31st August 2022

Task

Probability:-

It is the measure of the likelihood of an event.

E.g:- Tossing coin

SS = {h, t}

$$Prob = \frac{\#\text{ of was event can occur}}{\#\text{ of possible outcomes}}$$

$$Prob = \frac{1}{2} = 0.5$$

Rolling a dice:-

SS = {1, 2, 3, 4, 5, 6}

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

$$Prob(2) = \frac{1}{6}$$

Mutual Exclusive Event:-

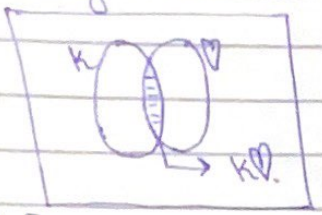
In probability theory, two events are said to be mutually exclusive if they cannot occur at the same time.

Heads or tail cannot occur simultaneously

Not mutual exclusive event:-

Taking out a card from deck

King and ♡



ME complaint:-

Tossing a coin.

$$\text{Prob}(h/T) = \text{Prob}(h) + \text{Prob}(t)$$
$$= \frac{1}{2} + \frac{1}{2}$$
$$= 1$$

Rolling a dice:-

$$\text{Prob}(1,2,3) = \text{Prob}(1) + \text{Prob}(2) + \text{Prob}$$
$$= \frac{1}{6} + \frac{1}{6} + \frac{1}{6}$$
$$= 0.5$$

Non ME complaint:-

Prob (K or ♡) = ?

$$\text{Prob}(K) = \frac{4}{52}, \quad \text{Prob}(\heartsuit) = \frac{13}{52}$$

$$\text{Prob}(K \text{ and } \heartsuit) = \frac{1}{52}$$

$$\text{Prob}(K \text{ or } \heartsuit) = \frac{4}{52} + \frac{13}{52} - \frac{1}{52}$$

Prob (K) + Prob (♡) − (P(K

$$= \frac{16}{52}$$

$$= 0.03076$$

Answer.

Additive Formula:-

ME : $\text{Prob}(A \cap B) = \text{Prob}(A) + \text{Prob}(B)$

NME : $\text{Prob}(A \cap B) = \text{Prob}(A) + \text{Prob}(B) \mp \text{Prob}(A \cap B)$

Multiplicative Formula:-

(1) Independent event. $P(A \cup B) = P(A) \times P(B)$

(2) Dependent event. $P(A \cup B) = P(A) \times P(B/$

Tossing a coin:-

Toss = 3

{H 1, T 2, H 3}

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

$$Prob(T) = \frac{1}{2}$$

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

Cards:-

$$Prob(K) = \frac{1}{52}$$

$$Prob(Q) = \frac{1}{51}$$

$$Prob(J) = \frac{1}{50}$$

Rolling a dice :-

Prob (1 and 3).

$$Prob(A \text{ and } B) = Prob(A) \times Prob(B)$$

Prob (1 and 3) = Prob (1) x Prob (3)

$$= \frac{1}{6} \times \frac{1}{6}$$

$$= \frac{1}{36}$$

Ans

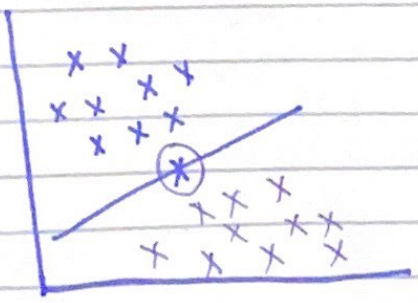
Prob (K and Q)

Prob (A and B) = Prob (A) x Prob (B/A

Prob (K and Q) = Prob (K) x Prob (Q/K

$$= \frac{1}{52} \times \frac{1}{51}$$

$$= \frac{1}{2652}$$



Probability = 30%
70%