Inspiring Greatness

INDEPENDENCE SCHOOL DISTRICT

Math Virtual Learning

Probability and Statistics

April 16, 2020

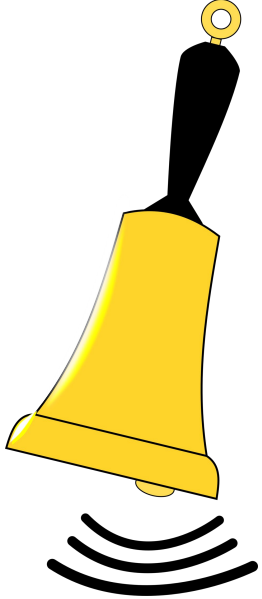
Probability and Statistics
Lesson: April 16, 2020

Objective/Learning Target:

Students will be able to test whether a set of data is normal or not.
Day 2 Practice

What 2 pieces of information do you need in order to create a Bell Curve to test normalcy?

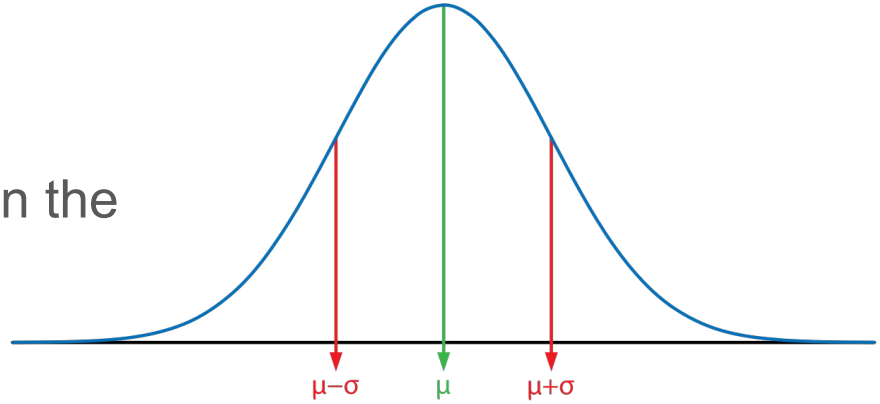
1.
2.



What represents the **green line**?

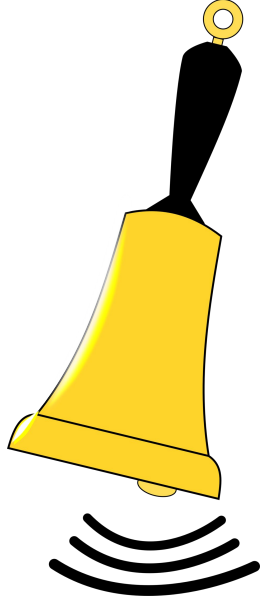
How do you get the numbers for the **red lines**?

What % of the data should be between the **red lines**?



What 2 pieces of information do you need in order to create a Bell Curve to test normalcy?

1. Mean
2. Sample Standard Deviation



What represents the **green line**?

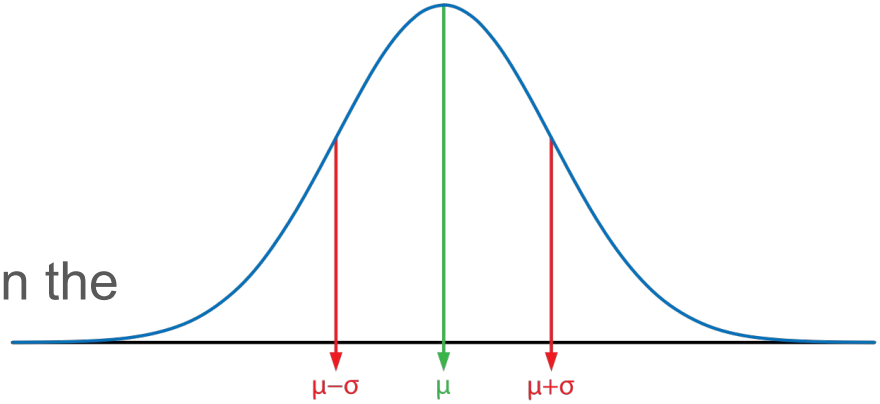
Mean

How do you get the numbers for the **red lines**?

