

## 12.2 – Measures of Central Tendency

- An **average** is a number that is representative of the “center” for a group of data.

### Mean

- The **arithmetic mean**, or simply the **mean** is symbolized by  $\bar{x}$ , when it is a *sample* of a population or by the Greek letter mu,  $\mu$ , when it is the entire *population*.
- The **mean**,  $\bar{x}$  is the sum of the data divided by the number of data values.

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

- $\sum x$  represents the sum of all the data
- $n$  represents the number of data values

### Example

- Find the mean amount of money parents spent on new school supplies and clothes if 5 parents randomly surveyed replied as follows: \$327 \$465 \$672 \$150 \$230

## Median

- The **median** ( $M$ ) is the value in the middle of *ranked* data set. In a large set of numbers with  $n$  data items the median is in the  $\frac{n+1}{2}$ st position.

## Examples

- Determine the median of \$327 \$465 \$672 \$150 \$230.  
Rank the data from smallest to largest.

- Determine the median of the following set of data:  
8, 15, 9, 3, 4, 7, 11, 12, 6, 4.

Put the data in numerical order:

3 4 4 6 7 8 9 11 12 15

## Mode

- The **mode** is the data value that occurs most frequently.

Example: Determine the mode of the data set:  
3, 4, 4, 6, 7, 8, 9, 11, 12, 15.

## Midrange

- The **midrange (or midpoint)** is the value halfway between the lowest (L) and highest (H) values in a data set.

$$\text{Midrange} = \frac{\text{Highest Value} + \text{Lowest Value}}{2}$$

Example: Find the midrange of the data set  
\$327, \$465, \$672, \$150, \$230.

## Working with Frequency Distributions

$$\text{Mean} = \bar{x} = \frac{\sum xf}{n}$$

Example (p.697, #12):