

10-1 Measures of Central Tendency

Objectives:

- I can find the mean, median, mode, and range of a data set
- I can identify outliers in a data set
- I can describe which measure best fits a data set
- I can explain the effect of outliers on a data set

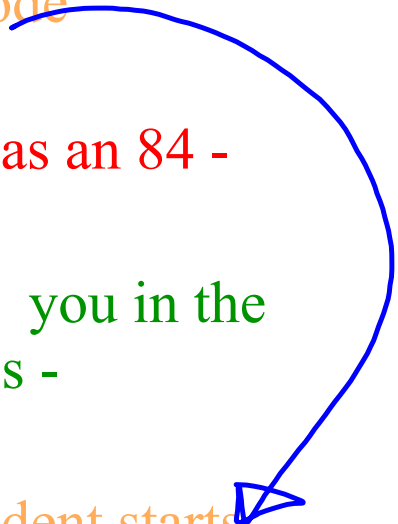
Mean - Median - Mode



The average on the test was an 84 -



The average test score puts you in the middle of the class -



The average American student starts college at 18-

Measures of Central Tendency

Mean:

average, $\frac{\text{add all data}}{\text{\# data points}}$

Median:

Middle, organize data in order
CROSS of get to middle

Mode:

MOST, MOST OFTEN RESPONSE



- 1 MODE
- Multiple
- No

Range:

difference between biggest &
Smallest Response

Shoe size activity:

Get everyone's shoe size and find the mean, median, mode and range of the classes shoe sizes.

~~7, 10, 13, 13, 9, 7, 7, 11, 10, 13, 7, 7, 14, 9, 12~~
~~9, 8, 7, 6, 9, 9, 8, 12, 7~~

Mean:

$$\frac{224}{24} = 9.3$$

Median:

9

Mode: 7

Range: $14 - 6 = 8$

~~6, 7, 7, 7, 7, 7, 7, 7, 8, 8, 9, 9, 9, 9, 9, 10, 10~~
~~11, 12, 12, 13, 13, 13, 14~~

$$\frac{9 + 9}{2} = 9$$

The salaries of the LA Lakers (who makes more than a million a year) for
the 2013-2014 season

*
~~Kobe Bryant: \$30,453,805~~ ~~Pau Gasol: \$19,285,950~~
~~Steve Nash: \$9,300,500~~ ~~Jordan Hill: \$3,563,600~~
Chris Kaman: \$3,183,000 Jodie Meeks: \$1,550,000
MarShon Brooks: ~~\$1,210,080~~ Nick Young: ~~\$1,106,942~~
Jordan Farmar: ~~\$1,106,942~~ Chris Duhon: ~~\$1,500,000~~

Mean: 7,226,071.9

Median:

2,366,500

$\frac{3,183,000 + 1,550,000}{2}$

Mode:

1,106,942

← USE MEDIAN TO describe
data with outliers

Range: 30,453,805 — 1,106,942

Test scores from a class: 70, 70, 75, 75, 90, 70, 80, 85, 65, 95, 70, 85, 90, 70, 20

Mean: $\overline{X} = 74$

Median: 75

Mode: 70

Range: $95 - 20 = 75$

Is there an outlier for the following set? If so, find the mean, median, and mode without the outlier and describe how it affects the data.

Test scores from a class: 70, 70, 75, 75, 90, 70, 80, 85, 65, 95, 70, 85, 90, 70, 20 *yes.*

$$\bar{x} = 77.89$$

$$\text{Med} = 75$$

$$\text{Mode} = 70$$

$$\text{Range} = 95 - 65 = 30$$

Why do we have all of these measures?

Example: On a cul-de-sac, you have 5 houses built for:

\$200,000, \$200,000, \$200,000, \$200,000,
\$1,200,000

Find the median and the mean? Which one is a better measure?

Med: 200,000 } ^{MOST} useful b/c of outliers
Mode: 200,000 }
Mean: 400,000

