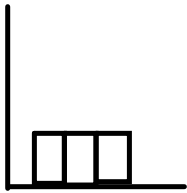


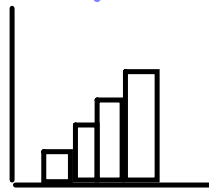
## Lesson #13

Aim: What is the normal distribution?

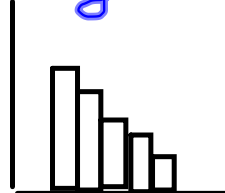
**Distribution** { Scenario: If you collect data (information) and then you used a histogram to display your data. Your histogram can have only the following 4 choices.



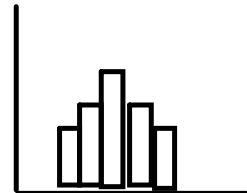
Uniform OR  
Continuous



Skewed  
to Left



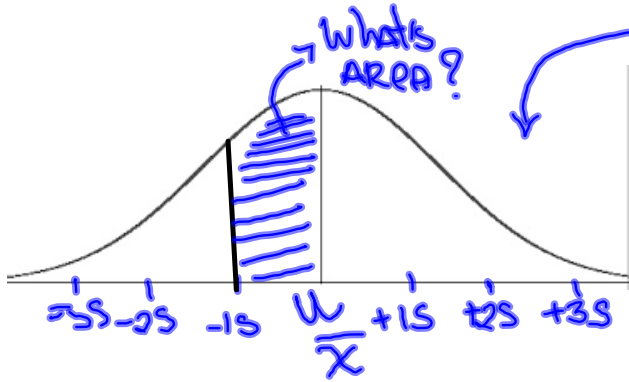
Skewed  
to Right.



Normal  
Bell shaped

# Normal Distribution

## Equation for the curve



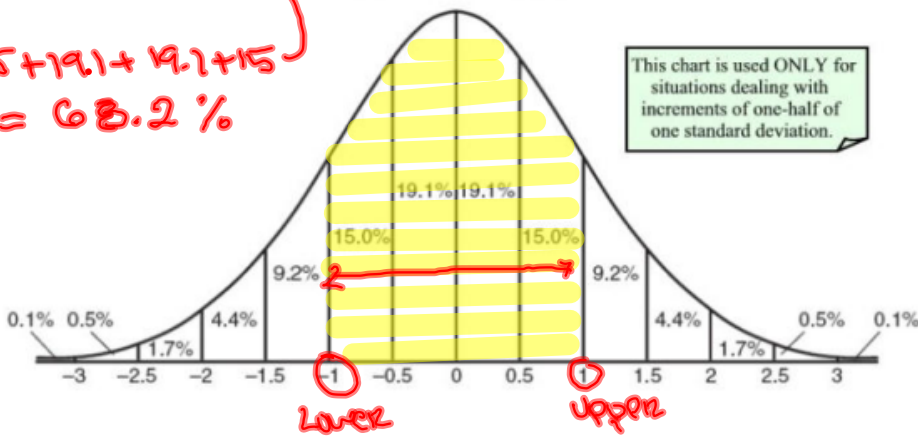
$$y = \frac{1}{\sigma\sqrt{2\pi}} e^{-\frac{(x-\mu)^2}{2\sigma^2}}$$

$\mu$  = Mean  
 $\sigma$  = Standard Deviation  
 $\pi \approx 3.14159\dots$   
 $e \approx 2.71828\dots$

Probability  
 Normal C.D.  
 = 0.68268949  
 : Low = -1  
 : Up = 1

15 + 19.1 + 19.1 + 15  
 = 68.2 %

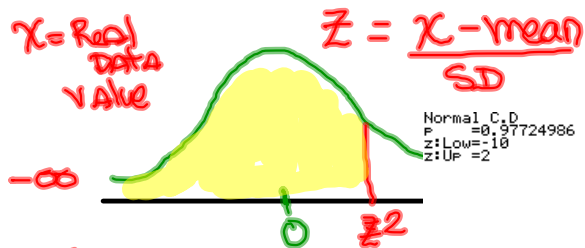
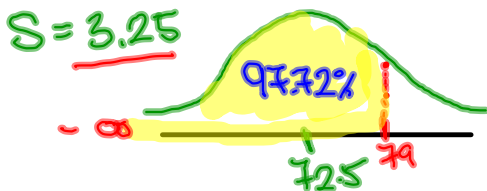
Normal Curve  
 Standard Deviation



Z values

### Question 19 - Spring 2018 final Review

Height (in inches) of basketball players has a bell-shaped distribution with a mean of 72.5 inches and a standard deviation of 3.25 inches. A height of 79 inches is what percentile?



**Real DATA**

Calculator

Lower:  $-10^{10}$  ( $-\infty$ )

Upper: 79

CS+NOV)  $\sigma = 3.25$

mean  $\mu = 72.5$

**Z VALUES**

→

→

→

→

Calculator

Lower:  $-\infty$  (-10)

Upper:  $z = \frac{79 - 72.5}{3.25} = 2$

$\sigma = 1$

$\mu = 0$

Normal C.D

P = 0.97724986

z: Low = -3.077E+09

z: UP = 2

97.72%