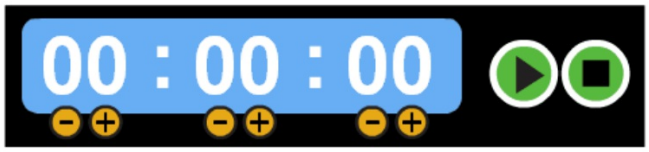
**Timed Expectations**




**Find the mean, median, and mode of the data set of test scores.**

**91, 100, 66, 50, 66, 88, 87, 88, 30, 88, 50**

mean - 73.09

med. - 87

mode - 88

# Measures of Central Tendency
# Shape of Distributions

Objective: We will be able to analyze methods of data collection and sampling.

Essential Questions: How do we collect data and determine what sampling method to use?

# Mean

Add everything up and divide by the number of data points.

Ex. Find the mean of the data set:
3, 4, 6, 8, 3 4.8

# Median

- Middle point of the data
- To calculate:
  - Put the values in order from smallest to largest
  - If there is an odd number of data points, value in the middle
  - If there is an even number of data points, average the two middle values
- Ex. Find the median of the data set:

~~6~~, ~~3~~, ~~9~~, ~~1~~, ~~7~~, ~~8~~, ~~3~~, ~~5~~, ~~3~~, ~~2~~, ~~7~~, ~~3~~, ~~8~~, ~~4~~, ~~9~~, 10

1 2 3 3 3 4 5 6 7 8 9 9 10

# Mode

- Value that occurs most frequently
- If no value occurs more than once, then the data set has no mode
- Data set can have more than one mode
- Ex. Find the mode of the data set:

7, 4, 9, 2, 4, 3, 9, 1, 7, 8, 3, 2, 3, 3, 3, 5, 2

1 2 3 4 5

# Example 1

Data Set I

| | | | | |
|---|---|---|---|---|
| $300 | 300 | 300 | 940 | 300 |
| 300 | 400 | 300 | 400 | |
| 450 | 800 | 450 | 1050 | |

Data Set II

| | | | | |
|---|---|---|---|---|
| $300 | 300 | 940 | 450 | 400 |
| 400 | 300 | 300 | 1050 | 300 |

- Data Set I

Mean is 483.64
Median is 400
Mode is 300

- Data Set II

Mean is 474
Median is 350
Mode is 300

# Solution

Data Set I

| | | | | |
|---|---|---|---|---|
| $300 | 300 | 300 | 940 | 300 |
| 300 | 400 | 300 | 400 | |
| 450 | 800 | 450 | 1050 | |

