

Statistics and Bell-Curve

Statistic is the science of collecting, organizing, and analyzing data.

Few different Ways to organize the data:

- 1) Frequency Tables
- 2) Histograms
- 3) Dot Plots
- 4) Stem and Leaf Plots
- 5) Box and Whisker Plots

Frequency Table:

Ex1) The final scores for each golfer in a tournament are given below. Use the data to make a frequency table.

~~77~~, ~~71~~, ~~70~~, ~~82~~, ~~75~~, ~~76~~, ~~72~~, ~~70~~, ~~71~~, ~~74~~, ~~71~~, ~~75~~, ~~68~~, ~~72~~, ~~75~~, ~~74~~
greatest least

Step 1: Identify the least and greatest values.

Step 2: Divide the data into equal intervals.

Step 3: List the intervals in the first column of the table in each interval and list the count in the last column

Step 4: Give the table a title.

Decide a range: 65 - 85

Scores	Frequency
65 - 69	1
70 - 74	8
75 - 79	6
80 - 85	1

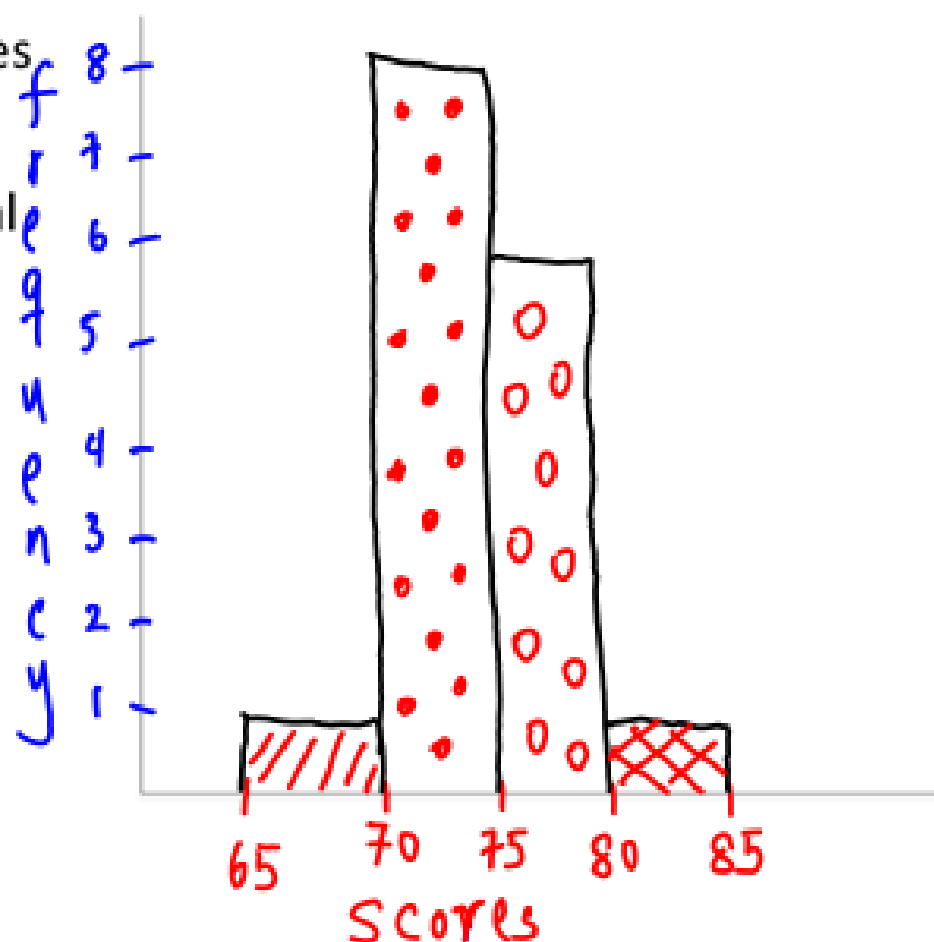
Histogram: a bar graph used to display the frequency of data divided into equal intervals. The bars must be of equal width and should touch, but not overlap.

77, 71, 70, 82, 75, 76, 72, 70, 77, 74, 71, 75, 68, 72, 75, 74

Step 1: Use the scale and interval from the frequency table.

Step 2: Draw a bar for the number of the scores in each interval.

Step 3: Title the graph, and label the horizontal and vertical scales.



Stem-and-Leaf: a special table where each data value is split into a “stem” (the first digit or digits) and a “leaf” (usually the last digit).

