Summarizing Quantitative Data: Part 3

- Topic: Interquartile Range, Standard Deviation, and Variance

- Objective: Students will be able to calculate the Interquartile Range, Standard Deviation, and Variance of a population.

- Standards: AP Stats: UNC-1 (EU), UNC-1.J (LO), UNC-1.J.1 (EK), UNC-1.J.2 (EK) CCSS Math: 6.SP.B.5, 6.SP.B.5c

Summarizing Quantitative Data

- Interquartile Range: Describes the middle 50% of data. This measure is ***not*** affected by outliers.

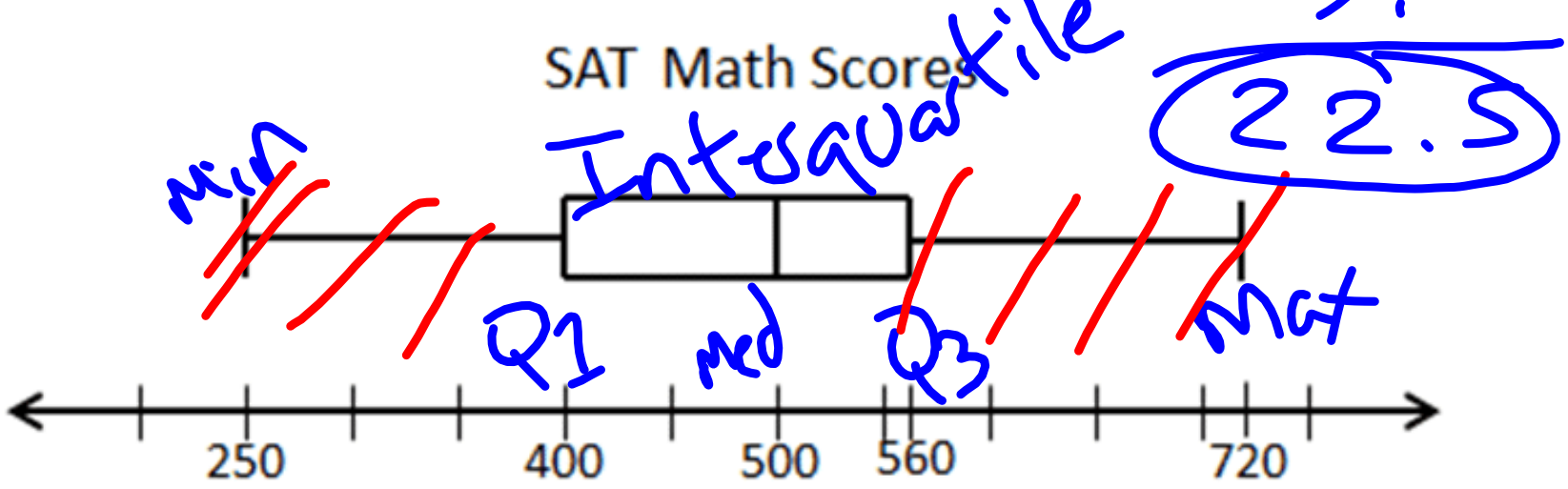
- Standard Deviation of a Population:is a number used to tell how spread out data is from the mean.

- Variance of a Population: is a number used to tell how spread out data is.

- Standard Deviation and Variance describe the data in a very similar way. Variance is the square of the Standard Deviation.

Interquartile Range (IQR)

- IQR = $Q_3 - Q_1$



Interquartile Range (IQR)

- Example: The following data points represent the number of points scored by each player on the Wildcats basketball team last game.

4 5 6 8 9 10 11 13

- Find the interquartile range (IQR) of the data set.