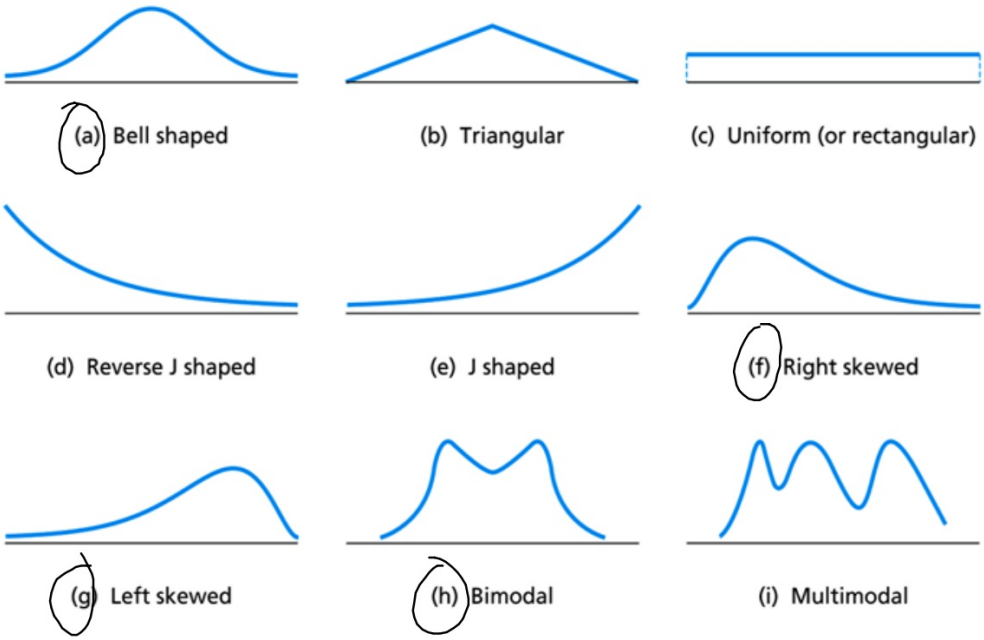
Data Set II

| | | | | |
|---|---|---|---|---|
| $300 | 300 | 940 | 450 | 400 |
| 400 | 300 | 300 | 1050 | 300 |

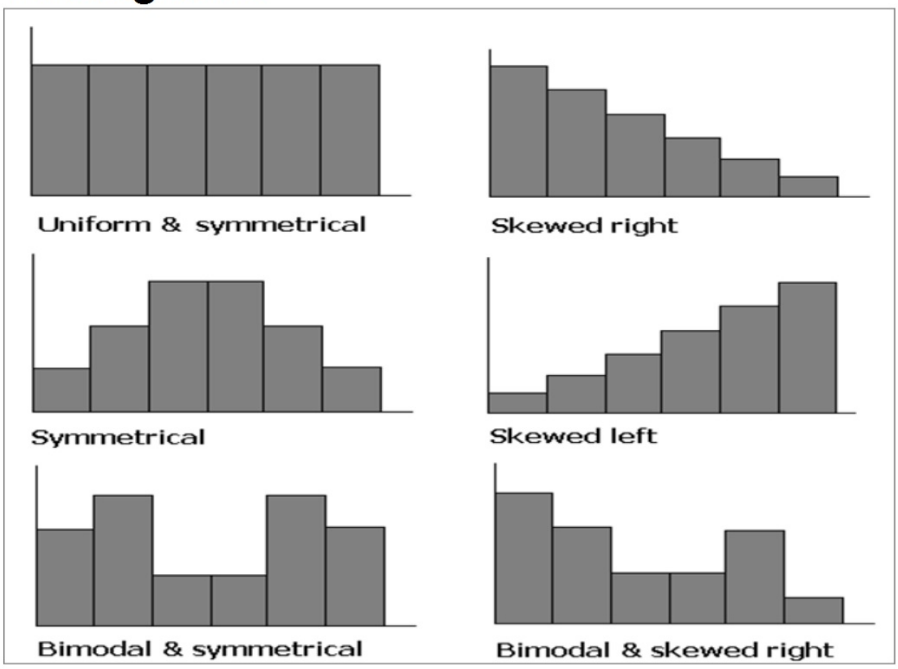
- Data Set I
  Mean is 483.8461538
  Median is 400
  Mode is 300

Data Set II
  Mean is 474
  Median is 350
  Mode is 300

# Distribution Shapes



# Histograms


Uniform & symmetrical
Skewed right
Symmetrical
Skewed left
Bimodal & symmetrical
Bimodal & skewed right

# What shape works best?

In the following, determine what shape the data may have if represented by a histogram.

Household income

Birth weight of a baby

Life expectancy of a tire

Wait time the Lynx blue line

Life expectancy of an individual

| Age Group | Number of Runners |
|---|---|
| 0–10 | \|\| |
| 11–20 | \| |
| 21–30 | 𝍸 𝍸 \|\| |
| 31–40 | 𝍸 \| |
| 41–50 | 𝍸 |
| 51–60 | \| |
| 61–70 | \|\| |
| 71–80 | \| |
| 81–90 | \|\| |

What is the shape of the distribution?

A uniform

B skewed right

C skewed left