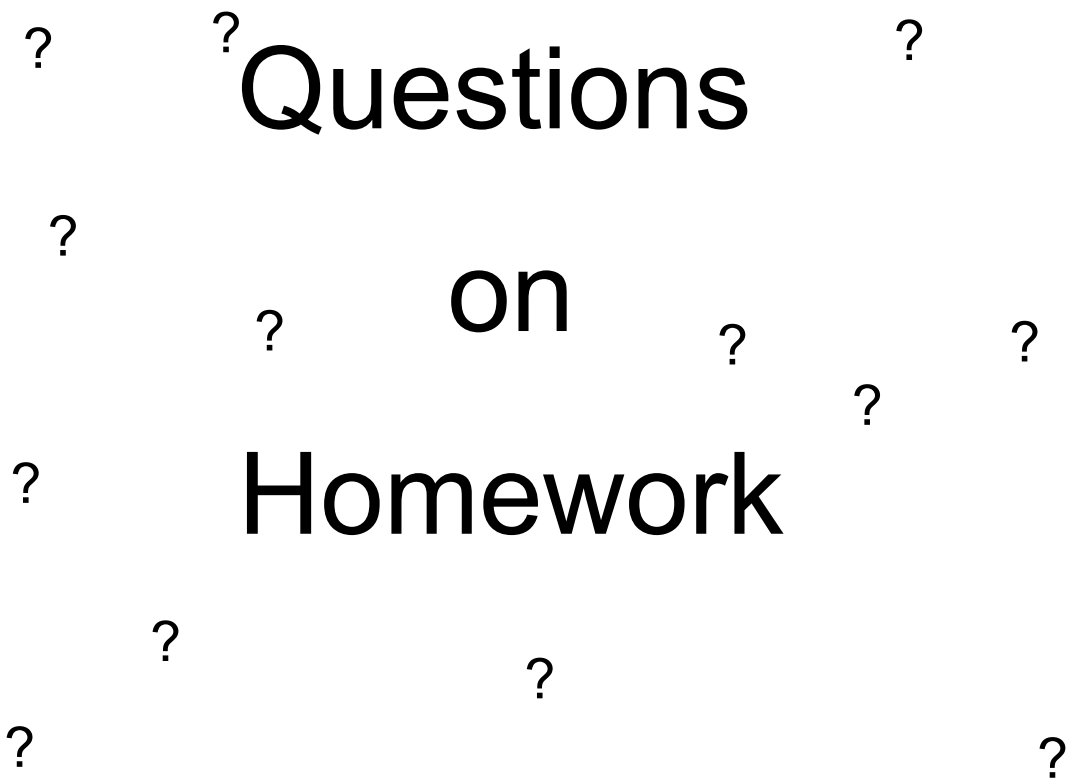
Stick Quiz:

Describe the difference between a survey, experiment and observational study. Provide a scenario when you would use each.

Survey:

Experiment:

Observational Study:



I can... describe a distribution for data and select appropriate measures of center and spread.

Ways to Describe Data Sets

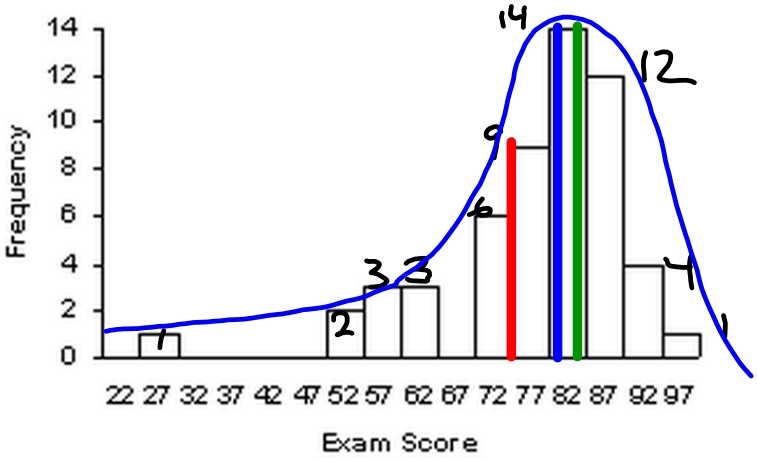
Center. Graphically, the center of a distribution is the point where about half of the data is on either side. (This is the mean/median and mode)

Spread. The spread of a distribution refers to the variability of the data. If the observations cover a wide range, the spread is larger. If the observations are clustered around a single value, the spread is smaller. This is the RANGE or the Standard Deviation.

Shape. The shape of a distribution is described by symmetry, skewness, number of peaks, etc. (Left Skewed, Right Skewed, Approximately normal)

Unusual features. Unusual features refer to gaps (areas of the distribution where there are no observations) and outliers.

Tap to see lines on graph...



Mean: 75.9

Median: 82

Mode: 82

Which Measure of Central Spread best describes the data?

