

Statistics:

① Descriptive

② Inferential

→ Hypothesis Testing

Data Science
 ↓
Data Analysis
 → +
Machine Learning

Analysis

Python (NumPy, Pandas)

SQL

Excel

Tableau | Power BI

→ StatisticsProbability:

$$\frac{0 \text{ to } 1}{0\% \text{ to } 100\%}$$

Tossing a coin → Experiment
 ↓
 Sample space → [H, T] ✓
 ↑
 All possible outcomes of an experiment

Dice
 ↑

$$SS \rightarrow [1, 2, 3, 4, 5, 6]$$

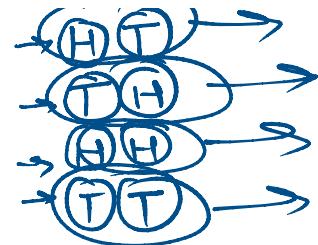
Tossing two coins → Experiment

$$SS \rightarrow [HH, HT, TH, TT]$$





\rightarrow Favourable outcome



$$\frac{\text{At least one tails}}{4} = \frac{3}{4}$$

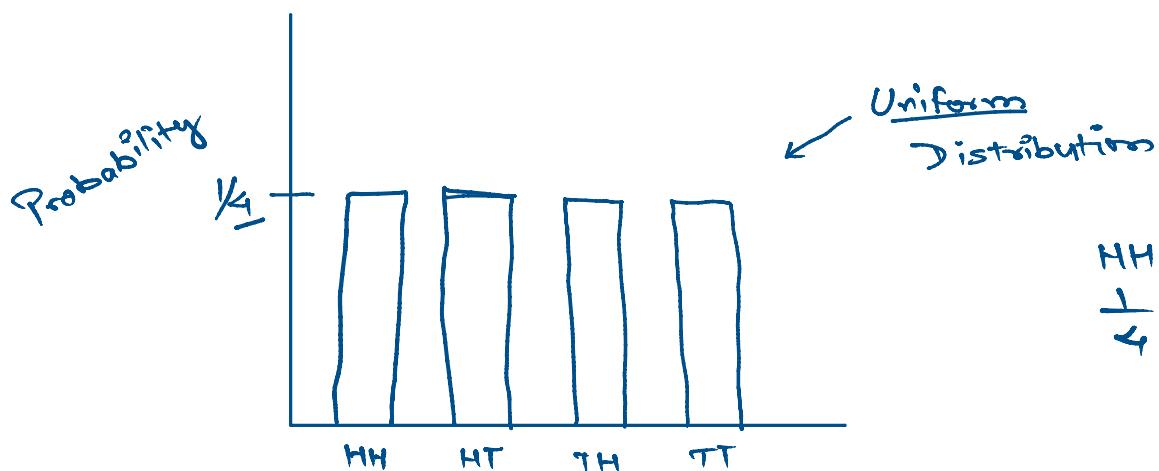
Probability Distribution \rightarrow

Experiment \rightarrow Tossing two coins

$$ss \rightarrow [HH, HT, TH, TT] \quad \left[\begin{array}{cccc} \frac{1}{4} & \frac{1}{4} & \frac{1}{4} & \frac{1}{4} \end{array} \right]$$

\downarrow

Probability Distribution.



$$\begin{matrix} HH & HT & TH & TT \\ \frac{1}{4} & \frac{1}{4} & \frac{1}{4} & \frac{1}{4} \end{matrix}$$

