

06/08/17

Probability

Trial: unit of an experiment.

↳ (କ୍ଷେତ୍ର ମଧ୍ୟ ଯାଇଁ ହୁଅଥିଲାଏଇ ଘଣ୍ଡାଳି) (ଖୋଲିବି)

↳ coin toss କୋଣର କୋଣ କେବେ ତ୍ରୈଲ୍

Mutually exclusive outcome: at a time

ଏହି କ୍ଷେତ୍ର ମଧ୍ୟ ଦେଇବାରେ ଏକାକିତଥିରେ ଏକ କ୍ଷେତ୍ର ଆପଣଙ୍କ ନାହିଁ,
କୋଣ ତୋରେ କୋଣର କୋଣ ହୁଏଇ
ଫଳ - କୋଣରେ କୋଣର କୋଣ ହୁଏଇ, କୋଣରେ କୋଣର କୋଣ ହୁଏଇ

Sample space:

ଏହି କ୍ଷେତ୍ର ମଧ୍ୟ ଏକ ସଂଗ୍ରହ
କୋଣର କ୍ଷେତ୍ର ମଧ୍ୟ ଏକ କ୍ଷେତ୍ର
ଏକ କ୍ଷେତ୍ର ମଧ୍ୟ ଏକ କ୍ଷେତ୍ର

coin toss : { H, T }

Event: total sample space (universe)

ଓচেত মুগ্ধ করা রাই-বোকু

Event ,

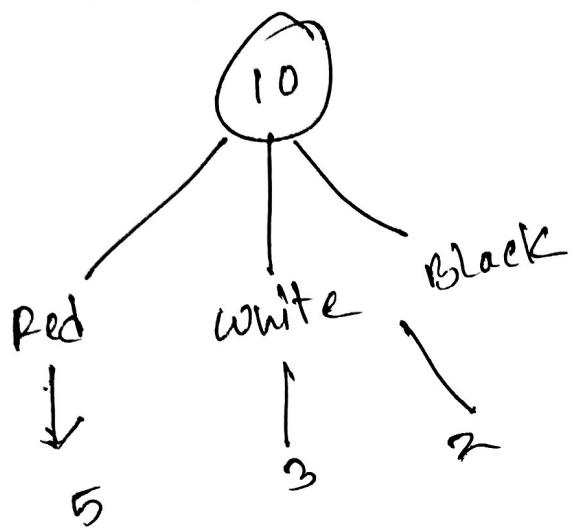
coin effoss 2007 head gran 2

head & tail 2019-09-06 Events

Probability

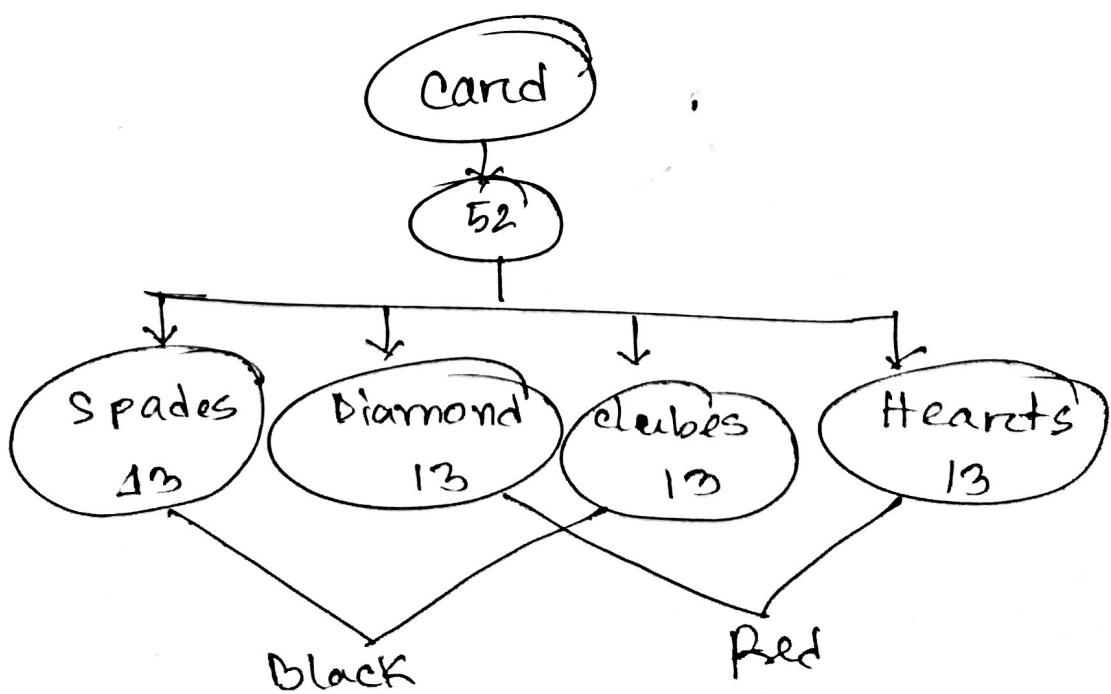
P(A) → A zero → sign or

$$= \frac{m}{n} \rightarrow \text{मर्गीय Probability}$$



Red among probability $\frac{5}{10}$

$\text{size}(2)$, $\frac{5}{10} = m \rightleftharpoons$ favourable no of outcome.

