CDS-AFCAT 1 2025

SSBCrack EXAMS

LIVE ●

MATHS

PROBABILITY

CLASS 1

NAVJYOTI SIR

16 Oct 2024 Live Classes Schedule

Time	Class	Instructor
9:00AM	16 OCTOBER 2024 DAILY DEFENCE UPDATES	DIVYANSHU SIR

SSB INTERVIEW LIVE CLASSES

Time	Class	Instructor
9:30AM	OVERVIEW ON GPE & PRACTICE	ANURADHA MA'AM

NDA 1 2025 LIVE CLASSES

Time	Class	Instructor
1:00PM	BIOLOGY - MCQ - CLASS 7	SHIVANGI MA'AM
4:00PM	MATHS - COMPLEX NUMBERS - CLASS 1	NAVJYOTI SIR
5:30PM	ENGLISH - ANTONYMS - CLASS 1	ANURADHA MA'AM

CDS 1 2025 LIVE CLASSES

Time	Class	Instructor
1:00PM	BIOLOGY - MCQ - CLASS 7	SHIVANGI MA'AM
5:30PM	ENGLISH - ANTONYMS - CLASS 1	ANURADHA MA'AM
7:00PM	MATHS - PROBABILITY - CLASS 1	NAVJYOTI SIR

AFCAT 1 2025 LIVE CLASSES

Time	Class	Instructor
4:00PM	STATIC GK - RAMSAR & LAKES IN INDIA	DIVYANSHU SIR
5:30PM	ENGLISH - ANTONYMS - CLASS 1	ANURADHA MA'AM
7:00PM	MATHS - PROBABILITY - CLASS 1	NAVJYOTI SIR

SSBCrack EXAMS

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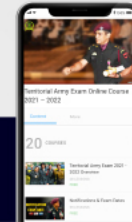
RANDOM EXPERIMENT

→ outcomes are independent to each other.
(result)

SAMPLE SPACE

Tossing a coin

Heads (H)

Tails (T)
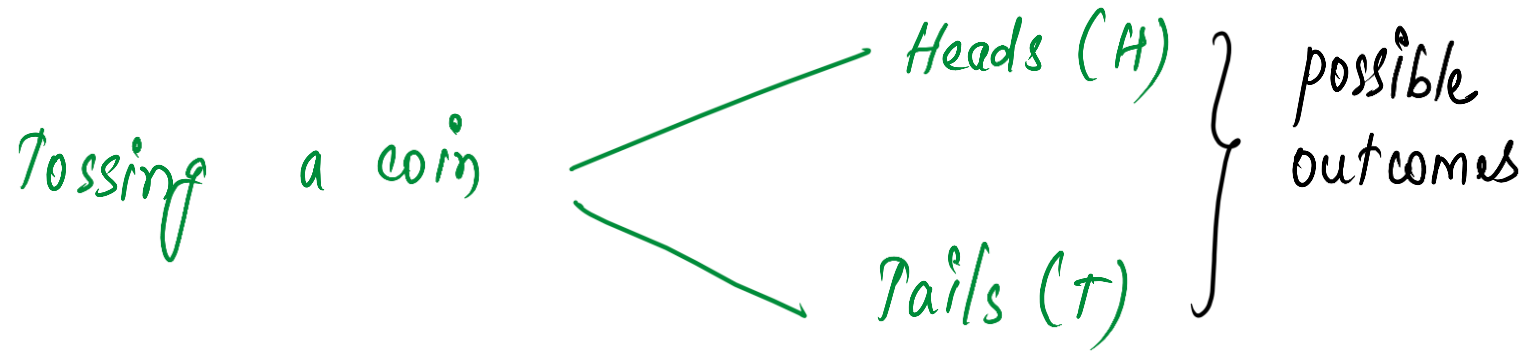
} possible outcomes

Sample Space (S)

Collection of possible outcomes

Total number of possible outcomes $= 2$ $(n(S))$

EVENT

→ Part of random experiment, for which probability is calculated.