Probability Distribution Types

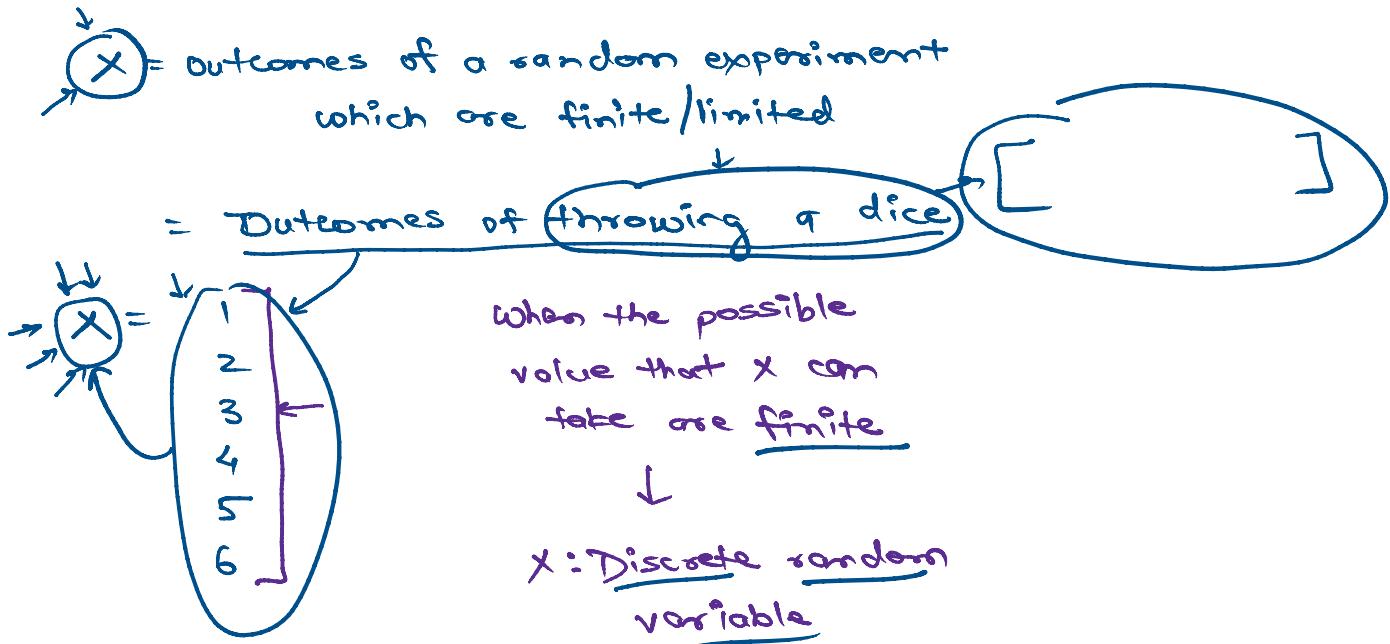
- ① Discrete Probability Distribution
- ② ... Probability Distribution

- ① Discrete Probability Distribution
- ② Continuous Probability Distribution

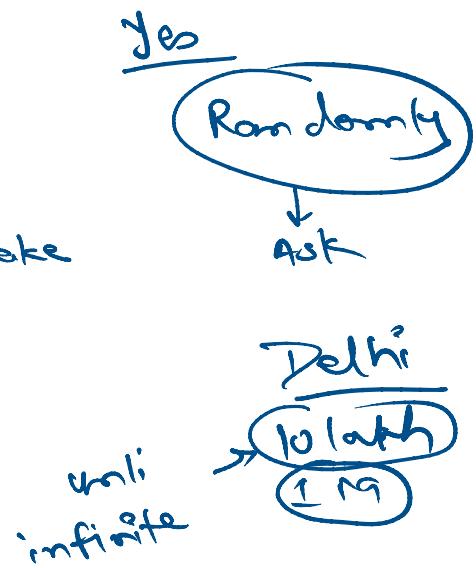
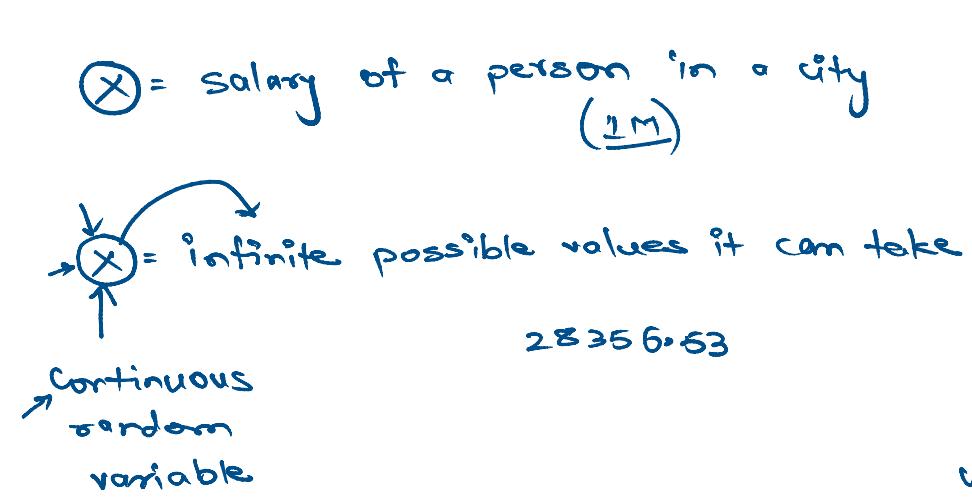
Random Variable:

