Inferential Stat.

Variable

Type of variable

- Quantitetive
  - Descrete variable (bank a/c, houses etc)
  - Continous variable (weight, age, height etc)
- Qualitative
  - Nominal variable (M/F, P/F, T/F etc)
  - Ordinal variable (1st, 2nd, 3rd, education 10th, 12th, gra, P.G., PhD.)

(Const. DSP
SI SP
TI SSP
PSI
ASI)

Random Variable

Type of Random variable

- Descrete Random variable
  - (Y = Coin (H/T))
  - (Y = Result (P/F))
  - (Y = Dice (1 to 6))
- Continous Random variable.
  - (Y = Temp. 33, 39.6, 38)
  - (Y = Height,)
  - (Y = Rain,

Probability

$$P_{com} = \frac{\text{Possible no. of outcome}}{\text{Total no. of outcome}}$$

$$P_{(H)} = \frac{1}{2}$$

$$P_{(6)} = \frac{1}{6}$$

Types of Probability

(I) mutually exclusive
(II) non-mutually exclusive

(I) no. of outcome possibility single, (coin, dice)

(II) when no. of outcome will be more than one.
(Deck of card.

$P_{\diamondsuit} \Rightarrow \frac{13}{52}$

$P_{\text{King}\diamondsuit} \Rightarrow \frac{1}{52}$

Rules of Probability

(i) Additive probability

(ii) multiplicative probability

(i) Add. pro. (single experiment)

1st

$P(A \text{ or } B) = P(A) + P(B)$

$P_{\text{one}}(2 \text{ or } 5) = \frac{1}{6} + \frac{1}{6}$

$= \frac{2}{6}$

$P(1 \text{ or } 3 \text{ or } 6) = \frac{1}{6} + \frac{1}{6} + \frac{1}{6} = \frac{3}{6}$

2nd $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$

$P(\text{king or } \triangle) = \frac{4}{52} + \frac{13}{52} - \frac{1}{52}$

$= \frac{4}{13}$

(11) multiplicative rule

(1) Independent event :-

$P(A) \text{ or } P(B) = P(A) * P(B)$

$P(H) \text{ or } P(T) = \frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$

(2) Dependent event :-

$P(A) \text{ or } P(B) = P(A) * P\left(\frac{B}{A}\right)$

$P(J) \text{ and } P(k) = \frac{4}{52} \times \frac{4}{51}$

$P(10) \text{ and } P(Q) = \frac{4}{52} \times \frac{4}{51} = \frac{4}{663}$ ✓

$P(2) \text{ and } P(6) \text{ and } P(A) = \frac{4}{52} \times \frac{4}{51} \times \frac{4}{50}$

$=$

✱ Probability Distribution

(i) Deserete pro Dist.

(ii) Continous pro Dist.

(1) Deserete pro. Dist.

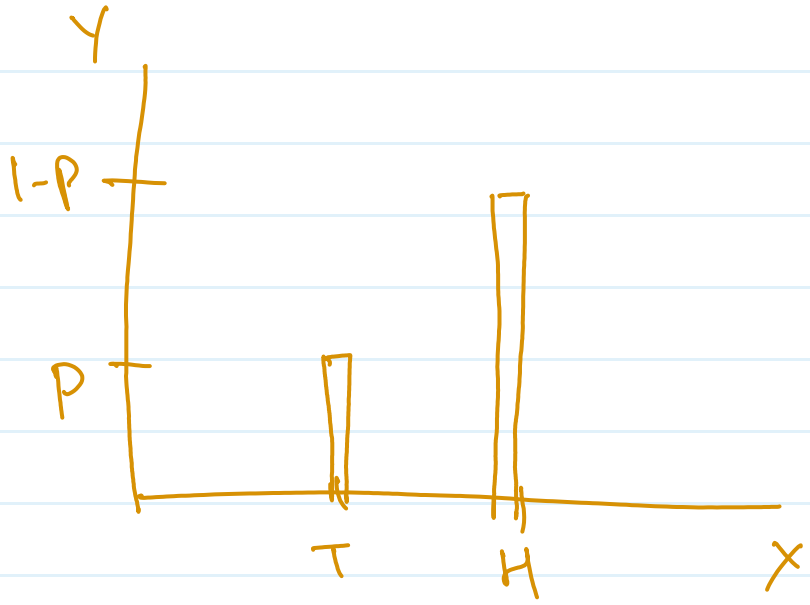
(1) Bernoullie'r Dist.

no. of experiment = 1

fix no of outcome = 1

formula = P ⇒ Pass

= 1 − P ⇒ fail



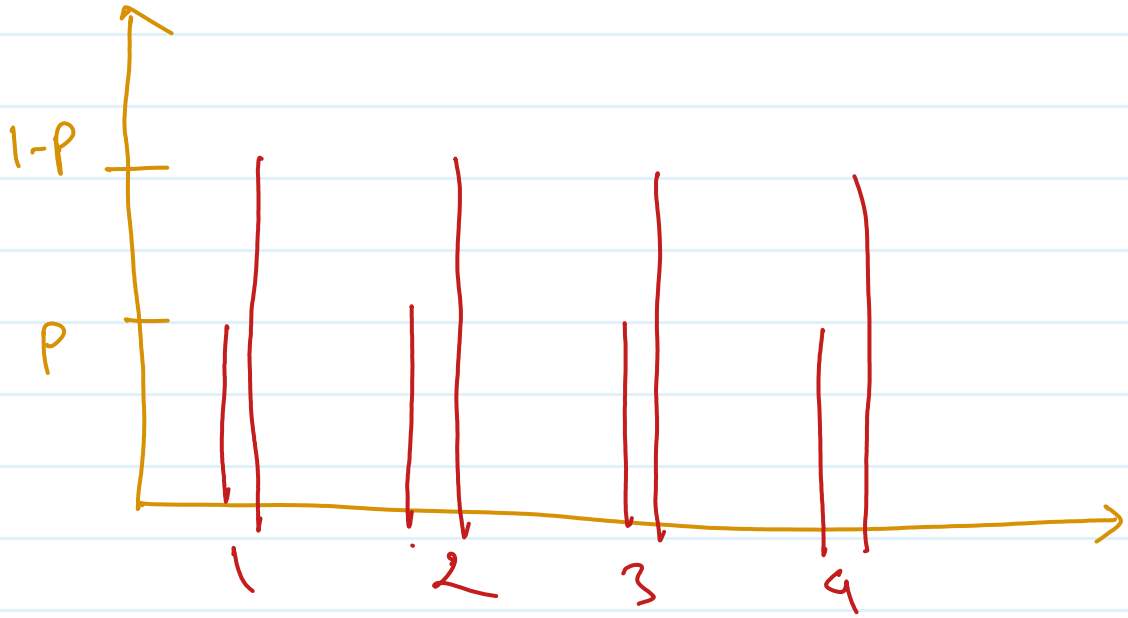
② Binomial Dist.

no. of experiment = n no. of experiment

fix no. of outcome = 1

P

1 − P



(3) Poisson Dist.

eg!-

$$P(X = x) = \frac{e^{-\lambda} \lambda^{x}}{x!}$$

λ = is the Avg. no of time the event has occured in a certain period

X = is no. of event in that time interval

e = is the euler's num

$e = 2.718$