the most data.