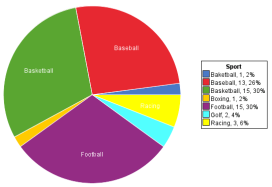
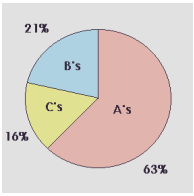
- Types of Data
- Mean, Median, Mode, and Range (MMMR)
- Shapes of Distribution

- **Categorical** - Non-numerical data
  - Ex. eye color, favorite movie
- **Quantitative** - Numerical data
  - Ex. height, weight, age

Favorite Sport

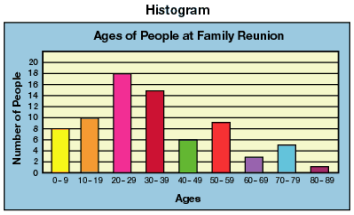


Scores on a Test

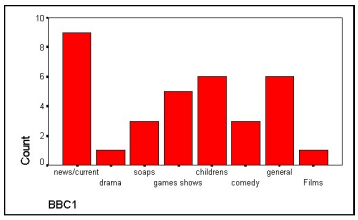


Categorical or Quantitative?

Histogram



Q



C

Quantitative Data

- How much candy do we eat each week?
- How many hours a week do we spend watching TV?
- How many hours a week do we talk on the phone?
- How much do our backpacks weigh?
- How many pets do students in our class have?

Categorical Data

- What is our favorite sport?
- What kind of music do we like best?
- What kinds of snacks do we like?

Mean (Average)

To find the mean, you __add__ up all the numbers and then __divide__ by how many __numbers__ you had.

Ex: Find the mean of the set of numbers.

14, 26, 39, 30 = 109 ÷ 4 = 27.25

Median (Middle)

To find the median, first write the numbers in __order__. Then find the __middle__ number or the __average__ of the two middle numbers.

Ex: Find the median of the set of numbers.

~~36, 51, 37, 41, 25, 32, 44, 53~~

~~32, 35, 36,~~ 37, 41, ~~44, 51, 53~~

39

Mode

To find the mode, put the __numbers__ in order. Then find the number or numbers that appear most __often__.

You can have __more__ than one mode or __no__ mode depending on the set of numbers.

Ex: Find the mode of the set of numbers.

34, 34, 37, 35, 34, 36, 33, 34, 33, 31, 33

31, 33, 33, 33, 34, 34, 34, 34, 35, 36, 37

34

Range

To find the range of a set of numbers, first put the numbers in order. Then __subtract__ the __smallest__ number from the __largest__ number.

Ex: Find the range of the set of numbers.

36, 37, 51, 49, 41, 32

51 - 32 = 19

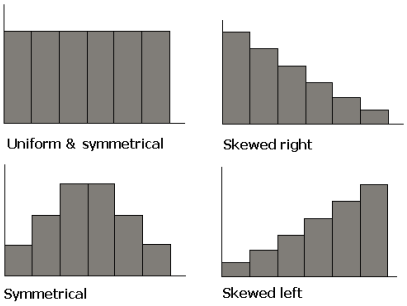
Finding Mean, Median, and Mode on a Calculator

1. Clear your calculator (2nd, 0, 7, 1, 2)
2. Press List and enter your data into L1. Press enter after each number
3. Press 2nd, Mode
4. Press 2nd, List
5. Press the right arrow twice to move to MATH
6. Choose which measure you want to find and press enter.
7. Press 2nd, List
8. Choose L1 and press enter twice.

Use this data to try it!
5 7 8 4 3 2 9 5 4

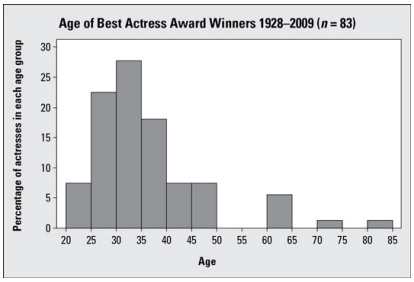
Shapes of Distribution

They describe the distribution of the data on a graph.



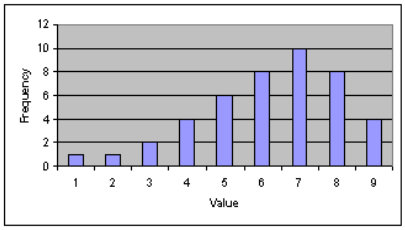
Skewed Right

A histogram that is skewed right indicates that the majority of the data has values towards the lower end of its range.



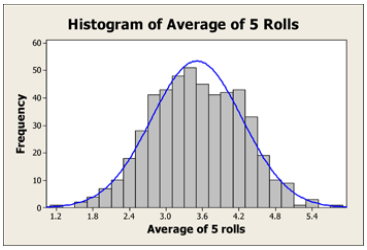
Skewed Left

A histogram that is skewed to the left indicates that the majority of the data has values towards the upper end of its range.



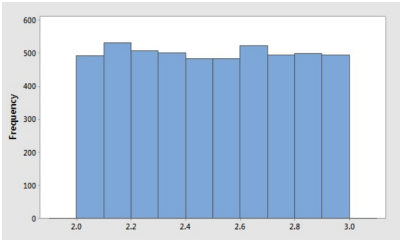
Bell-Curve

A common pattern is the bell-shaped curve known as the "normal or symmetrical distribution." In a bell curve, points are as likely to occur on one side of the average as on the other.



Uniform

A histogram that is uniform indicates that data is spread out equally within the range.



Unusual Features in Data

Gaps - Gaps refer to areas of a distribution where there is no data.

Outliers - Sometimes distributions are characterized by extreme values that differ greatly from other observations. These extreme values are called outliers. The figure below illustrates a distribution with an outlier and a gap.