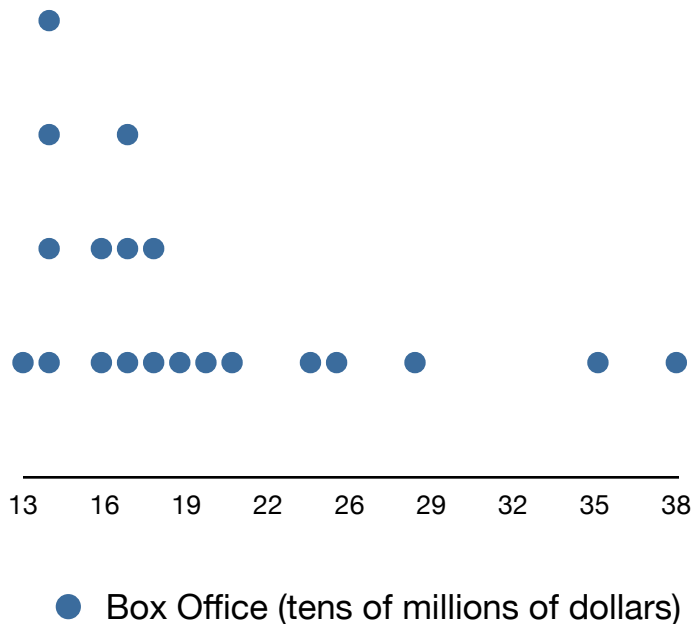


Mr Murphy
AP Statistics
1-3 Dotplots and Stem-and-Leaf Plots
Homework Solutions

1. *Harry Potter and the Deathly Hallows Part 2* and *Transformers: Dark of the Moon* were the top grossing films of 2011. Box office totals for the top films that year are given in the following table.

Film	Box Office (millions of dollars)
Harry Potter - DH2	381
Transformers - DM	352.4
Twilight - BD1	281.3
Hangover 2	254.4
Pirates - OST	241
Fast Five	209.8
Mission Impossible 4	209.4
Cars 2	191.4
Sherlock Holmes 2	186.8
Thor	181
Rise of the Planet of the Apes	176.7
Captain America	176.6
The Help	169.7
Bridesmaids	169.1
Kung Fu Panda 2	165.2
Puss in Boots	149.2
X-Men: First Class	146.4
Rio	143.6
The Smurfs	142.6
Alvin and the Chipmunks: Chipwrecked	133.1

Use a dotplot to display the data. Write a short summary paragraph commenting on notable features of the dotplot - i.e. use your SOCS.



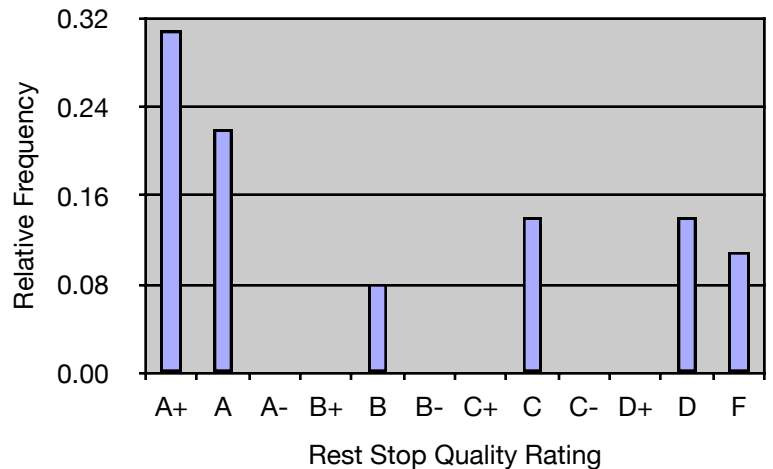
The shape of the distribution is skewed right. There appear to be some outliers (formulas to come in a future chapter). 16 million dollars is the approximate center of the distribution. The range for the box office data is 133.1 million dollars to 381 million dollars.

