

Daily Agenda

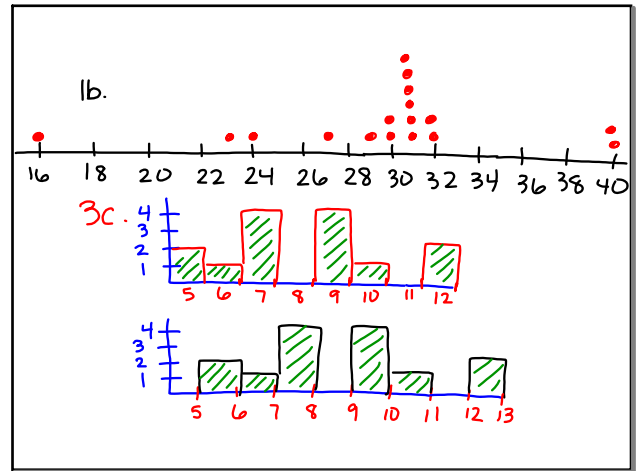
Learning Targets:  
 I can calculate the mean, median, and mode.  
 I can calculate percentiles of a data set.  
 I can determine an outlier.

**Homework**  
 10.5 Day 2 WS

**Assessments**  
 Unit 10 B Test - 5/23

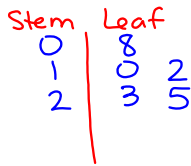
Success comes from knowing that you did your best to become best that you are capable of becoming. -John Wooden

Nov 15-8:24 PM



May 9-11:13 AM

23 25 12 10 8



May 9-11:21 AM

10.5 Displaying and Analyzing Data

**Statistics**

Study, analysis, and interpretation of data.

**Measure of Central Tendency**

indicates the "middle" of the data set

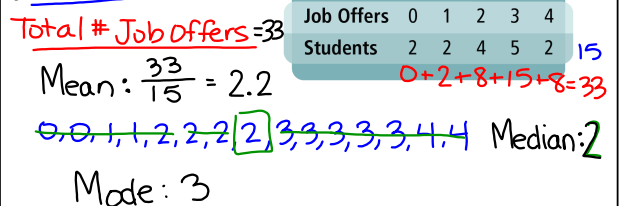
The *mean*, *median*, and *mode* are the most common measures of central tendency.

Feb 9-11:33 AM

|               | Definition   | Data Set: 1, 2, 3, 3, 4, 5, 5, 9                                  |
|---------------|--|---|
| <b>Mean</b>   | $\bar{x} = \frac{\text{sum of the data values}}{\text{total \# of data values}}$ | $\frac{1+2+3+3+4+5+5+9}{8} = 4$                                   |
| <b>Median</b> | The <i>middle value</i> when the data is listed in order.                        | 1, 2, 3, <b>3</b> , 4, 5, 5, 9<br>$\frac{3+4}{2} = 3.5$           |
| <b>Mode</b>   | The most <i>frequently occurring</i> value(s).                                   | 1, 2, <b>3, 3</b> , 4, <b>5, 5</b> , 9<br>Two values occur twice. |

Apr 14-12:41 PM

**Example** The frequency table shows the number of job offers received by each student within two months of graduating with a mathematics degree from a small college. What are the mean, median, and mode for the **job offers per student**?



Apr 14-5:30 PM

**Example** The frequency table shows the number of trees in the yard of each house on one street. What are the mean, median, and mode for the trees per yard.

|       |   |   |   |   |   |   |                    |
|-------|---|---|---|---|---|---|--------------------|
| Trees | 3 | 4 | 5 | 6 | 7 | 8 | Total # Trees: 105 |
| Yards | 1 | 5 | 7 | 4 | 1 | 2 | Total # Yards: 20  |

~~3, 4, 4, 4, 4, 4, 5, 5, 5, 5, 5, 5, 5, 6, 6, 6, 6, 7, 8, 8~~  
 Mean:  $\frac{105}{20} = 5.25$  Median: 5 Mode: 5

Apr 14-5:50 PM

**Error Analysis** Billy found the median of the data set below. Explain Billy's error, then find the median.

|           |    |    |    |    |
|-----------|----|----|----|----|
| Score     | 80 | 85 | 90 | 95 |
| Frequency | 6  | 4  | 10 | 1  |

90

~~Median:  $\frac{85+90}{2} = \frac{175}{2} = 87.5$~~

Apr 14-9:40 PM

**Comparisons**

|               | Definition            | Advantages/Disadvantages   |
|---------------|-----------------------|--|
| <b>Mean</b>   | Average               | Takes every value into account/Affected by extreme values (outliers)                   |
| <b>Median</b> | Physical middle value | Not affected by extreme values/Does not take every value into account                  |
| <b>Mode</b>   | Most frequent value   | Quick; no calculation/Sensitive to extreme values and does not account for every score |

Apr 14-9:39 PM

**Outlier**

Value that is substantially different from the rest of the data in a set. Can occur at the "ends."  
 Arranging the numbers in order will help identify any outlier(s).

Which of the following, if any, of the data set is an outlier:

56 65 73 59 98 65 59

56 59 59 65 65 73 98  
 Outlier(s) can affect measures of central tendency! (98)

Apr 14-1:20 PM

**Example**

What score was the 65<sup>th</sup> percentile of the list of the ordered test scores?

41 54 61 65 67 73 74 77 77 77  
 79 80 82 88 89 93 97 98 98 100

$20 (.65) = 13$

Find values at each percentile:  
 a) 55<sup>th</sup>                      a) 95<sup>th</sup>

May 8-2:50 PM