

# Measures of Center

Math 122

# Things To Look For in Data

- Shape of data
- Center
- Variation

# Mean/Average

Sum of data values divided by number of values

WE WILL NOT CALCULATE THIS BY HAND (USUALLY)

1, 1, 2, 3, 3, 3, 4, 4, 4, 5

# Notation

- $\Sigma$  (Greek Sigma) denotes a SUM
- $x$  - variable to denote individual data values
- $\Sigma x$  - sum of all values of  $x$
- $n$  - number of data values in a SAMPLE
- $N$  - number of data values in a POPULATION
- $\bar{x}$  - the mean or average of a SAMPLE
- $\mu$  - the mean or average of a POPULATION



# Notation

**Sample Mean:**  $\bar{x} = \frac{\sum x}{n}$

**Population Mean:**  $\mu = \frac{\sum x}{N}$

# Median

Middle value when data is sorted

2, 3, 3, 4, 5, 6, 45

2, 3, 5, 5, 6, 7, 7, 9, 12, 15

# Mode

The MODE is the most common data value

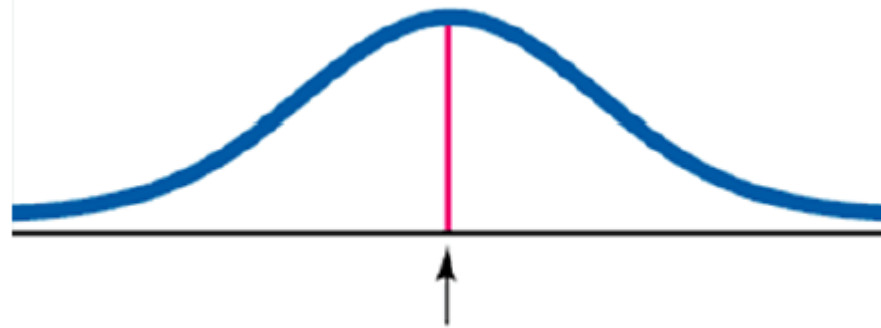
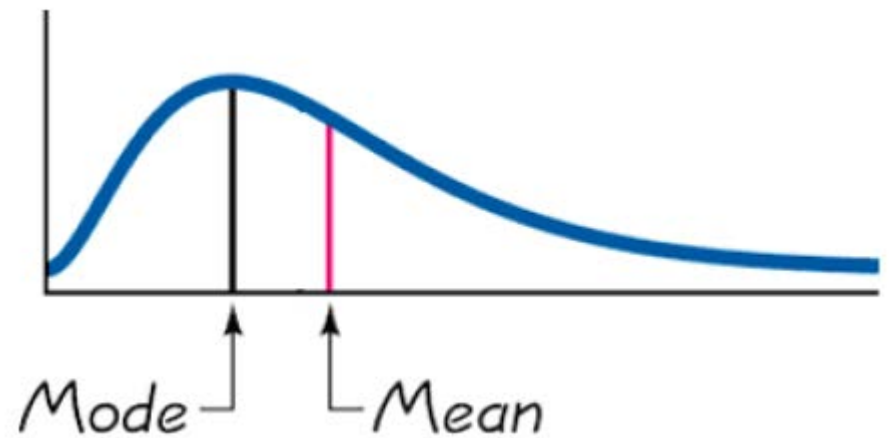
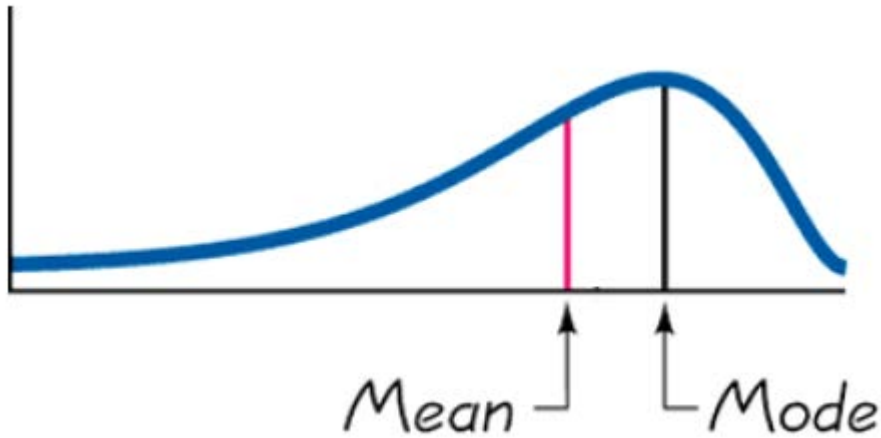
2, 3, 3, 4, 4, 5, 5, 5, 6, 7

a, a, a, b, b, b, b, c, c, c

Bimodal: 1, 1, 1, 2, 2, 2, 3, 4, 5

Multimodal: 1, 1, 2, 2, 3, 3, 4, 5

# Skewness



Mean = Mode = Median



# Midrange

Average of the maximum and minimum values

2, 3, 4, 4, 5, 5, 6, 7, 9, 10

# Comparison of Middle Values

	Mean	Median	Mode	Midrange
Reliable (sample values similar)	Yes	No	No	No
Resistant to outliers	No	Yes	Yes	No
Can be used with categorical data	No	No	Yes	No

