On Your Desk

- supply box (optional)
- notebook
- graphing calculator
- 2 colored markers - if you want

get ch. 2 hw packet

| vocabulary |
| examples |

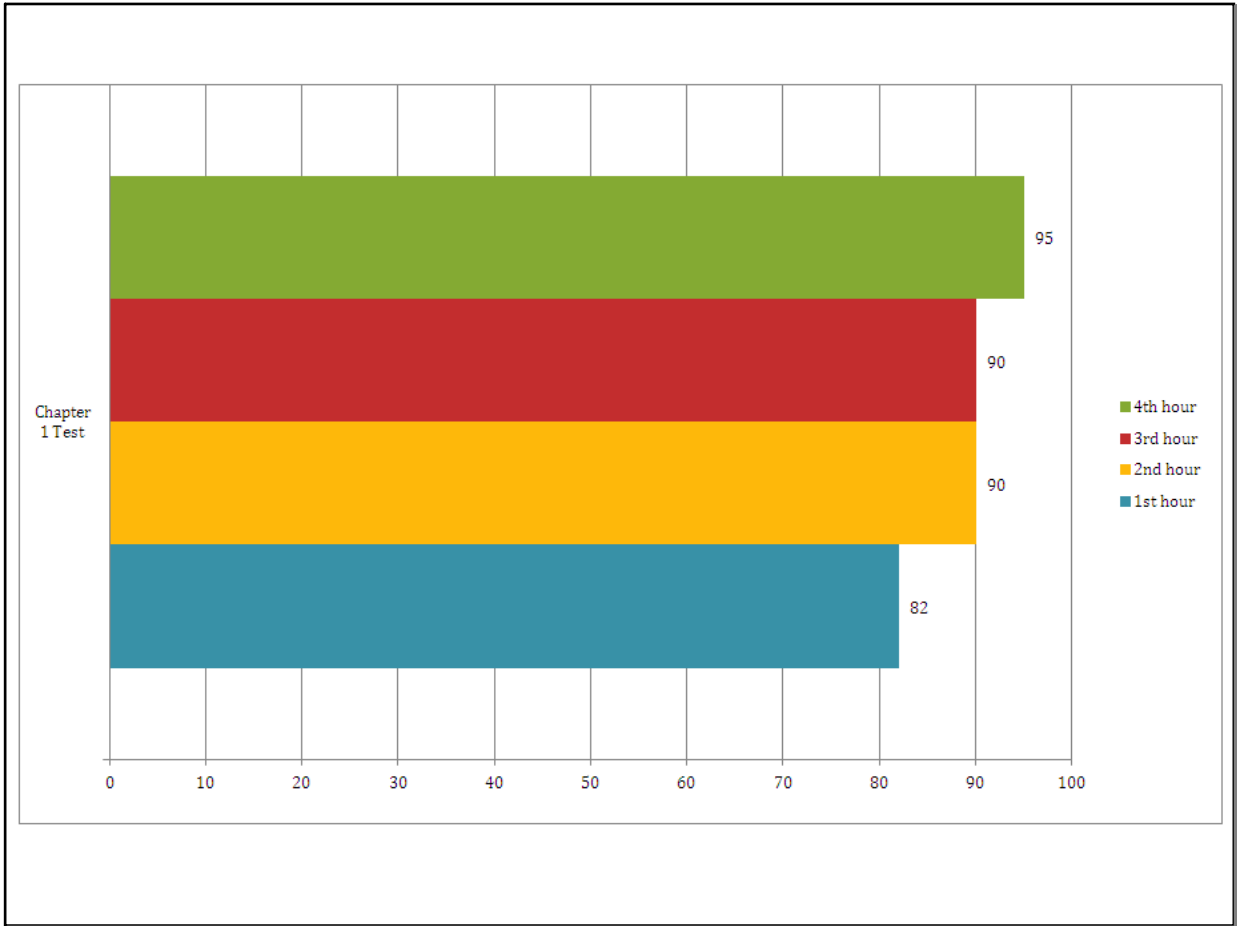Jan 31-7:02 AM

Test Results

HOW COOL (and tired) AM I THAT I GOT THEM ALL GRADED?!?!

Period 1:
  Mean: 87%
  Median: 87.5%

Period 3:
  Mean: 85.8%
  Median: 89%

Period 2:
  Mean: 86.2%
  Median: 86%

Period 4:
  Mean: 87.9%
  Median: 89%

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95

90

90

82

Chapter
1 Test

4th hour
3rd hour
2nd hour
1st hour

0 10 20 30 40 50 60 70 80 90 100

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Mission accomplished?

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What did we do well/What could we do differently next time?

+ | △

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2.3

Describing the Center of Data

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Center vs. Spread

Center

– What is a representative observation like?

Spread

– Do the other observations take similar values, or are they quite spread out?

