

# How to Compare Distributions

Name: \_\_\_\_\_ Class Period: \_\_\_\_\_

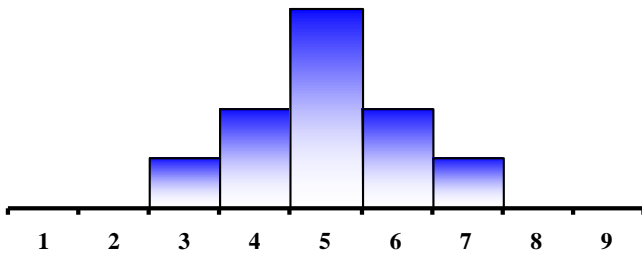
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When you compare two or more data sets, focus on four features:

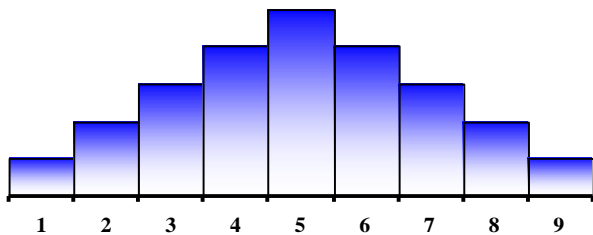
- ★ **Center.** Graphically, the center of a distribution is the point where about half of the observations are on either side.
  - ★ **Spread.** The spread of a distribution refers to the variability of the data. If the observations cover a wide range, the spread is larger. If the observations are clustered around a single value, the spread is smaller.
  - ★ **Shape.** The shape of a distribution is described by symmetry, skewness, number of peaks, etc.
  - ★ **Unusual features.** Unusual features refer to gaps (areas of the distribution where there are no observations) and outliers.
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## SPREAD

The spread of a distribution refers to the variability of the data. If the data cluster around a single central value, the spread is smaller. The further the observations fall from the center, the greater the spread or variability of the set.



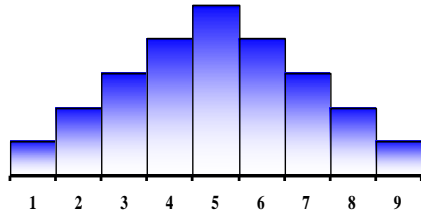
**Less Spread**



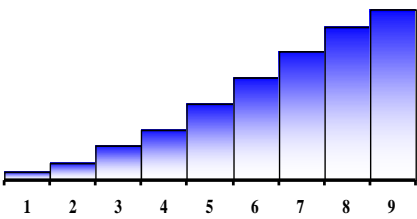
**More Spread**

## SHAPE

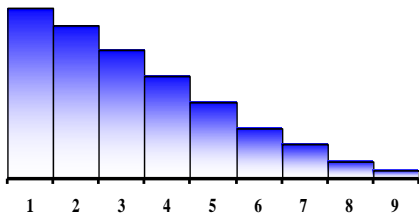
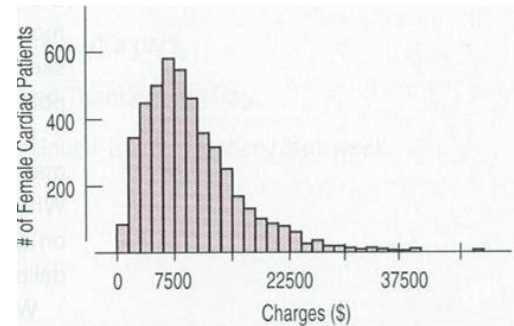
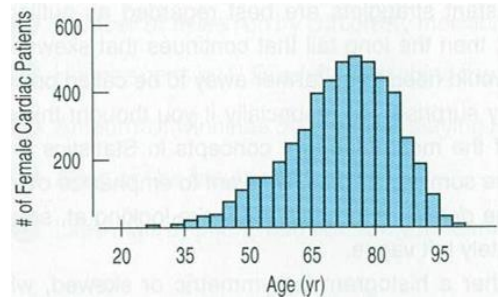
The shape of a distribution is described by symmetry, number of peaks, direction of skew, or uniformity



**Symmetric, Unimodal, Bell-shaped**

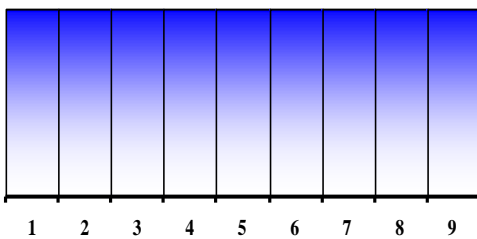
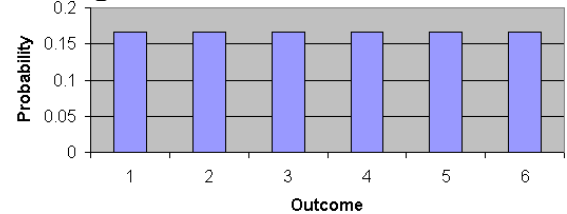


