

III Random Variables

Random variable is a process of mapping of a random process or experiment to a no.

ex: tossing coin

rolling a dice

measure of temperature for next day

} - Random Processes

Qy How is random variable diff from algebraic variables?

Random Variable (X)

• Can take any value based on the process outcome

• Denoted by: Capital Letter

• Ex: Sum (dice rolled 7 times)

i.e. $\sum_{i=1}^7 (\text{dice roll})_i$

\Rightarrow o/p 1: - {1, 2, 4, 6, 3, 4, 2}

\Rightarrow o/p 2: - {2, 3, 3, 6, 5, 5}

⋮

• Useful in Probability problems

$$X = \begin{cases} 0 & \text{if Heads} \\ 1 & \text{if tails} \end{cases}$$

Algebraic Variable (x)

• Algebraic Variable values is particularly fixed

• Denoted by: small letter

• Ex: $x + 5 = 7$, & $y + x = 10$

$\Rightarrow x = 2$ & $y = 8$