E

number of outcomes favourable to E = $n(E)$

PROBABILITY

Probability for event $E = \dfrac{\text{No. of favourable outcomes}}{\text{No. of total outcomes}}$

$$P(E) = \frac{n(E)}{n(s)}$$

Eg — getting a head when a coin is tossed — (E)

$$P(E) = \frac{1}{2}$$

PROBABILITY
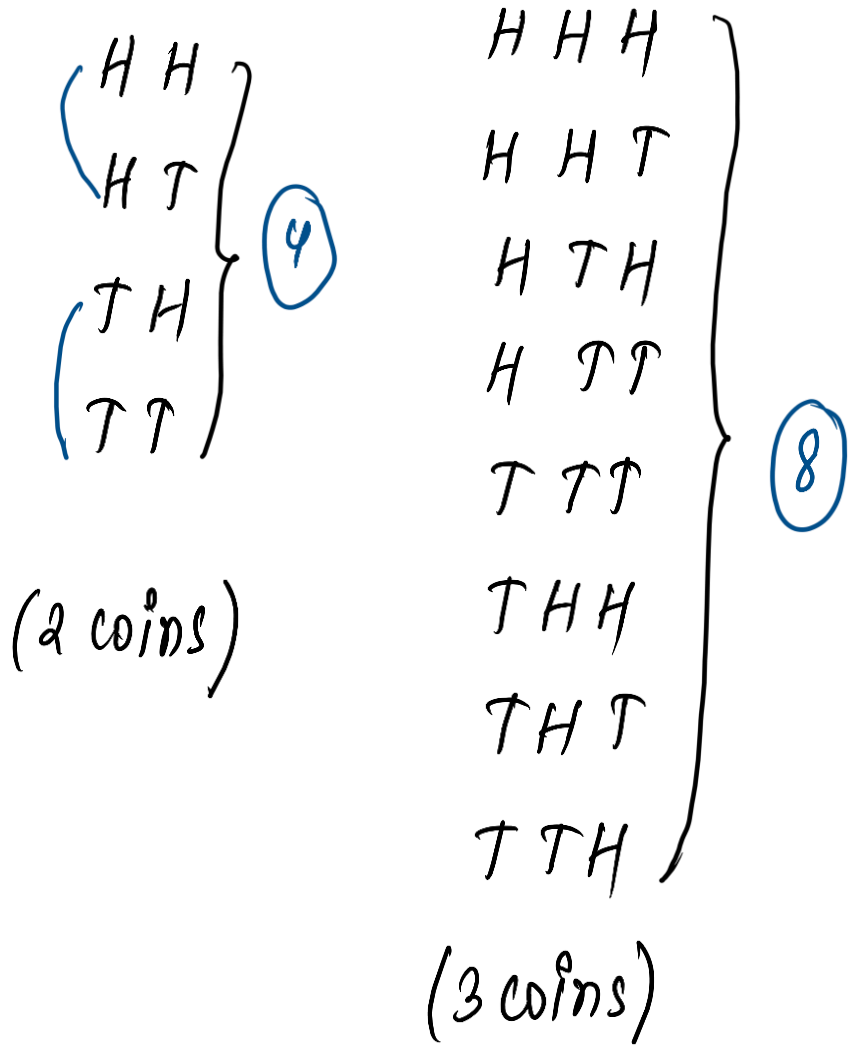
① $\quad 0 \leq P(E) \leq 1$

$P(E) = 0 \quad \Rightarrow \quad$ Impossible Event

$P(E) = 1 \quad \Rightarrow \quad$ Certain / Sure event

② $\quad P(E) + P(\text{not } E) = 1$

$P(\text{not } E) = 1 - P(E)$

COIN PROBLEMS

$$\left.\begin{array}{c} H\,H \\ H\,T \\ T\,H \\ T\,T \end{array}\right\} \textcircled{4}$$

(2 coins)

$$\left.\begin{array}{c} H\,H\,H \\ H\,H\,T \\ H\,T\,H \\ H\,T\,T \\ T\,T\,T \\ T\,H\,H \\ T\,H\,T \\ T\,T\,H \end{array}\right\} \textcircled{8}$$

(3 coins)

Number of
total outcomes $= 2^{\text{no. of coins}}$

QUESTION

Three coins are tossed. Find the probability of getting :

a) **2 heads ?**

b) **Atleast 2 heads ?** $\left(Atleast - minimum\right)$
2 and more

c) **Atmost 2 heads ?**

$$\left(Atmost - maximum\; 2\; heads\right)\begin{bmatrix} 0H \\ + \\ 1H \\ + \\ 2H \end{bmatrix}$$