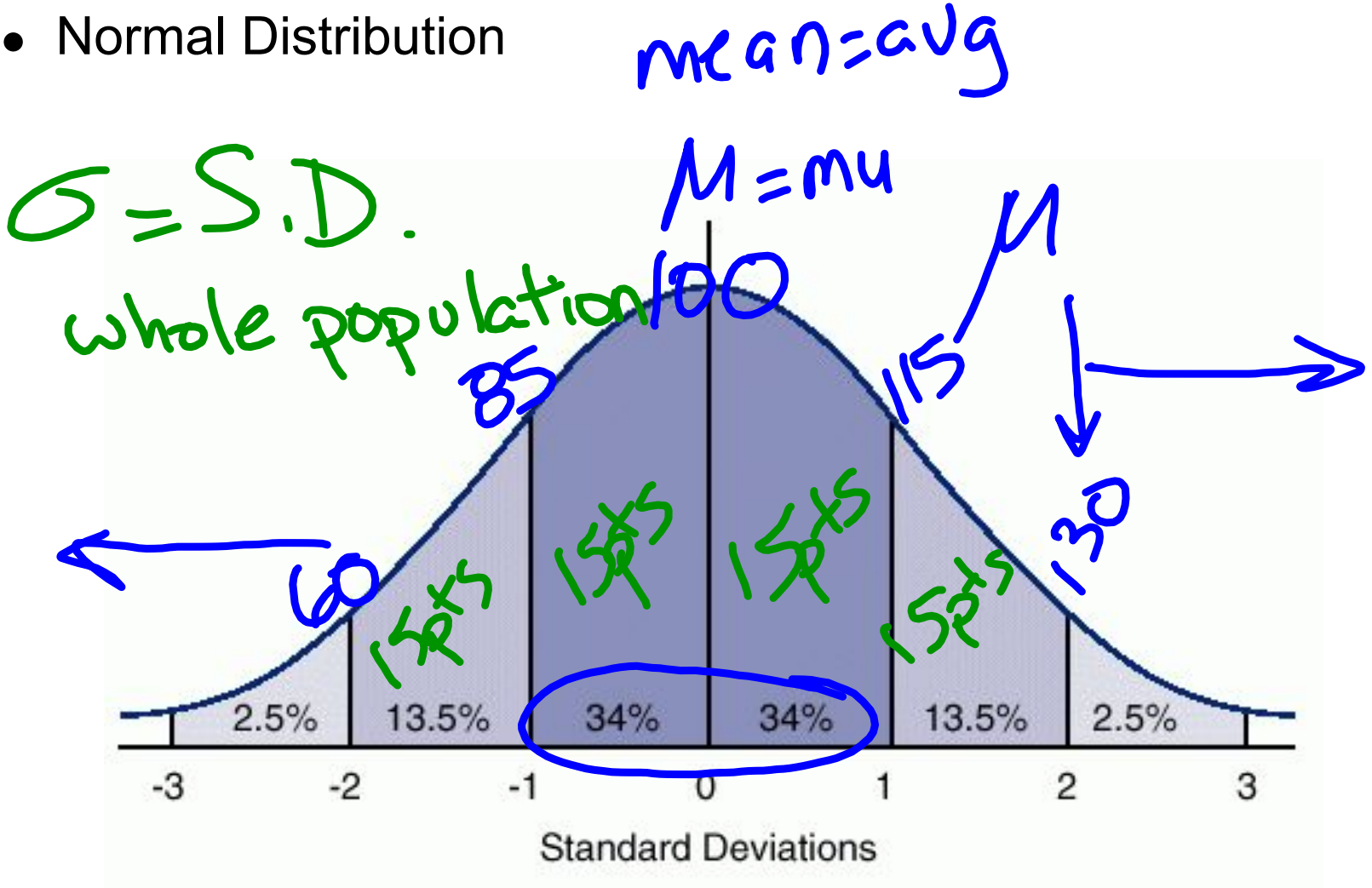
$IQR = Q3 - Q1$

$= 11 - 5$

6

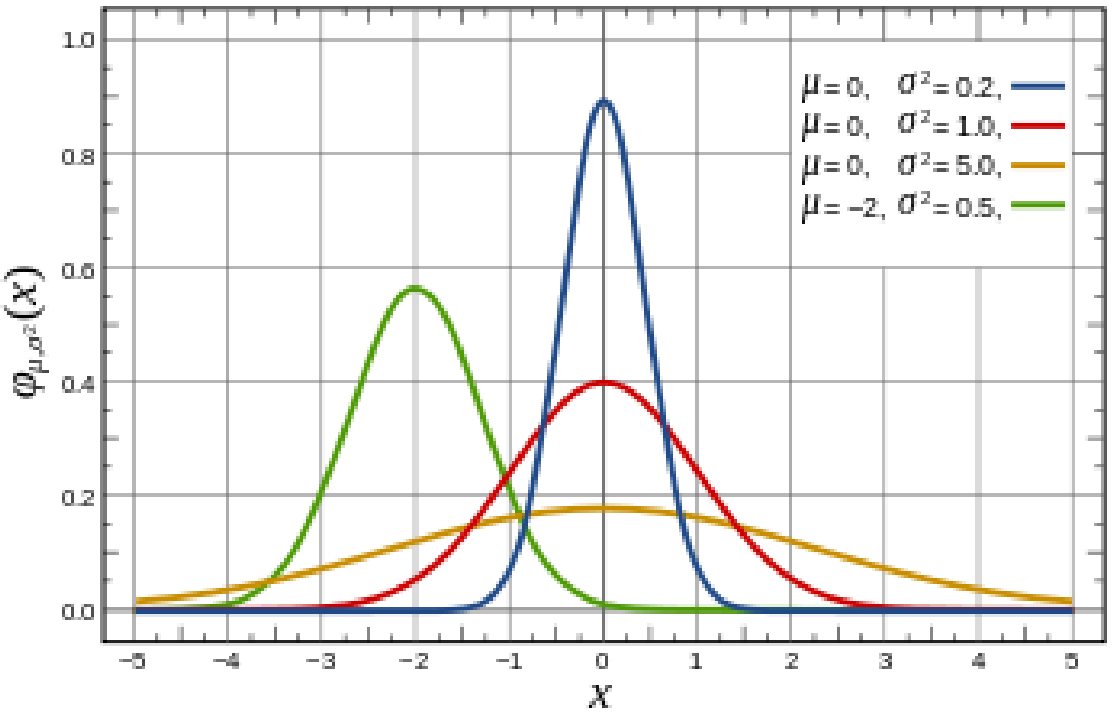
Standard Deviation of a Population

- Normal Distribution



Standard Deviation of a Population

- Normal Distributions



Standard Deviation of a Population

- Example: The Gabrielsons ran a family relay race. The distance run by each family member (in kilometers) is listed below.

4,11,6,7

- Find the standard deviation of the data set.

Round your answer to the nearest hundredth.

2.55

S = Sample

Standard Deviation of a Sample or Population

- Example: You have found the following ages (in years) of all 6 lizards at your local zoo:

1 2 2 1 3 3

- What is the average age of the lizards at your zoo? What is the standard deviation? *Round your answers to the nearest tenth.*

Average: _____

Standard Deviation: _____

- Example: You have found the following ages (in years) of 6 lizards of the 29 lizards at your local zoo:

1 2 2 1 3 3

- What is the average age of the lizards at your zoo? What is the standard deviation? *Round your answers to the nearest tenth.*

Average: _____

Standard Deviation: _____

Variance of a Sample or Population

- Example: You have found the following ages (in years) of 6 lions. The lions are randomly selected from the 22 lions at your local zoo:

13 2 1 5 2 7

- Based on your sample, what is the average age of the lions? What is the estimated variance of the ages?

You may round your answers to the nearest tenth.

Average: 5

$S = (4.5166)^2$

Variance: 20.4 20.39

Remember, Variance = (Standard Deviation)^2

Always use at least 4 decimal places!

Displaying and Comparing Quantitative Data

You should be working on the following skills:

1. Effects of shifting, adding, and removing a data point
2. Missing value given the mean
3. Median and Range Puzzlers

Quarterly Exams: November 4-8