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MEAN

- The mean is the sum of the observations divided by the number of observations
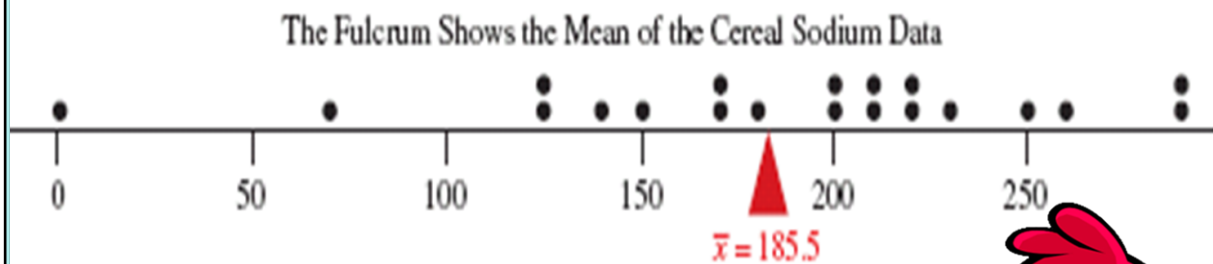
- It is the center of mass

$$\overline{x} = \sum \frac{x}{n}$$

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MEAN

The mean is the balancing point for the data. The line with the data points on it would balance by placing a fulcrum at the mean of that data.

The Fulcrum Shows the Mean of the Cereal Sodium Data

$\bar{x} = 185.5$

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MEDIAN

The median is the midpoint of the observations when they are ordered from the smallest to the largest (or   from the largest to smallest)

1. First, order the observations
2. If the number of observations is:
      Odd, then the median is the middle observation
      Even, then the median is the average of the two
      middle observations

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"We Do" Example

Find the mean and the median of the following data set:

78	114	91	105	94	98
103	101	99			

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Practice Example

Find the mean and the median of the following data set of people's ages:

15	18	21	16	32	18	26	29
24	15	18	30				

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WooooHoooo!

Calculator Commands

1. STAT, EDIT

2. Enter data into L1

3. STAT --> CALC

4. 1: 1-Var Stats

5. ENTER, ENTER

Cereal	Sodium
Frosted Mini Wheats	0
Raisin Bran	210
All Bran	260
Apple Jacks	125
Capt Crunch	220
Cheerios	290
Cinnamon Toast	210
Crackling Oat Bran	140
Crispix	220
Frosted Flakes	200
Fruit Loops	125
Grape Nuts	170
Honey Nut Cheerios	250
Life	150
Oatmeal Raisin Crisp	170
Sugar Smacks	70
Special K	230
Wheaties	200
Corn Flakes	290
Honeycomb	180

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FYI - Tests

This is why I look at the median on test scores...if someone gets a 0, the mean is much lower.

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Comparing Mean & Median

The mean and median of a symmetric distribution are close together.

For symmetric distributions, the mean is typically preferred because it takes the values of all observations into account
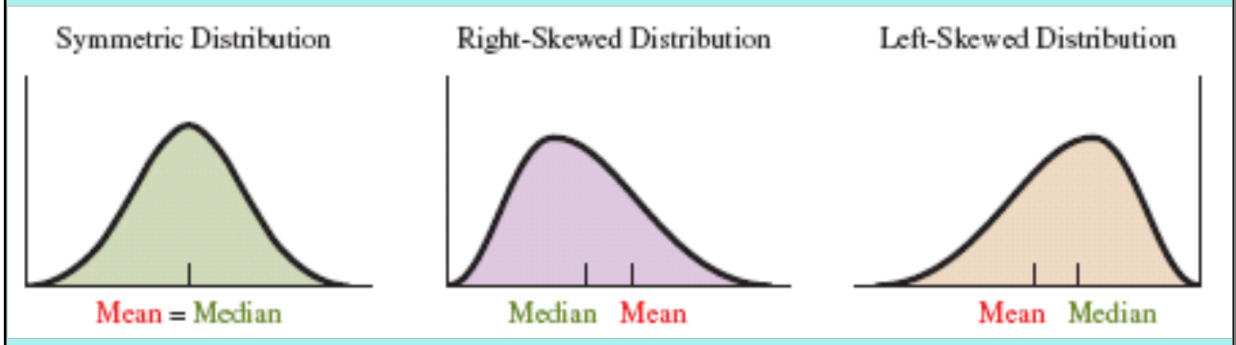
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Comparing Mean & Median

In a skewed distribution, the mean is farther out in the long tail than is the median

For skewed distributions the median is preferred because it is better representative of a typical observation

Symmetric Distribution	Right-Skewed Distribution	Left-Skewed Distribution
Mean = Median	Median Mean	Mean Median

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SKEW?

The mean household income in the US in 2005 was about $61,000. The median was about $44,000 (according to the Bureau of the Census).

Is there skew? If so, in which direction?

Mean is higher than median, so skew to the right!

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SKEW?

Last semester's stats class had a median grade of 85% with a mean grade of 70%.

Is there skew? If so, in which direction?

Mean is lower than median, so skew to the left!

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Resistant Measures

A numerical summary measure is resistant if extreme observations (outliers) have little, if any, influence on its value

The Median is resistant to outliers

The Mean is **not** resistant to outliers

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Marriage Example

Let's try a problem together...

# of Times Married	WOMEN	MEN
0	5861	7074
1	2773	1541
2	105	43
TOTAL	8739	8658

a. Find the median and mean for each gender
b. Why is the median not particularly
   informative?

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MODE

Value that occurs most often

Highest bar in the histogram/ highest frequency

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HOMEWORK

pg. 55 # 32, 33, 35-37, 42, 45

45 is tricky! Good thing it's odd so you can check your answer in the back of the book AFTER you try it.

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3 problems to try!

We ♥ working through problems together!

(2.3 problems)

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