2. Rest stop quality ratings of 36 Southern California rest stops, ranging from A+ to F, are given below. These ratings reflect cleanliness of bathrooms, food options and quality, parking, easy freeway access, etc.

A+ A+ A+ F A+ A+ A B A C C
 D A F B A+ C A D F A+ D
 A+ A D A C D A+ A+ A A C
 F B A+

(a) Summarize the ratings by constructing a relative frequency distribution and a bar chart. Comment on the interesting features of your bar chart.

Quality Rating	Frequency	Relative Frequency
A+	11	0.31
A	8	0.22
B	3	0.08
C	5	0.14
D	5	0.14
F	4	0.11
Total	36	1



(b) Would it be appropriate to construct a dotplot for this data? Explain.

A dotplot would not be appropriate for this data because this is not numerical data, but rather, categorical data.

3. The calorie content (calories per 100 ml) for 19 brands of light beer are (from the web site <http://www.theraven.com/beer.html>):

28 31 33 30 28 27 39 29 23 31
 32 19 40 27 34 31 35 29 43

Construct a stem-and-leaf plot using stems 1, 2, 3, and 4. Write a short summary paragraph describing the calorie content of light beers.

Calorie Content of Light Beer	
1	9
2	7 7 8 8 9 9
3	0 1 1 1 2 3 4 5 9
4	0 3
1 9 = 19 calories per 100 ml	

S - The shape of the distribution is roughly symmetric, perhaps slightly skewed left.

O - ??, formula to come in a later chapter

C - The center of the distribution is ~31

S - The spread of the distribution is 19 to 43.

4. The stem-and-leaf display from #3 uses only four stems. Construct a stem-and-leaf plot for these data using repeated stems, 2L, 2H, 3L, ... , 4L.

3

Calorie Content of Light Beer ⁴	
1H	9
2L	
2H	7 7 8 8 9 9
3L	0 1 1 1 2 3
3H	5 9
4L	0 3
1 9 = 19 calories per 100 ml	

5. The accompanying observations are lengths (in yards) for a sample of golf course from <http://www.golflink.com>. Construct a stem-and-leaf display and explain your choices of stems. The lengths are

6822 6061 6886 5286 5197 6960 6537 6539 6245 6794 7141 6612
 6740 6450 6805 6573 6721 7011 6831 6500 6782 6220 7040 6819
 6267 6302 7111 6158 6028 7117 6411 6992 6482 6487 7083 6871
 7063 7037 6048 6710 6376 7090 6431 6779 6234 6296 6739 6372

Golf Course Lengths			
5L	1 2		
5H			
6L	0 0 0 1 2 2 2 2 2 3 3 3 4 4 4 4 4		
6H	5 5 5 5 6 7 7 7 7 7 7 7 5 5 5 5 9 9		
7L	0 0 0 0 0 0 1 1 1		
7 0 = 7000 yards			

I decided to truncate the data at the 100s place for simplicity.

6. An article on coffee reported the following scores (quality ratings on a scale of 0 to 100) for various brands:

Regular:	53	20	39	34	64	21	58	48	29
	65	53	33	31	63	62	21	25	52
Decaf:	65	49	34	23	65	29	38	25	31
	59	37	47	47	23	20	20	52	52

Construct a comparative stem-and-leaf plot, and discuss similarities and differences for the two types of coffee.

Decaf		Regular	
9 5 3 3 0 0	2	0 1 1 5 9	
8 7 4 1	3	1 3 4 9	
9 7 7	4	8	
9 2 2	5	2 3 3 8	
5 5	6	2 3 4 5	
5 2 = 52 out of 100			

S - The decaf coffee distribution is skewed right whereas the regular coffee distributions is bimodal.

O - ??, formula to come in a later chapter

C - The center of the decaf distribution appears to be close to that the regular coffee distribution.

S - The spreads of the distributions are also similar, ranging from the low 20s to mid 60s.