Mean + Stand Dev

Mean - Stand Dev

What % of the data should be between the **red lines**? 68% or higher



Recall this slide from the 4/15 lesson:

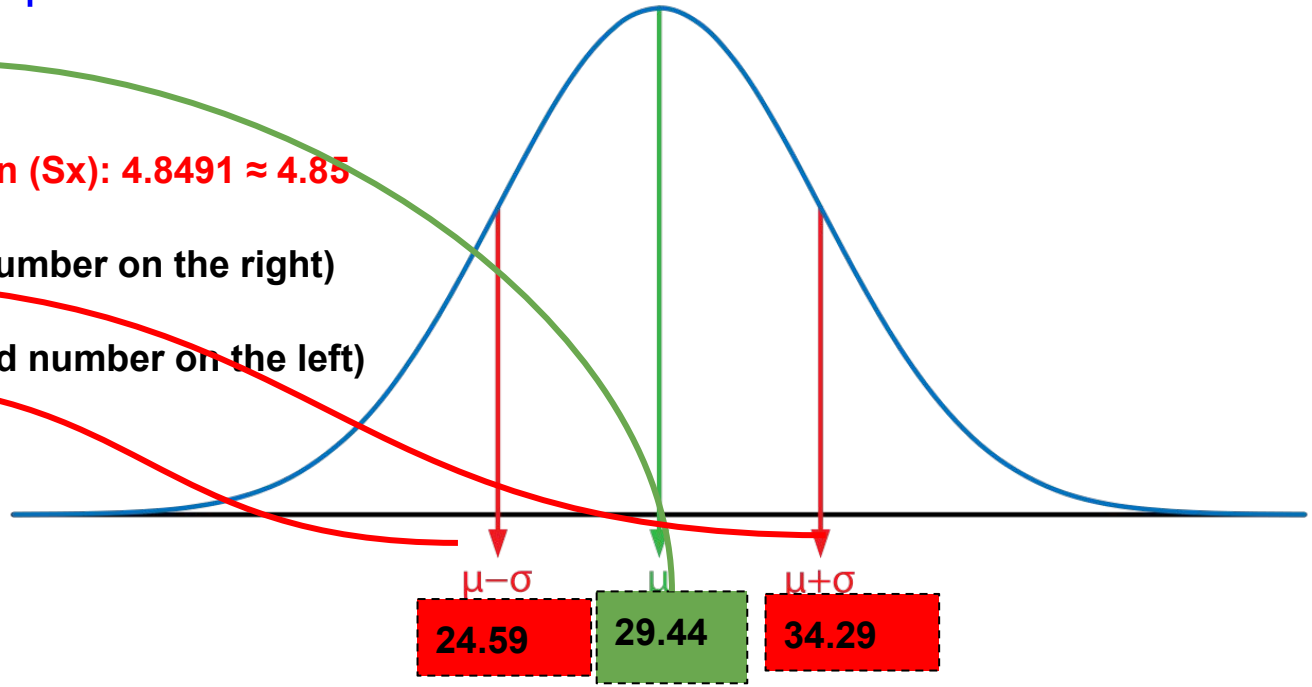
Step 2: Draw the graph and label it

Mean: 29.4355 ≈ 29.44

Sample Standard Deviation (Sx): 4.8491 ≈ 4.85

29.44 + 4.85 = 34.29 (red number on the right)

29.44 - 4.85 = 24.59 (the red number on the left)



Today you will be trying some on your own...

The following 4 slides each contain 1 scenario with data. For each slide: (remember that you can use Desmos for this, see 4/14 lesson for the how-to video on slide 7)

- **Calculate the Mean**
- **Calculate the Sample Standard Deviation**
- **Calculate the Range of 1 Stand Dev on each side of the Mean**
- **Determine if the data is Normal or Not**
- **Describe the Mean and the Sample Standard Deviation in words**

The data set below gives the prices (in dollars) of bluetooth speakers at an electronics store:

$35, $50, $60, $60, $75, $65, $80

1. **Calculate the Mean**
2. **Calculate the Sample Standard Deviation**
3. **Calculate the Range of 1 Stand Dev on each side of the Mean**
4. **Determine if the data is Normal or Not**
5. **Describe the Mean and the Sample Standard Deviation in words**