**Skewed Left**



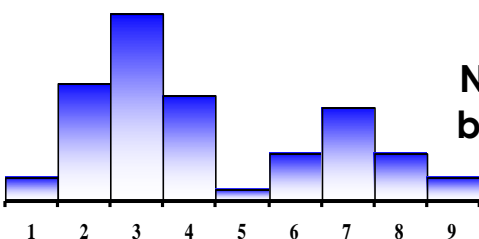
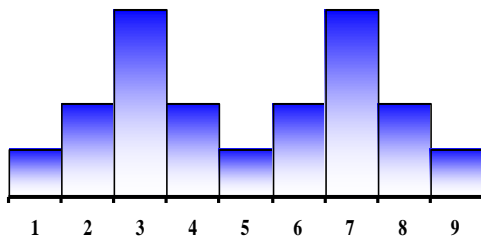
**Skewed Right**

**Rolling Dice**

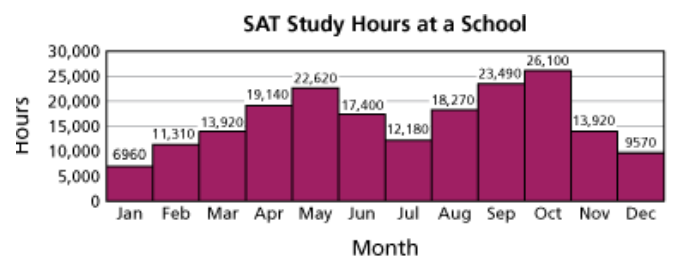


**Uniform**

**Symmetric, Bimodal**

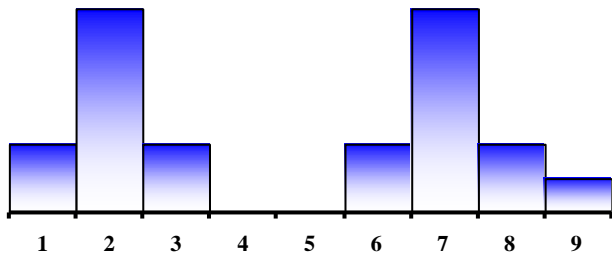


**Non-Symmetric, bimodal**

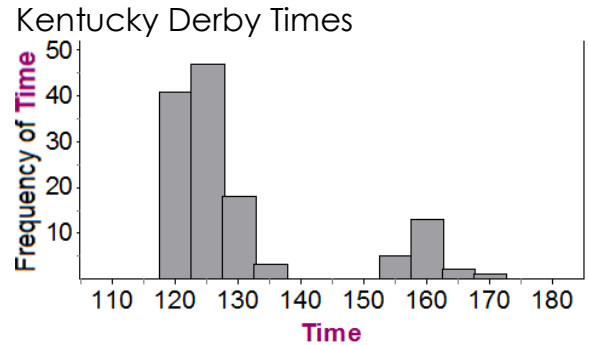


## UNUSUAL FEATURES

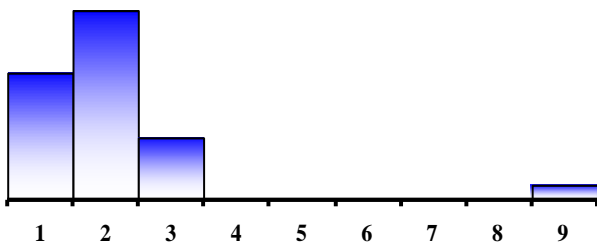
Sometimes, statisticians refer to unusual features in a set of data. The two most common unusual features are gaps and outliers.



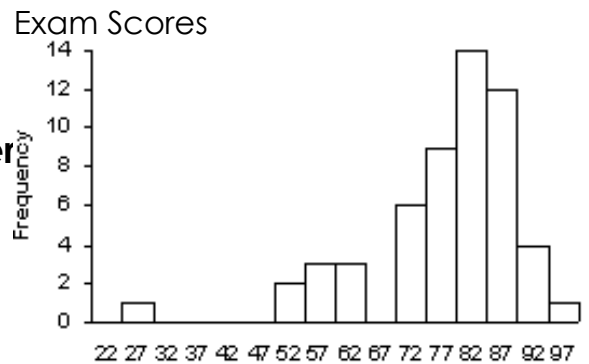
Gap



What could have caused this shift in times?



Outlier



### Practice Problems:

What shape would the following situations have?

- 1) A really hard test
- 2) A really easy test
- 3) Results of rolling a 6 sided die 1000 times
- 4) Heights for each gender at LHS?
- 5) Combined heights of male and female students at LHS?