a) $\dfrac{3}{8}$

b) $\dfrac{4}{8} = \dfrac{1}{2}$

c) $\dfrac{7}{8}$

$H\ H\ H$ ✓
$H\ H\ T$ ✓
$H\ T\ H$ ✓
$H\ T\ T$
$T\ H\ H$ ✓
$T\ H\ T$
$T\ T\ H$
$T\ T\ T$

c) $1 - P(3 \text{ heads})$

$1 - \dfrac{1}{8} = \dfrac{7}{8}$

$\boxed{H \quad H \quad H}$

H   H   T

H   T   H

H   T   T

T   H   H

T   H   T

T   T   H

T   T   T

QUESTION

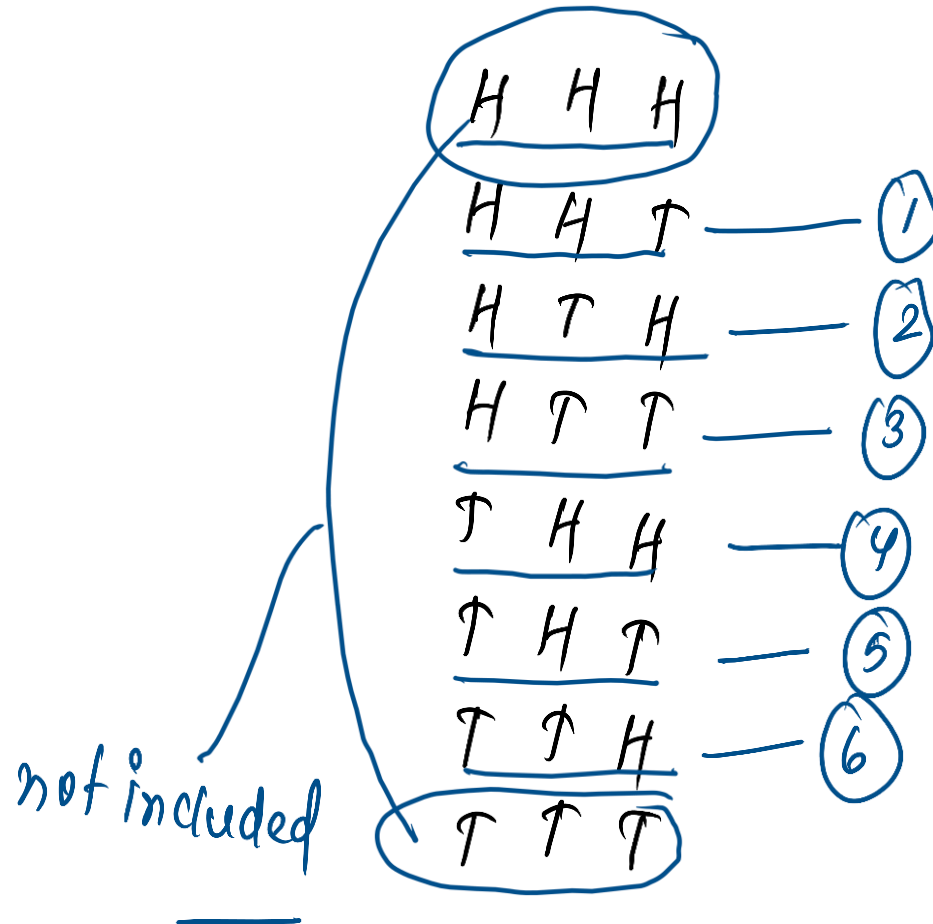**Three coins are tossed. Find the probability of getting :**

a) **No heads ?**

b) **Atleast 1 head and 1 tail ?**

a)   T T T $\longrightarrow$ $\frac{1}{8}$

b) $\frac{6}{8} = \frac{3}{4}$

H H H

H H T —— ①

H T H —— ②

H T T —— ③

T H H —— ④

T H T —— ⑤

T T H —— ⑥

not included   T T T

DICE PROBLEMS

1 die $\longrightarrow$ 1, 2, 3, 4, 5, 6] (6)

2 dice $\longrightarrow$ (1,1) (1,2) (1,3) (1,4) (1,5) (1,6)

(2,1)   (2,6)

(3,1)

(6,1)   (6,6)

(36)

$$\frac{\text{Total outcomes}}{\text{no. of dice}}$$

$$(6)^{\text{no. of dice}}$$

QUESTION

Two dice are rolled. Find the probability of getting :

a) Same number on both die?

b) A total of atleast 10 ?

