

Section D
Summarizing Quantitative Data (Continued)

Stem-and-Leaf plots – simple way to display small data sets (similar to histogram). The number get split into a stem part and a leaf part. The stem part can be any number of place values, but the leaf part can only be one place value, usually the smallest place value in the number.

1) The following table presents the daily high temperatures for West Windsor Township, NJ, in degrees Fahrenheit, for the winter months of January and February, 2018.

19	24	30	27	17	15	18	32	44	42	56	65	63	26	32	42	35	32
41	55	52	55	61	45	36	40	58	54	45	38	31	44	37	32	38	38
37	47	34	38	47	65	65	39	53	63	60	42	45	49	71	78	57	44
51	46	52	56	61													

a) Construct a stem-and-leaf plot. What is the shape of the distribution?

<u>Stem</u>	<u>Leaf</u>	
1	9758	Slightly Right skewed
2	476	
3	0225268172887489	
4	422150547725946	
5	65258437126	
6	53155301	
7	18	

b) Repeat part (a), but split the stems, using two lines for each stem.

<u>Stem</u>	<u>Leaf</u>
1	
1	5789
2	4
2	67
3	0122224
3	567788889
4	01222444
4	5556779
5	12234
5	556678
6	01133
6	555
7	1
7	8

2) A pediatrician who tested the cholesterol levels of several young patients was alarmed to find that many had levels over 200 mg per 100 mL. The readings of 20 patients with high levels are presented in the following table. Construct a stem-and-leaf plot of the data and describe the shape of the distribution.

220	209	212	208	202	218	196	214	188	210
217	165	210	223	235	221	213	210	199	208

<u>Stem</u>	<u>Leaf</u>	
16	5	Left Skewed
17		
18	8	
19	69	
20	9828	
21	28407030	
22	031	
23	5	

3) The Food and Nutrition Board of the National Academy of Sciences states that the recommended daily allowance of iron is 18mg for adult females under the age of 51. The amounts of iron intake, in milligrams, during a 24-hour period for a sample of 45 such females follows. Construct a stem-and-leaf plot of the data and describe the shape of the distribution.

6.3	9.4	10.7	10.9	11.0	11.5	11.5	11.6	11.9
12.1	12.4	12.5	12.5	12.5	12.6	12.7	12.8	13.1
14.4	14.5	14.6	14.6	14.7	15.0	15.0	15.3	15.6
16.0	16.3	16.3	16.4	16.6	16.6	16.8	17.0	17.3
18.1	18.1	18.2	18.3	18.3	18.6	19.5	19.8	20.7

<u>Stem</u>	<u>Leaf</u>	
6	3	Very slightly Left Skewed or Symmetric (Bell-Shaped)
7		
8		
9	4	
10	79	
11	05569	
12	14555678	
13	1	
14	45667	
15	0036	
16	0334668	
17	03	
18	112336	
19	58	
20	7	

Back-to-back stem-and-leaf plot – used to compare two data sets.

Example:

Following are the running times (in minutes) for the 15 top-grossing movies rated G or PG and the top 15 top-grossing movies rated R of all time, as of August 2018.

Movies Rated G or PG		Movies Rated R	
<i>Incredibles 2</i>	118	<i>The Passion of Christ</i>	126
<i>Beauty and The Beast (2017)</i>	129	<i>Deadpool</i>	106
<i>Finding Dory</i>	103	<i>American Sniper</i>	132
<i>Star Wars: Episode I – The Phantom Menace</i>	133	<i>It</i>	135
<i>Star Wars</i>	121	<i>Deadpool 2</i>	119
<i>Shrek 2</i>	93	<i>The Matrix Reloaded</i>	138
<i>E.T.: The Extra-Terrestrial</i>	117	<i>The Hangover</i>	96
<i>The Lion King</i>	89	<i>The Hangover Part II</i>	102
<i>Toy Story 3</i>	103	<i>Beverly Hills Cop</i>	105
<i>Frozen</i>	108	<i>The Exorcist</i>	122
<i>Finding Nemo</i>	104	<i>Logan</i>	135
<i>The Secret Life of Pets</i>	90	<i>Ted</i>	106
<i>Despicable Me 2</i>	98	<i>Saving Private Ryan</i>	170
<i>The Jungle Book (2016)</i>	105	<i>300</i>	117
<i>Inside Out</i>	94	<i>Wedding Crashers</i>	113

- a) Construct a back-to-back stem-and-leaf plot for these data sets.
b) Do the running times of R-rated movies differ greatly from the running times of movies rated G or PG, or are they roughly similar? **The running times are roughly similar**

G or PG		R
9	8	
8430	9	6
85433	10	2566
87	11	379
91	12	26
3	13	2558
	14	
	15	
	16	
	17	0