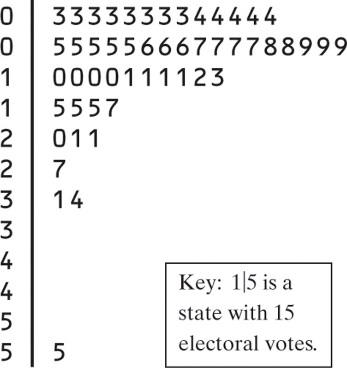
Warmup



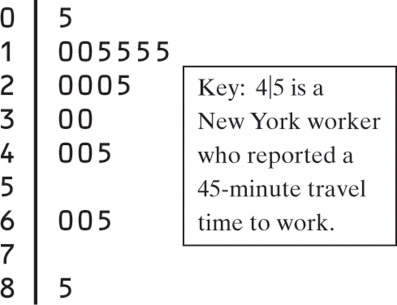
1. What is the shape of the distribution? Will the mean be smaller or larger than the median (don’t calculate)
2. What is the median?
3. Calculate the IQR
4. Confirm 55 is an outlier

**Five-Number Summary & Boxplots**

The *5-Number Summary* consists of the miniumum observation, the first quartile, the median, the third quartile, and the maximum observation, written in order from smallest to largest.

***Minimum Q1 M Q3 Maximum***

Example:



Calculate the 5-number summary

These numbers roughly divide the distribution into *quarters.*

A **boxplot** graphically depicts the 5-number summary.

* Draw and label a number line that includes the range of the distribution.
* Draw a central box from *Q1* to *Q3*.
* Note the median *M* inside the box.
* Extend lines (whiskers) from the box out to the minimum and maximum values that are not outliers. **Place a dot for outliers**

Example: Draw the boxplot for the 5-number summary from above

**Example**

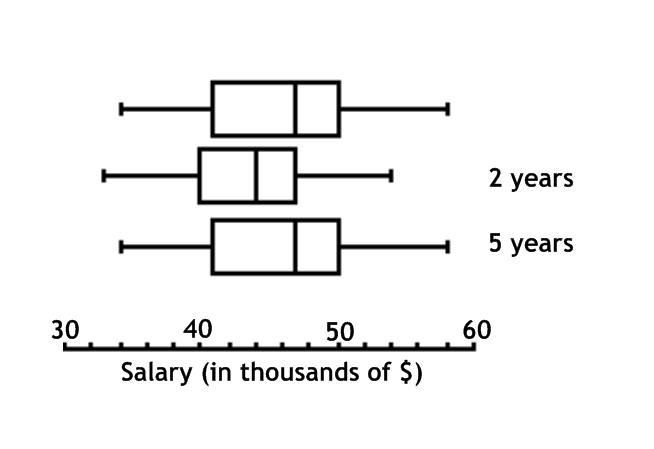
The number of calories in 22 different Ice Cream Bars

342, 377, 319, 353, 295, 234, 294, 286, 377, 182, 310, 439, 111, 201, 182, 197, 209, 147, 190, 151, 131, 151

1. Find the 5-number summary for this data and draw a boxplot.
2. Describe the distribution

**Comparing Distributions of Data**

This side by side boxplot shows the five number summary of annual salary from graduates of Renata College. The boxplot on top shows the salaries of graduates from two years ago, the boxplot on the bottom shows the salaries of graduates from five years



Compare the two distributions

**Measuring Spread: The Standard Deviation**

The *standard deviation* sx measures the *average* distance of the   
observations from their mean.

Procedure: 1) Calculate the mean.

2) Calculate each *deviation.*

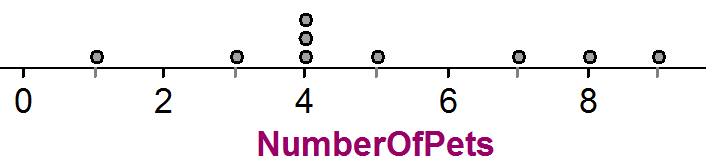
*deviation = observation – mean*

*3) Square each deviation.*

*4) Find the “average” squared deviation. Calculate the sum of the squared deviations divided by (n-1)…this is called the* ***variance.***

*5) Calculate the square root of the variance…this is the* ***standard deviation.***

Example:

**