a) $(1,1)$ $(2,2)$, $(3,3)$ $(4,4)$ $(5,5)$ $(6,6)$ $\dfrac{6}{36} = \dfrac{1}{6}$

b) $(6,4)$ $(6,5)$ $(5,5)$, $(6,6)$ $\dfrac{6}{36} = \dfrac{1}{6}$

    $(4,6)$ $(5,6)$

CARD PROBLEMS

52

26 Black

26 Red

suits

13 Clubs

13 Spades

13 Diammds

13 Hearts

Cards numbered from (1 – 13)
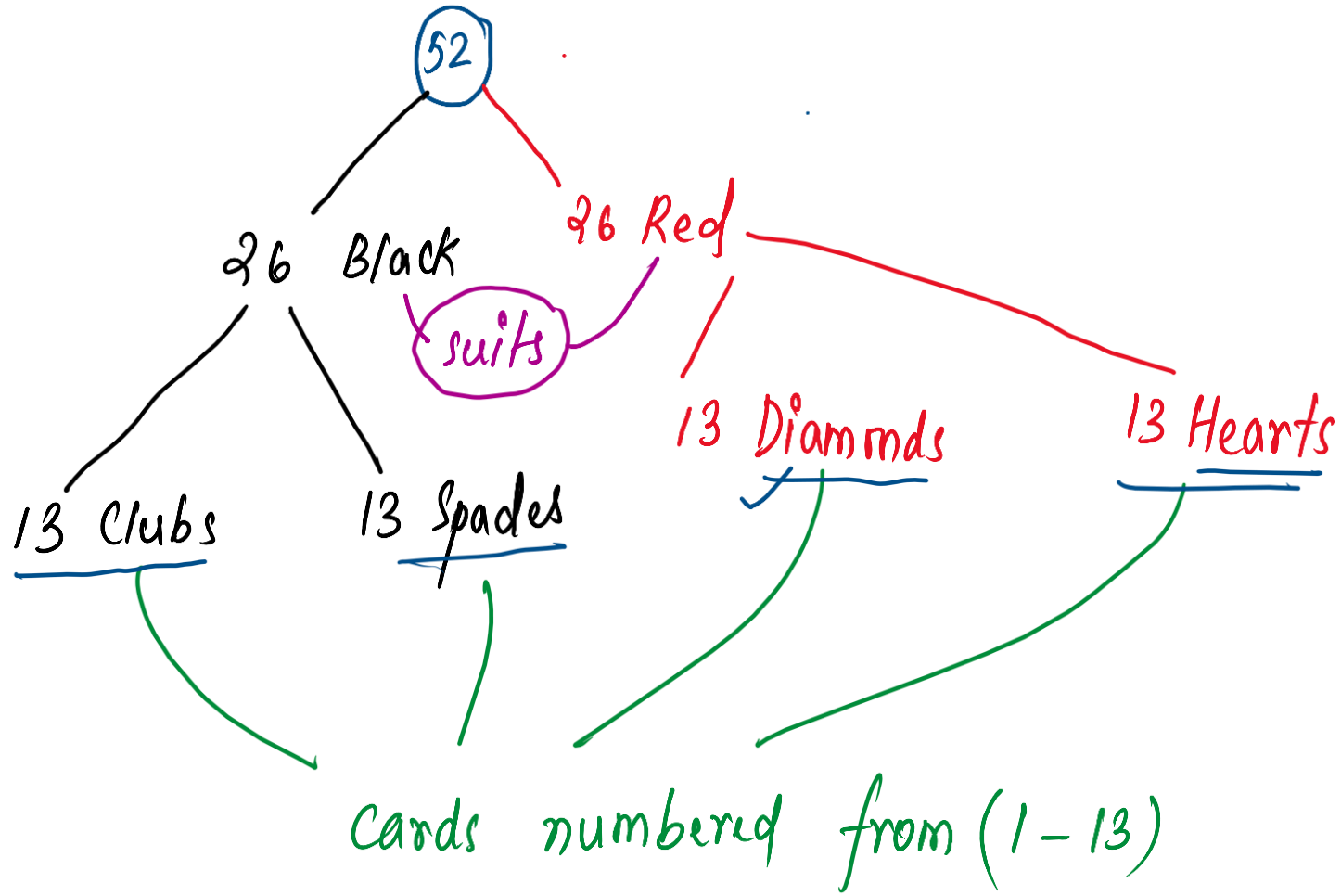
1 → Ace

11 → Jack

12 → Queen

13 → King

Face cards

QUESTION

One card is taken out from a pack of cards. Find the probability of getting :

a) **A face card ?**

b) **A Black king ?**

c) **A Jack of clubs ?**

a) $\dfrac{12}{52} = \dfrac{3}{13}$

c) $\dfrac{1}{52}$

b) $\dfrac{2}{52} = \dfrac{1}{26}$

QUESTION

One card is taken out from a pack of cards. Find the probability of getting :

a) Not a red face card ?

b) Ace and King ?

a) $1 - P(\text{red face card})$

$$1 - \frac{6}{52} = 1 - \frac{3}{26} = \frac{23}{26}$$

b) $\frac{0}{52} = 0$