~~77~~, ~~71~~, ~~70~~, ~~82~~, ~~75~~, ~~76~~, ~~72~~, ~~70~~, ~~77~~, ~~74~~, ~~71~~, ~~75~~, ~~68~~, ~~72~~, ~~75~~, ~~74~~

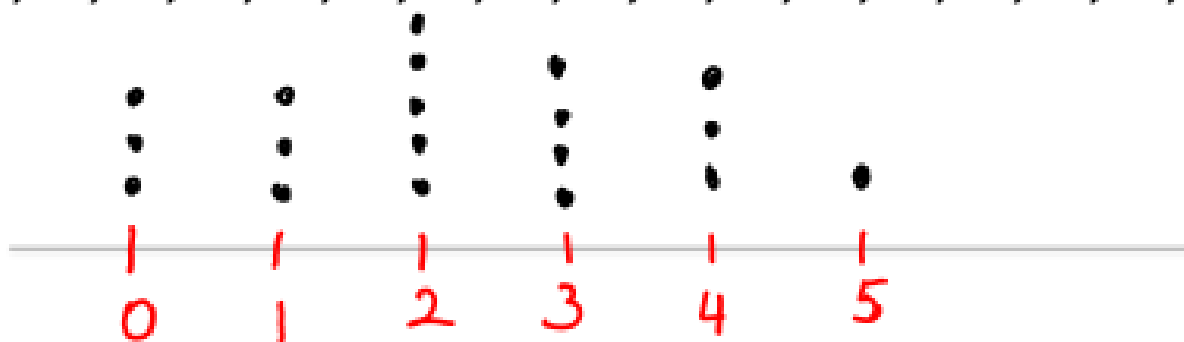
Stem	Leaf
8	2
7	7 1 0 5 6 2 0 7 4 1 5 2 5 4
6	8

7 | 5
 Stem | Leaf

7 | 5 4
 Stem | Leaf

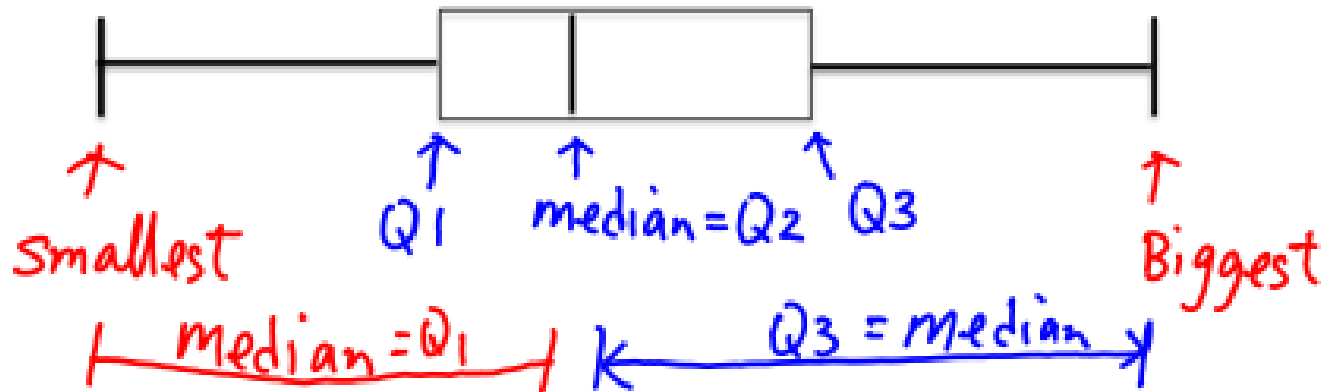
Dot Plot: a data representation that uses a number line and X's, dots, or other symbols to show frequency.

~~3~~, ~~4~~, ~~0~~, ~~3~~, ~~2~~, ~~0~~, ~~1~~, ~~4~~, ~~3~~, ~~2~~, ~~2~~, ~~0~~, ~~1~~, ~~5~~, ~~4~~, ~~3~~, ~~2~~, ~~2~~, ~~2~~