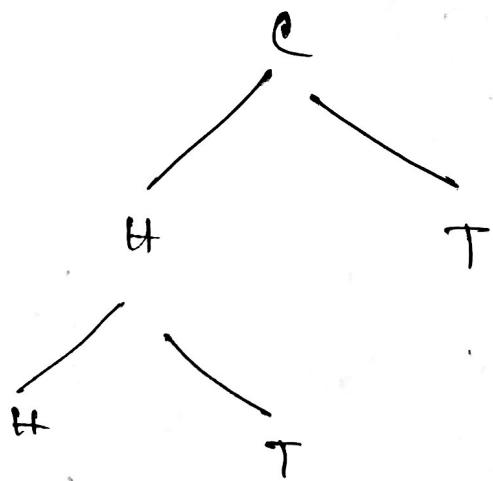


Last card Red & Spur Probability.

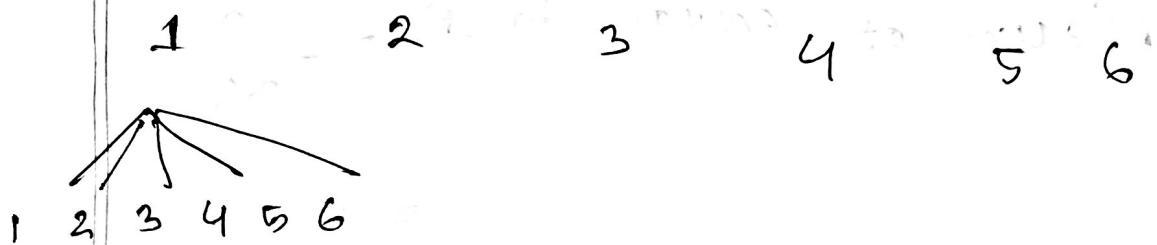
$$P(\text{Red}) = \frac{26}{52}$$

- {
1 - Ace
1 - King
1 - Queen
1 - Jack

(2 - 10) → among marks



Dice throw \rightarrow



$(1,1), (1,2), (1,3), (1,4), (1,5), (1,6)$

$(2,1), (2,2), (2,3), (2,4), (2,5), (2,6)$

$(3,1), (3,2), (3,3), (3,4), (3,5), (3,6)$

$(4,1), (4,2), (4,3), (4,4), (4,5), (4,6)$

$(5,1), (5,2), (5,3), (5,4), (5,5), (5,6)$

$(6,1), (6,2), (6,3), (6,4), (6,5), (6,6)$

Example:

Suppose a dice rolled 2 times,

find the sample space ~~&~~ find the probability

that the sum is

a) equal to 1.

b) equal to 4.

c) less than $\frac{5}{2}$.

sample space
2 dice sum = 12 ways
probability =?

1st and 2nd roll for 2×2 cases

$$(a) P(\text{sum of } \text{evenal} \text{ to } 1) = \frac{0}{36}$$

$$= 0$$

$$(b) P(\text{sum of } \text{evenal} \text{ to } 4) =$$

$$\frac{3}{36} \left\{ (1, 3), (2, 2), (3, 1) \right\}$$

$$(c) P(\text{sum of } \cancel{\text{evenal}} \text{ less than } 5) = \frac{6}{36}$$

Question:

A dice is rolled and a coin is tossed. Find the sample space & From that find the probability.

The dice shows an odd number and the coin shows a head?

Dice roll
outcome = $\{1, 2, 3, 4, 5, 6\}$

Coin Toss result

outcome = $\{H, T\}$

$S = \{(1, H), (1, T), (2, H), (2, T), (3, H), (3, T), (4, H), (4, T), (5, H), (5, T), (6, H), (6, T)\}$

$$P(\text{odd & show head}) = \frac{3}{12} = \frac{1}{4}$$

Addition Rule: \rightarrow (only for two events)

In Probability 280 (no) Addition

Rule GRRQ:

- (1) Specific addition Rule
- (2) General

Specific Addition rule:

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

[on

related term

convert \rightarrow

$$P(A \cup B) = P(A) + P(B)$$

or

\rightarrow

mutually exclusive

events do not

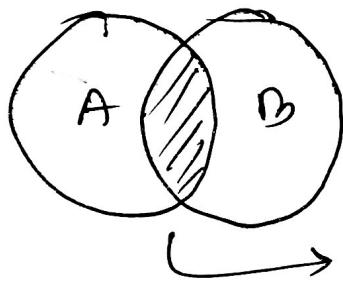


General Addition Rule:

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

$$P(A \text{ and } B)$$

$$\Rightarrow P(A \cup B) = P(A) + P(B) - P(A \cap B)$$



↑
common term $P(A \cap B)$

★ Randomly draw card to select a card
card is red & queen - 23% - chance.

Ques:

From a packet of card if a card is randomly selected find

the probability that the card would be

(i) Red or King



(ii) Black

(iii) King or Queen.

(ii) Ans:

$$P(\text{Black}) = \frac{26}{52}$$

(i) Ans = $P(\text{Red or K}) = P(R) + P(K)$
 $- P(R \cap K)$

$$= \frac{26}{52} + \frac{4}{52} - \frac{2}{52} \rightarrow \begin{array}{l} \text{King } 4 \text{ R} \\ \text{Red } 2 \text{ R} \\ \text{Black } 2 \text{ R} \end{array}$$

$$(iii) P(Q \text{ or } K) = P(Q) + P(K)$$

Example:

In a group of 105 students, 40 are juniors. 50 are male & 22 are male & juniors. Find the probability that a student randomly selected either junior or male?

Ans:

$$\begin{aligned} P(J \text{ or } m) &= P(J) + P(m) - P(J \cap m) \\ &= \frac{40}{105} + \frac{50}{105} - \frac{22}{105} \\ &= \frac{68}{105} \end{aligned}$$