When describing distributions of data:

If Approx Normal: WE describe the data using the mean and standard deviation

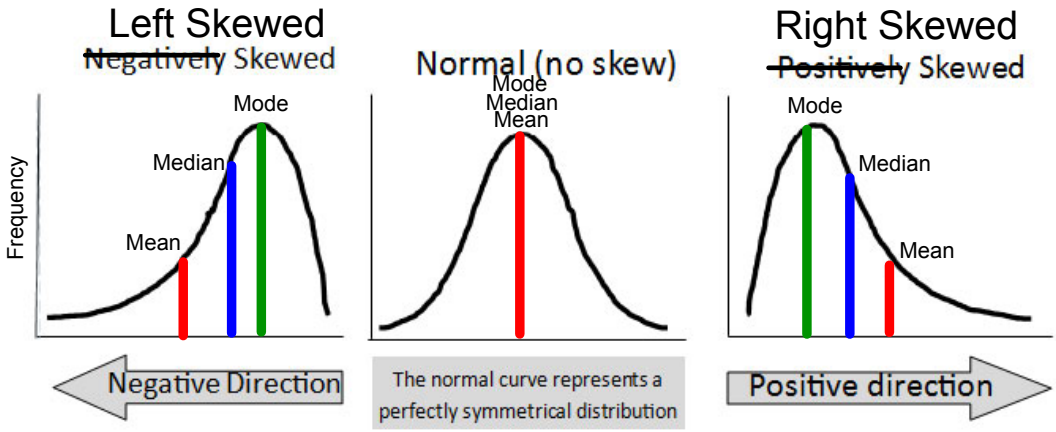
If Skewed: We describe the data using the median and range.

If Comparing two data sets:

if both normal - use mean/sd

if even one is skewed you must describe both using median/range

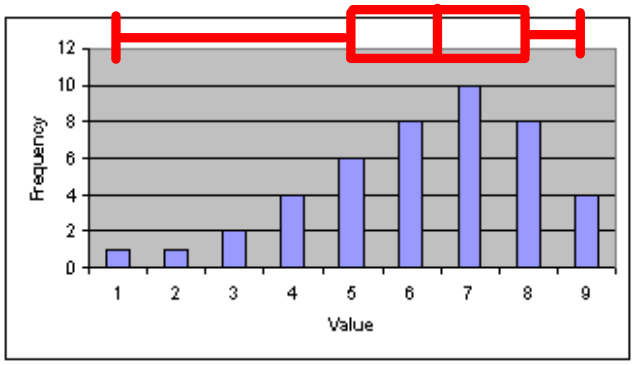
distribution of data: shows the observed or theoretical frequency of each possible data value



Notice where the mean, median, and mode are!

We use Mean/Median or Mode to describe the "Center" and the Range or Standard Deviation(Sd) to describe the "Spread".

What measure is best when it is left skewed?



5# Summary

Min: 1

1st Q: 5

Med: 6.5

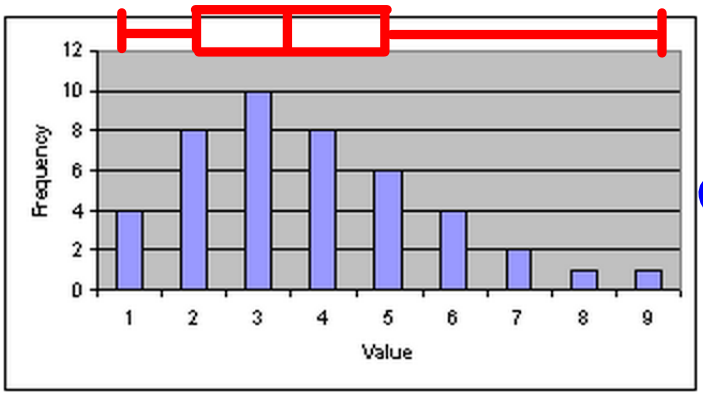
3rd Q: 8

Max: 9

Center: Median (6.5)

Spread: 9-1=8 (Range)

What measure is best when it is right skewed?