The data set below gives the prices (in dollars) of bluetooth speakers at an electronics store:

$35, $50, $60, $60, $75, $65, $80

1. **Calculate the Mean** **60.71**
2. **Calculate the Sample Standard Deviation** **15.12**
3. **Calculate the Range of 1 Stand Dev on each side of the Mean** **45.59 - 75.83**
4. **Determine if the data is Normal or Not** **5 out of 7 numbers are in my range so 5÷7 ≈ .71 = 71% so YES the data is approximately normal.**
5. **Describe the Mean and the Sample Standard Deviation in words** **The average cost of a bluetooth speaker at this store is $60.71. The majority of the prices, 71%, is within $15.12 on either side (above or below) the avg.**

The data set below gives the numbers of home runs for the 10 batters who hit the most home runs during the 2005 Major League Baseball regular season: **51, 48, 47, 46, 45, 43, 41, 40, 40, 39**

1. **Calculate the Mean**
2. **Calculate the Sample Standard Deviation**
3. **Calculate the Range of 1 Stand Dev on each side of the Mean**
4. **Determine if the data is Normal or Not**
5. **Describe the Mean and the Sample Standard Deviation in words**

The data set below gives the numbers of home runs for the 10 batters who hit the most home runs during the 2005 Major League Baseball regular season: **51, 48, 47, 46, 45, 43, 41, 40, 40, 39**

1. **Calculate the Mean** 44
2. **Calculate the Sample Standard Deviation** 4.03
3. **Calculate the Range of 1 Stand Dev on each side of the Mean** 39.97 - 48.03
4. **Determine if the data is Normal or Not** 8 out of 10 numbers are in my range so 8÷10 ≈ .80 = 80% so YES the data is approximately normal.
5. **Describe the Mean and the Sample Standard Deviation in words** The average number of home runs for these 10 batters is 44. The majority of the home runs, 80%, are within 4 home runs on either either side (above or below) the avg

The data set below gives the waiting times (in minutes) of several people at a local hospital's emergency room:

11, 7, 14, 2, 8, 13, 3, 6, 10, 3, 8, 4, 8, 4, 7

1. **Calculate the Mean**
2. **Calculate the Sample Standard Deviation**
3. **Calculate the Range of 1 Stand Dev on each side of the Mean**
4. **Determine if the data is Normal or Not**
5. **Describe the Mean and the Sample Standard Deviation in words**

The data set below gives the waiting times (in minutes) of several people at a local hospital's emergency room:

11, 7, 14, 2, 8, 13, 3, 6, 10, 3, 8, 4, 8, 4, 7

1. **Calculate the Mean** **7.2**
2. **Calculate the Sample Standard Deviation** **3.67**
3. **Calculate the Range of 1 Stand Dev on each side of the Mean** **3.53 - 10.87**
4. **Determine if the data is Normal or Not** **9 out of 15 numbers are in my range so 9÷15 ≈ .60 = 60% so NO the data is NOT approximately normal.**
5. **Describe the Mean and the Sample Standard Deviation in words** **The average wait time at this hospital ER is 7.2 minutes. The wait time for 60% of the people falls between 3.53 - 10.87 minutes.**

The data set below gives the calories in a 1-ounce serving of several breakfast cereals:

135, 115, 120, 110, 110, 100, 105, 110, 125

1. **Calculate the Mean**
2. **Calculate the Sample Standard Deviation**
3. **Calculate the Range of 1 Stand Dev on each side of the Mean**
4. **Determine if the data is Normal or Not**
5. **Describe the Mean and the Sample Standard Deviation in words**

The data set below gives the calories in a 1-ounce serving of several breakfast cereals:

135, 115, 120, 110, 110, 100, 105, 110, 125

1. **Calculate the Mean** **114.44**
2. **Calculate the Sample Standard Deviation** **10.74**
3. **Calculate the Range of 1 Stand Dev on each side of the Mean** **103.7 - 125.18**
4. **Determine if the data is Normal or Not** **7 out of 9 numbers are in my range so 7÷9 ≈ .77 = 77% so YES the data is approximately normal.**
5. **Describe the Mean and the Sample Standard Deviation in words** **The average number of calories in a 1-ounce serving of these cereal brands is 114.44. The calories of these brands are within 10.74 calories of the average, either above or below.**