

# Probability Distributions

Monday, 8 November 2021 7:52 PM

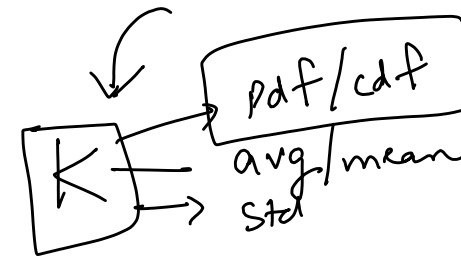
R.V marks = 96, 97, 100  
50, 43, 49  
60 - 70 - 75 majority

Why?

1000 observation  
 ↓

Summarize data / EDA

follow



Simple model

# function

pdf  
↓  
Continuous r.v

Cdf

pmf  
↓  
discrete r.v

# Uniform

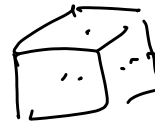
↳ equally likely

↳ Discrete Uniform  
↳ Continuous Uniform

0.561

0.328

0.79



~~5/6~~

Coin → head  
          → tail

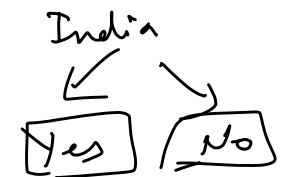
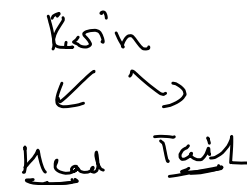
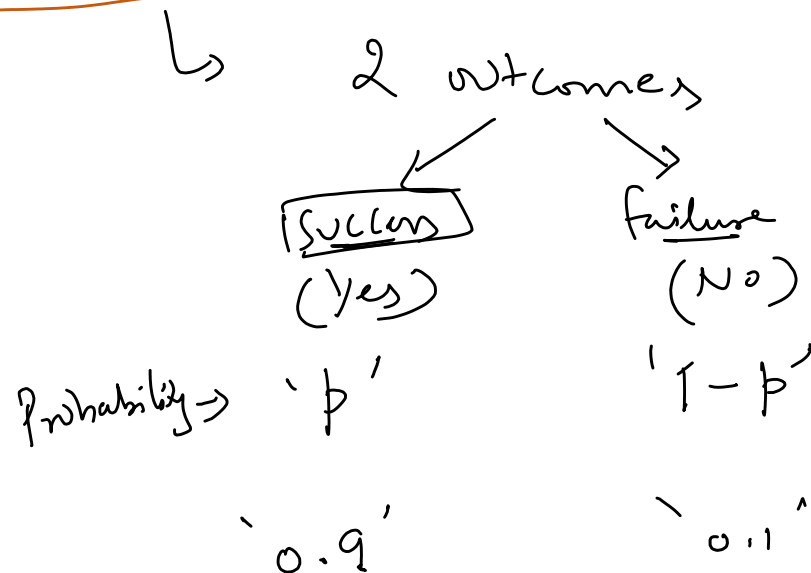
$$X \sim U(a, b)$$