$$\begin{array}{l} \text{num1} = 10 \\ \text{num2} = 25 \end{array}$$

- ① Discrete Random Variable \rightarrow



- ② Continuous Random Variable \rightarrow



variable
along with their
probability

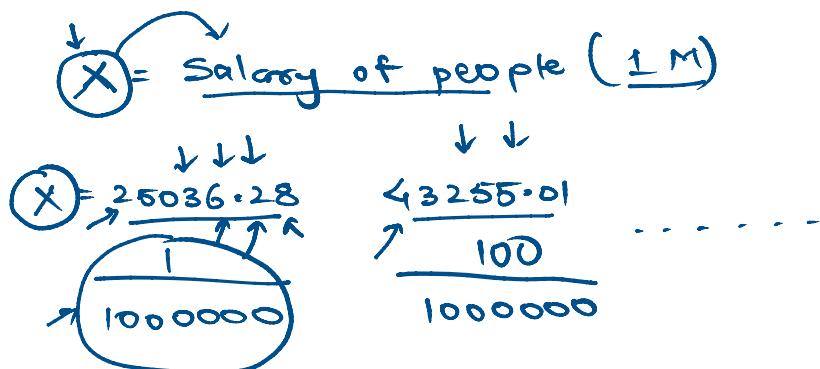
Discrete probability
Distribution

$\text{X} =$	1	2	3	4	5	6
	$\frac{1}{6}$	$\frac{1}{6}$	$\frac{1}{6}$	$\frac{1}{6}$	$\frac{1}{6}$	$\frac{1}{6}$