5# Summary

Min: 1

1st Q: 2

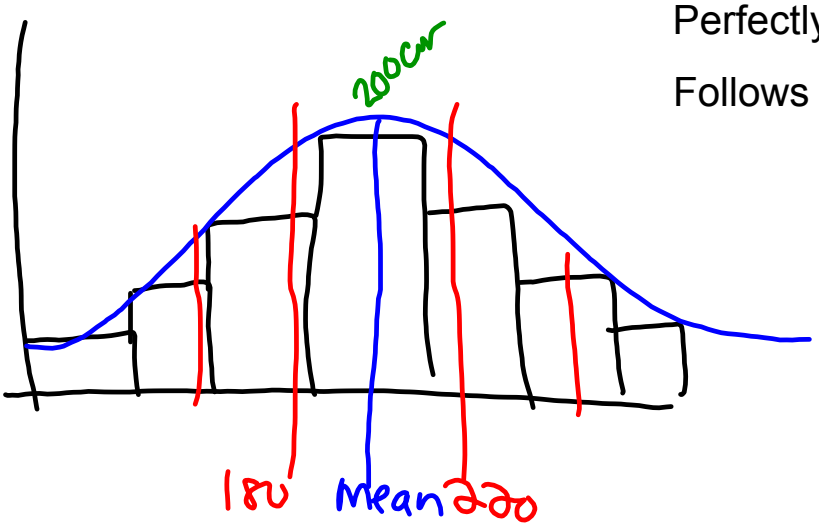
Med: 3.5

3rd Q: 5

Max: 9

Center: Median

Spread: Range



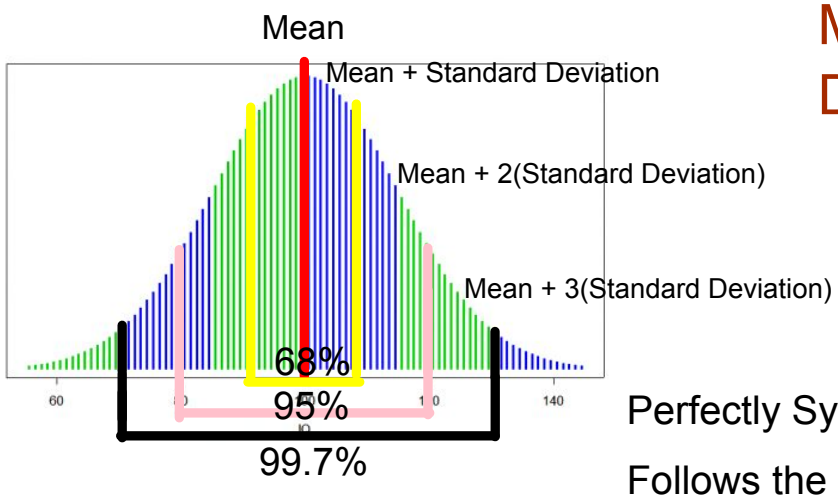
Perfectly Symmetrical

Follows the 68-95-99.7 Rule

200cm

SD 20cm

What measure is best when it is normal distribution?



Mean/Standard Deviation

Perfectly Symmetrical

Follows the 68-95-99.7 Rule

Center: Mean

Spread: SD

Create a histogram. Determine distribution and state what measure of center and spread you would use to describe the distribution. Label on histogram.

Data	Frequency
65	1
68	1
77	1
78	1
84	2
88	3
90	1

You Try!

Create a histogram. Determine distribution and state what measure of center and you would use to describe the distribution. Label on histogram.

The test scores for 10 students in Ms. Sampson's homeroom were:

61, 67, 81, 83, 87, 88, 89, 89, 89, 89, 90, 90, 90, 98, and 100

Technology:

Students reported the average number of minutes they spent on homework each night below.

62	53	46	66	38	45
52	46	73	39	42	56
64	54	48	59	70	60
49	54	48	57	70	33

Use a graphing calculator to create a histogram.

Find the mean, standard deviation, and 5 # summary.

$\bar{X} = 53.5$
$Sd = 10.7$

33, 46, 53.5, 61, 73

On average students spend about 53 min a night on homework, give/take about 11 min.

Technology:

Students reported the average number of minutes they spent on homework each night below.

62	53	46	66	38	45
52	46	73	39	42	56
64	54	48	59	70	60
49	54	48	57	70	33

Use a graphing calculator to create a box-and-whisker plot.

Distribution:

Center:

Spread:

Technology:

Test scores from Mrs. Morash's class are shown below.

Chapter 3 Test Scores	Chapter 4 Test Scores
81, 81, 92, 99, 61, 67, 86, 82, 76, 73, 62, 97, 97, 72, 72, 84, 77, 88, 92, 93, 76, 74, 66, 78, 76, 69, 84, 87, 83, 87, 92, 87, 82	87, 73, 69, 83, 74, 86, 74, 69, 79, 84, 79, 74, 83, 74, 86, 69, 91, 73, 79, 83, 69, 79, 83, 74, 86, 79, 79, 78, 83, 79, 86, 79, 84

Use a graphing calculator to create a histogram for each data set. Then describe the shape of each distribution.

Compare the distributions using either the means and standard deviation or the 5 # summaries. Justify your choice.

Technology:

The points scored per game by a professional football team for the 2008 and 2009 seasons are shown.

2008
81, 81, 92, 99, 61, 67, 86, 7, 51, 24, 27, 17, 35, 33, 28, 30, 27, 21, 24, 30, 14, 20

2009
20, 9, 3, 10, 6, 14, 3, 10, 3, 37, 7, 21, 13, 41, 20, 23

Use a graphing calculator to create a box-and-whisker plot for each data set. Then describe the shape of each distribution.

Compare the distributions using either the means and standard deviation or the 5 # summaries. Justify your choice.

Homework 11.2

Pg. 739

#5-10, 13, 21-23

Survey Your advisory