Notes Day 3: Skewed vs. Normal, CLT, Law of Large #s

Warm Up:

Using the data below find the 5 number summary (calculator) and create a box plot.

Describe the distribution.

30 27 12 42 35 47 38 36 27 35

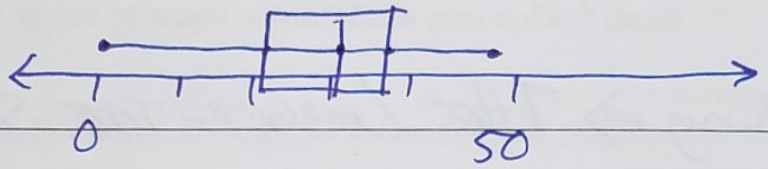
22 17 29 3 21 0 38 32 41 33

26 45 18 43 18 32 31 32 19 21

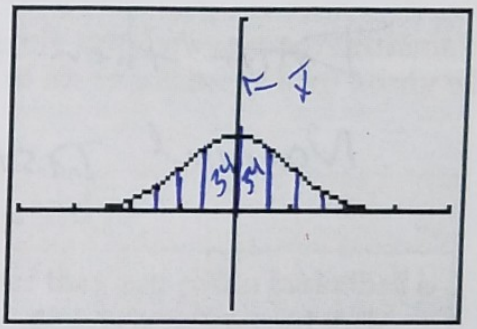
Min 0
Max 47
Med 30.5
Q3 [UQ] 36
Q1 [LQ] 21

IQR = 15
15·1.5 = 22.5

modified Box plot.
Q3 + 22.5 = 58.5
Q1 − 22.5 = −1.5



Notes:



Normal Distributions

- Symmetrical bell-shaped (unimodal) density curve
- Above the horizontal Axis
- N(0, 1)
- MEAN and MEDIAN are almost the same.

Normal distributions occur frequently:

1. Newborn Lengths 2. Height 3. weight 4. Test Scores 5. SAT ACT 6. Intelligence 7. # of typing errors

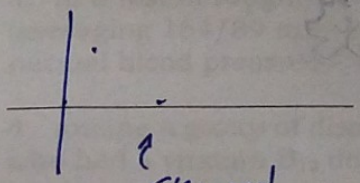
How do I know if the data is not normal?

- Graph it
- Are there outliers, gaps, or clusters.

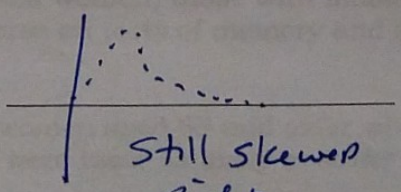
Central Limit Theorem (applet)

Definition: With a large enough selection of Samples (each with their own mean and standard deviation), their distribution will be approximately normal.

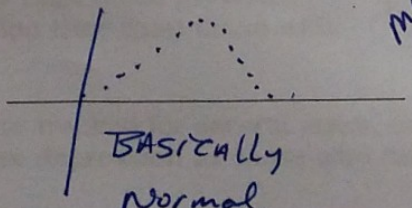
N= 2 N= 15 N= 50



Skewed Right



Still skewed Right



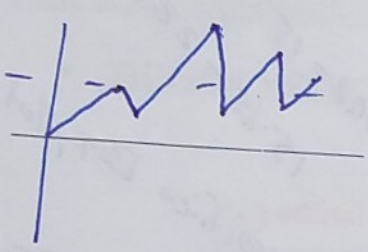
Basically Normal.

more # in sample the more normal it becomes

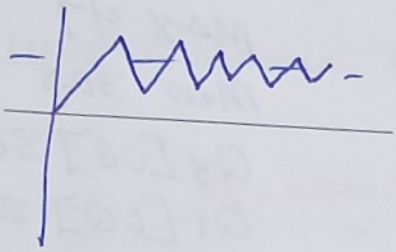
Law of Large Numbers (applet)

Definition: As the size of the Sample gets continually larger, it will approximate towards it's predicted Average. (In other words, the bigger the sample, the more likely we are to find the Mean.)

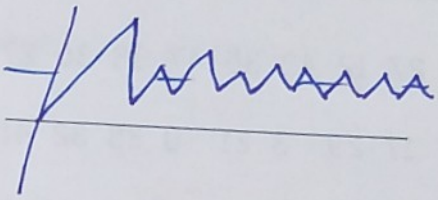
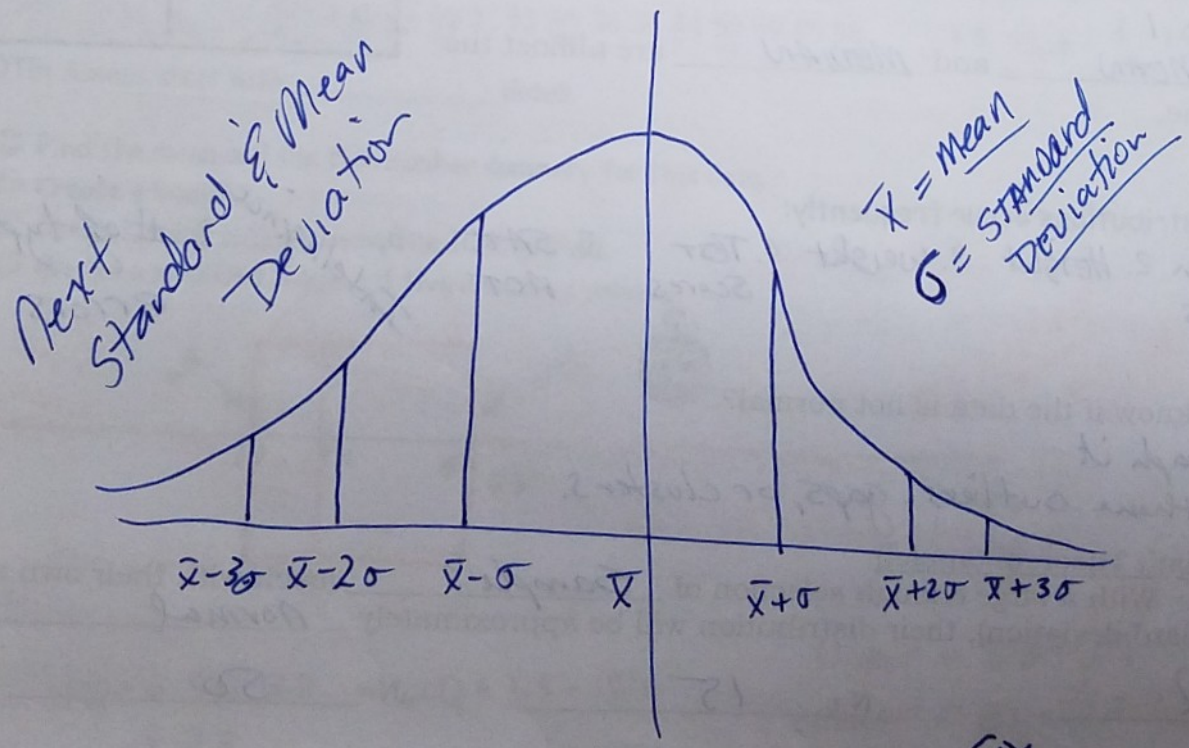
N= 10



N= 30



N= 100



TAKE Away ⇒ THE LARGER THE SET of DATA, then the more likely it will Be Normal Distribution