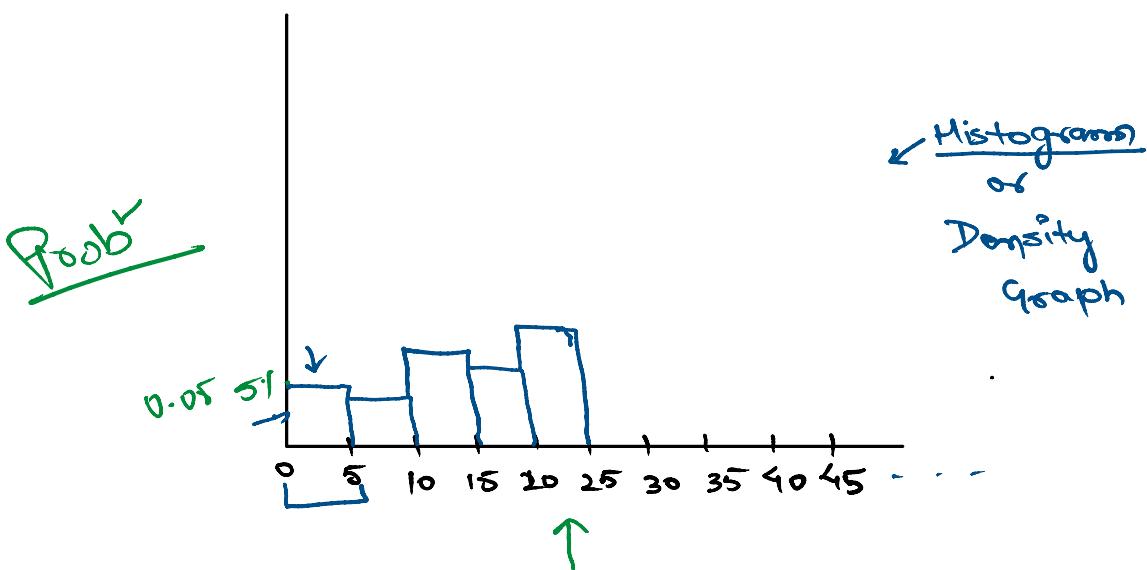
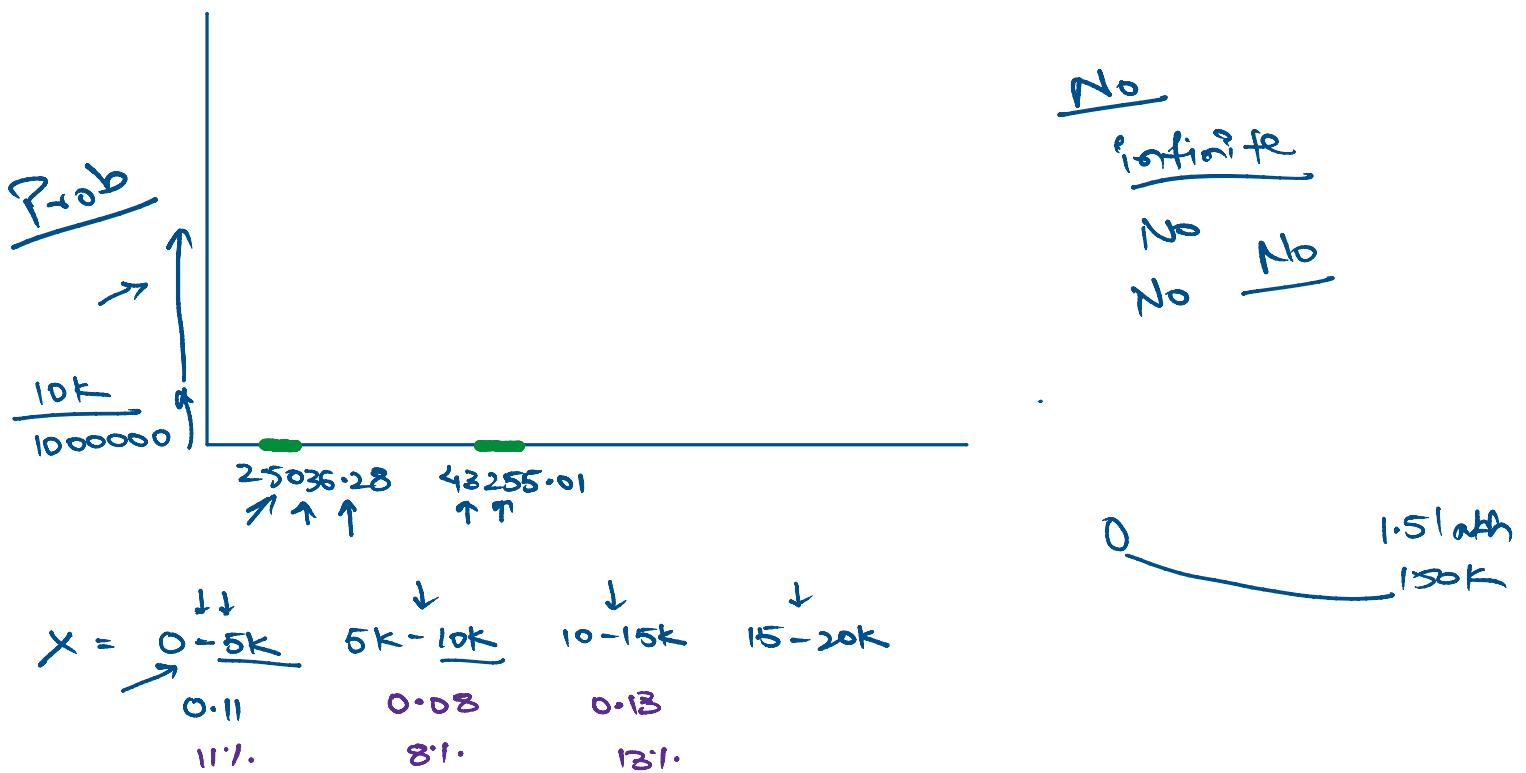
↓
Discrete probability
Distribution

Continuous random
variable along
with their
probabilities

Continuous Probability
Distribution



$$\frac{0.0000001}{0.0001}$$



Discrete Probability Distribution →

- ① Uniform Distribution
- ② Bernoulli Distribution
- ③ Binomial Distribution
- ④ Poisson Distribution

Continuous

① Normal Distribution

→ skewed Distribution.

② Standard Normal Distribution.

