# STATISTICS
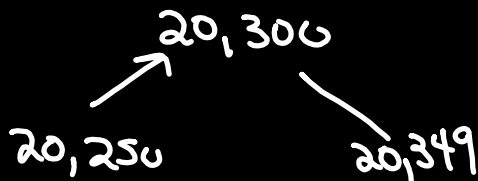
— the science of collecting, analyzing, & reporting information about a set of data

## Heights of U.S. Mountains

| | | |
|---|---|---|
| 15,705 | 17,440 | 15015 |
| 15,320 | 16,277 | 16,286 |
| 16,390 | 20,320 | 16,550 |
| 18,008 | 15,658 | |

20,300
20,250          20,349

## Steam-and-Leaf Plot

| Truncated | | Rounded |
|---|---|---|
| 7 6 3 0 | 15 | 0 3 7 7 |
| 5 3 2 2 | 16 | 3 3 4 6 |
| 4 | 17 | 4 |
| 0 | 18 | 0 |
| | 19 | |
| 3 | 20 | 3 |

$3|20 = 20,300 - 20,399$

$20|3 = 20,250 - 20,349$

# HISTOGRAM — displays how many pieces of data fall in each range.

Bin Bin

**Bin Settings**

Skewed to the left
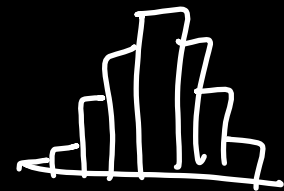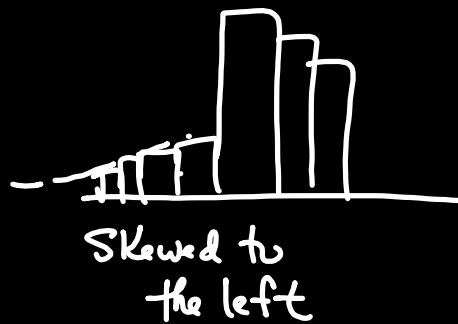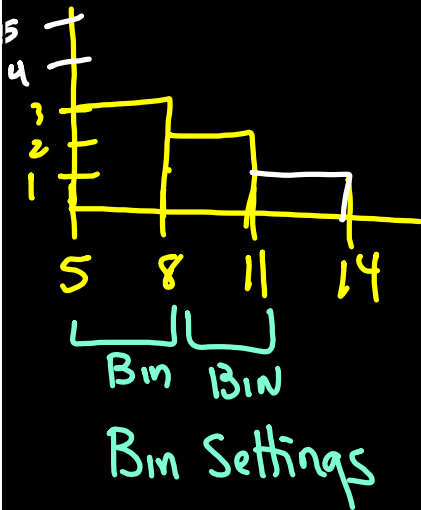
# MEASURES OF CENTRAL TENDENCY

— describe the "center" of the data

$$\text{Mean} = \text{"average"} = \frac{\text{sum of data}}{\text{\# of items}}$$

$$\sum \frac{x}{n} \leftarrow \text{sum} \quad \leftarrow \text{data} \quad \leftarrow \text{\# of items}$$

$$\frac{\text{Sample}}{\overline{x}} \qquad \frac{\text{population}}{\mu} \quad \text{(mu)}$$

$\frac{7}{2} = 3.5 \Rightarrow 4^{th}$

2   5   8   ⑰   29   30   56

$$\overline{x} = \frac{147}{7} = 21$$

$$\text{Med} = 17$$

Median — the middle value — Data must be in order!

Data set: 200 values     $\frac{200}{2} = 100^{th}$ & $101^{st}$ = Find mean of these #'s

Data set: 75 values     $\frac{75}{2} = 37.5 = 38^{th}$

Mode = the most frequent value

    can have up to 3 modes

2 partners    $100,000

23 earn    $12,000

9 earn    $25,000

16 earn    $18,000

23    12,000

16    18,000

9    25,000

2    100,000

$$2 \cdot 100,000 = 200,000$$
$$23 \cdot 12,000 = 276,000$$
$$9 \cdot 25,000 = 225,000$$
$$\frac{16 \cdot 18,000 = 288,000}{50 \qquad\qquad 989,000}$$

$$\mu = \frac{989,000}{50} = \$19,780$$

$$\text{Median} = \frac{50}{2} = 25^{th} + 26^{th}$$
$$= \$18,000$$

$$\text{Mode} = \$12,000$$

Convenience — ask whoever is readily available

Random — Everyone has an = chance

Systematic = Select every $K^{th}$ person

Stratified = ① Break pop. into groups
② Randomly select from each group

Cluster = ① Break pop. into groups
② Randomly select a few groups
+ survey <mark>everyone</mark> in the group.