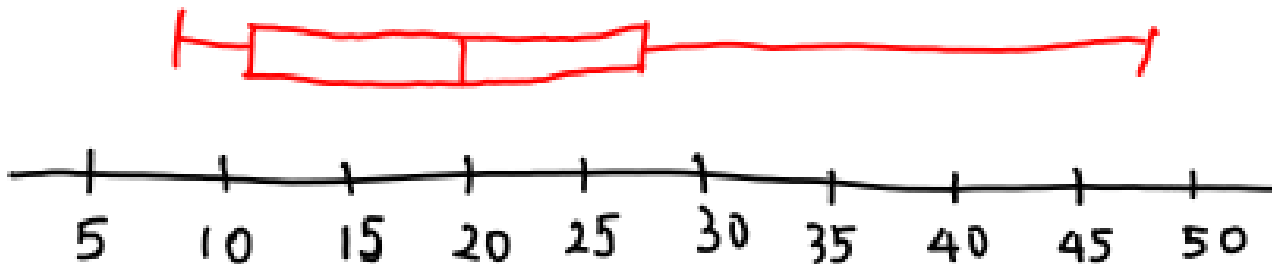
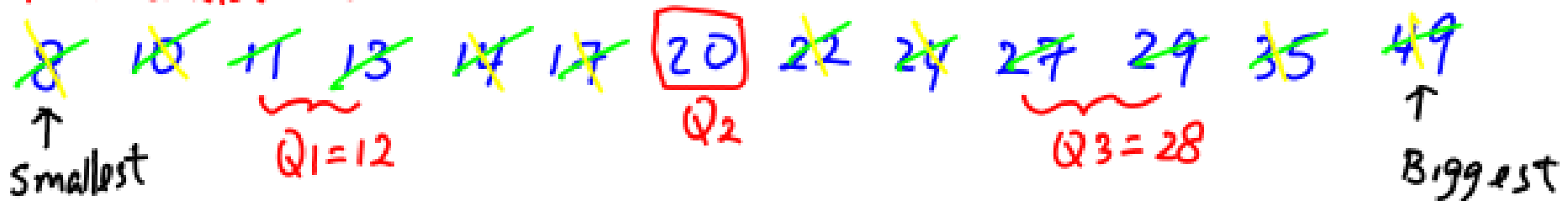
Box-and-Whisker Plots: can be used to show how values in a data set are distributed.

You need five values to make a box-and-whisker plot:



EX) ~~11~~, ~~22~~, ~~20~~, ~~14~~, ~~29~~, ~~8~~, ~~35~~, ~~27~~, ~~13~~, ~~49~~, ~~10~~, ~~24~~, ~~17~~

Put the List in order:

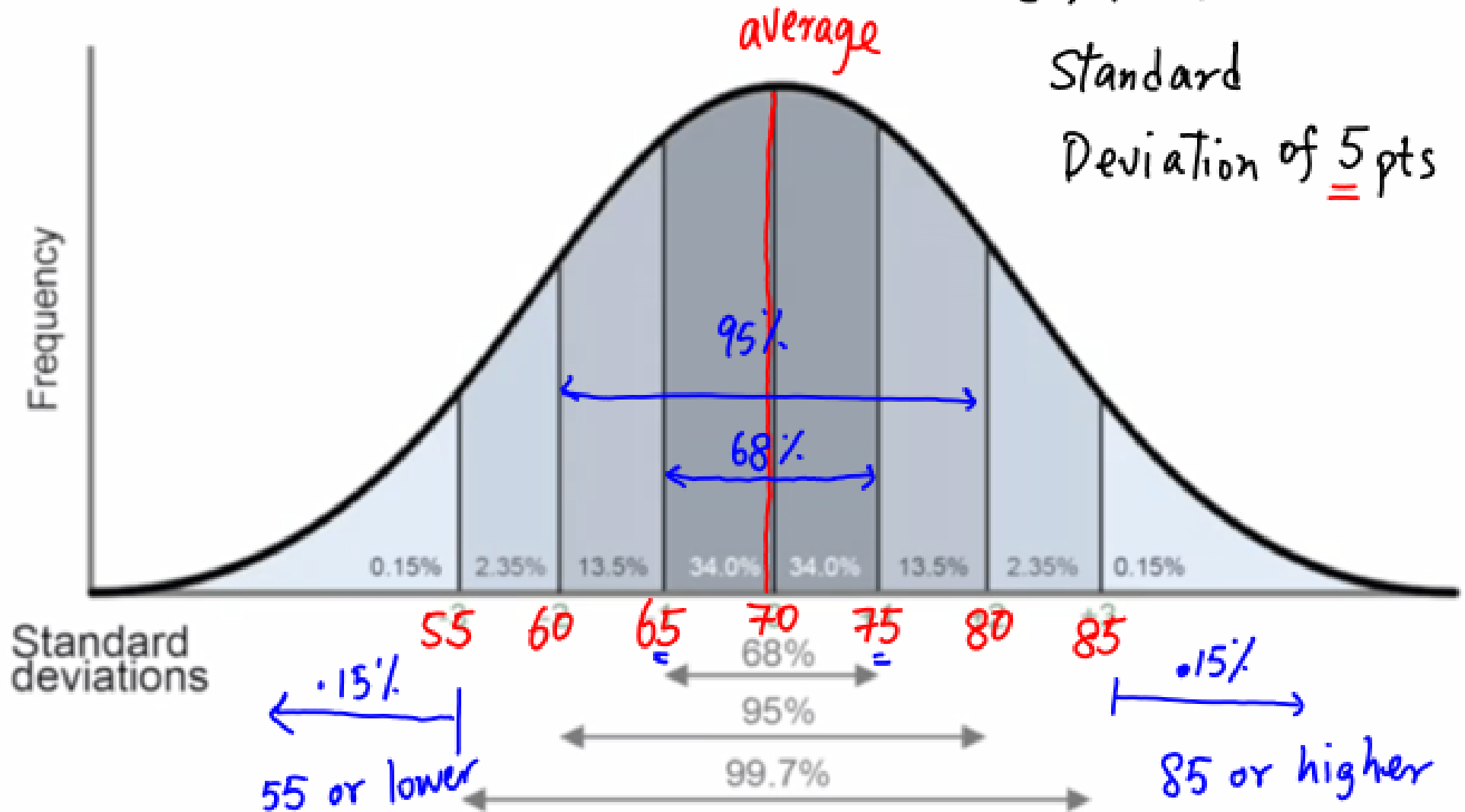


The Standard Normal Distribution: **The Bell Curve**

Ex) Mean = 70

Standard

Deviation of 5 pts



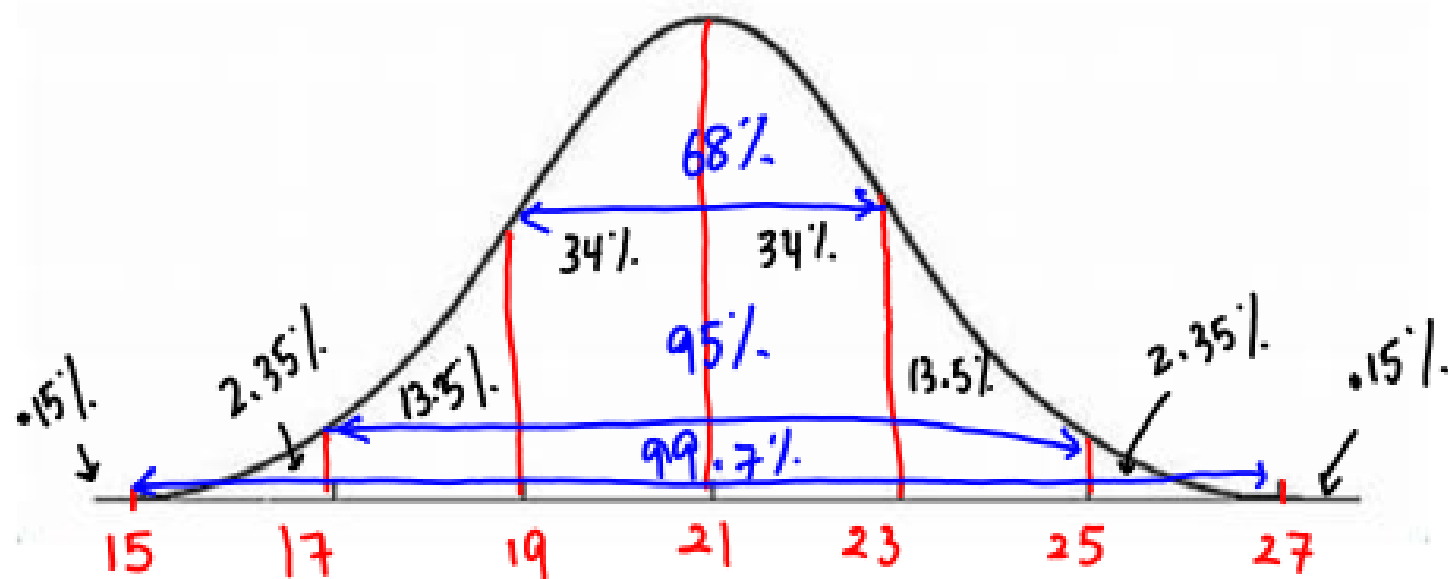
Ex) The ACT scores are normally distributed. The average ACT score in Florida is 21 with a standard deviation of 2. Use the empirical rule to answer the following questions.

a) What percent of the students score between 17 and 25? **95%**

b) Between what two values does 99.7% of the data fall between?

15 to 27

c) What percent of students score between 19 and 23? **68%**



Ex) The Fruit Loop cereal boxes dispenses cereal with a normal distribution and has a mean of 24 and a standard deviation of 0.1 ounces.

- a) The middle 95% of cereal boxes contain between 23.8 and 24.2 ounces of cereal.
- b) Approximately 68% of cereal boxes have between 23.9 and 24.1 ounces of cereal.
- c) What percentage of cereal boxes contain more than 24.2 ounces of cereal?
 $2.35\% + .15\% = 2.5\%$
- d) What is the probability that a randomly selected box of cereal contains less than 24.1 ounces of cereal?
 $.15\% + 2.35\% + 13.5\% + 34\% + 34\%$

$$= 2.5 + 13.5 + 68 = 84\%$$