$\uparrow$                        $\uparrow$   
 $a$                        $b$

Cdf  $\Rightarrow P(X \leq 20)$

$\rightarrow P(X \leq 20)$

## Bernoulli Distribution

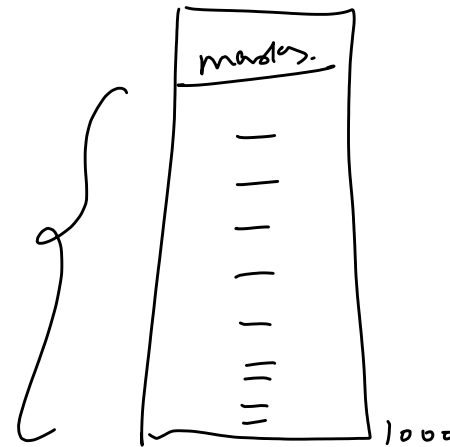


# # Normal Distribution ←

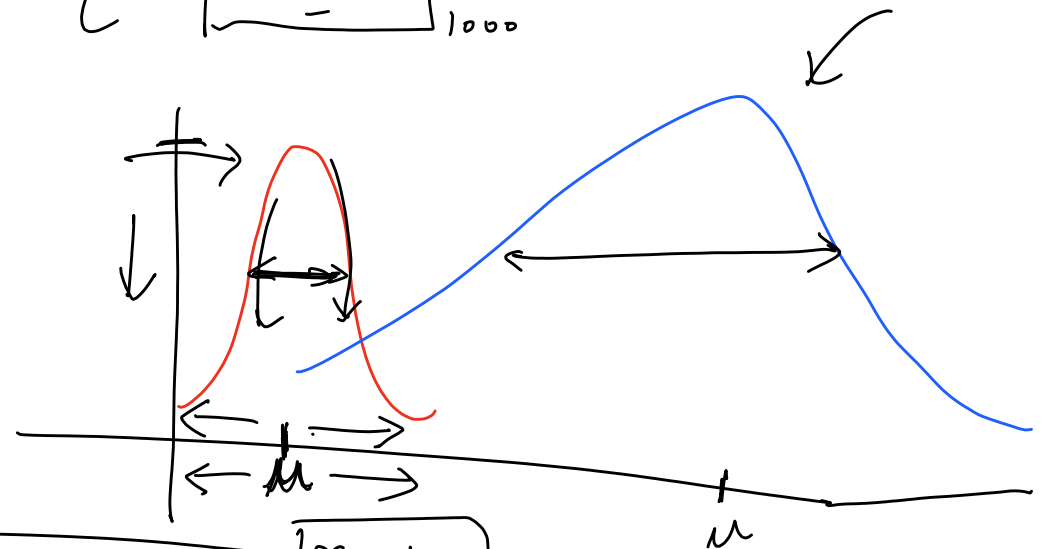
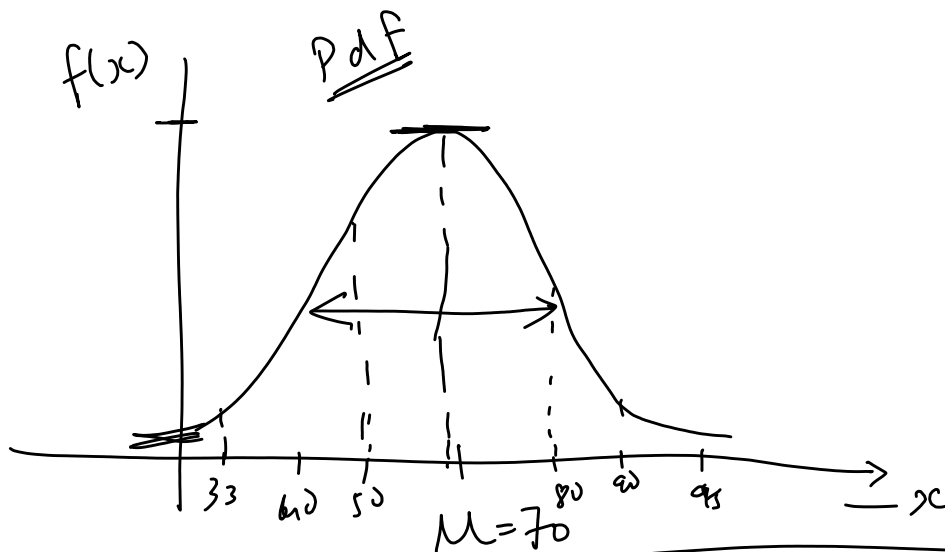
heights, weights, — — — — —, marks — —

$$X \sim N(\mu, \sigma^2)$$

$\mu \rightarrow$  mean  
 $\sigma \rightarrow$  std.



70 - 75 - 80



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

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

Const