

(Q) Bag A \rightarrow 3 white + 2 black balls
 Bag B \rightarrow 2 white + 3 black balls.

A ball is transferred from bag A to B randomly and then a ball is drawn from B if it is found to be white find prob that transferred ball was black.

A:- transfer white from A \rightarrow B

B:- transfer black " " "

C:- getting white.

START

$P = \frac{3}{5}$

$P = \frac{2}{5}$

cause now
in bag B
we have 3W + 3B

$\frac{3}{6}$

$\frac{2}{6}$

cause now
in bag B we have
 $2W + 4B$

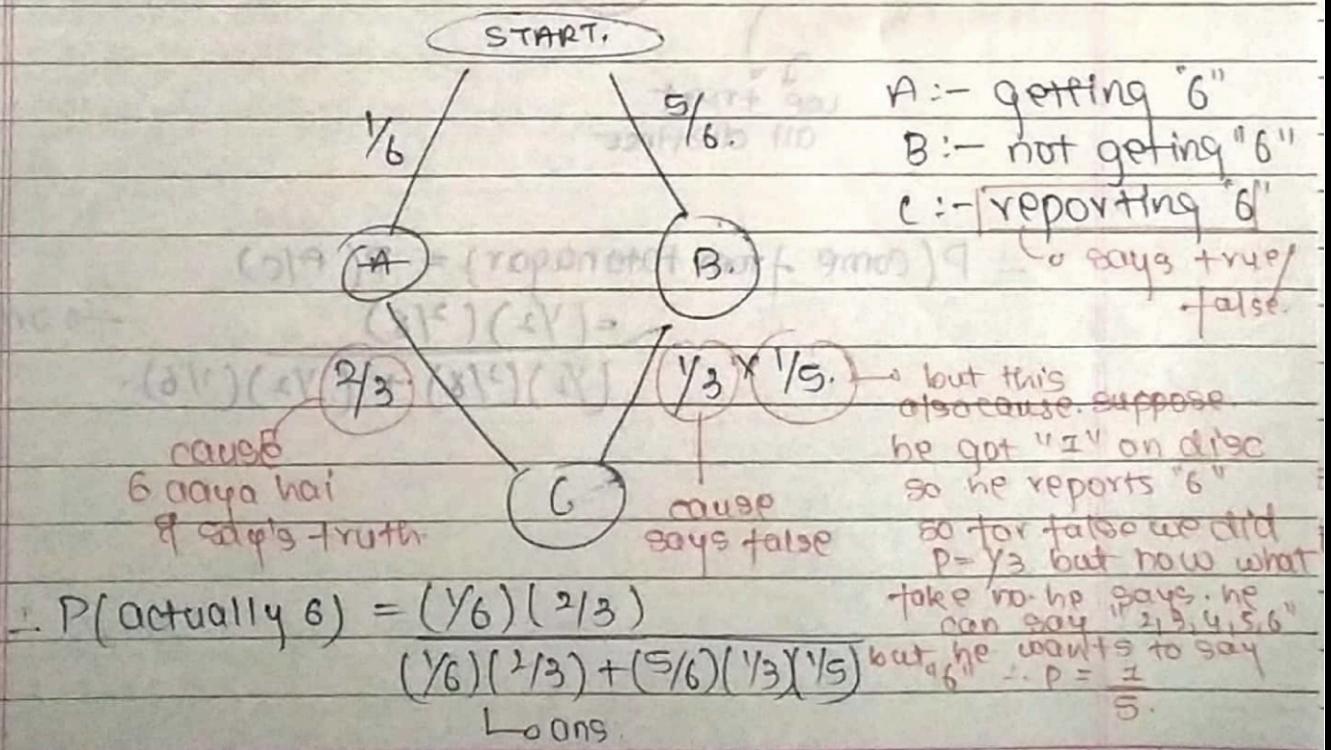
C.

$$\begin{aligned}
 &\therefore \text{Prob that transferred ball was black} \\
 &= P(B/C) \Rightarrow \text{prob of } B \text{ such that } C \text{ occurs} \\
 &\Rightarrow \text{reverse} \\
 &\Rightarrow \text{use formula} \\
 &= \frac{P(B) \times P(C/B)}{P(C)} \\
 &= \frac{\left(\frac{2}{5}\right) \times \left(\frac{2}{6}\right)}{\left(\frac{3}{5}\right)\left(\frac{3}{6}\right) + \left(\frac{2}{5}\right)\left(\frac{2}{6}\right)}.
 \end{aligned}$$

(Q) A man speaks truth 2 out of 3 times.
 Imp He throws a die & reports the number as "6". Find the prob that it is actually "6"

→ to make events 1st always think the timeline.

Now before telling true/false the obs will see if outcome is "6" or not.



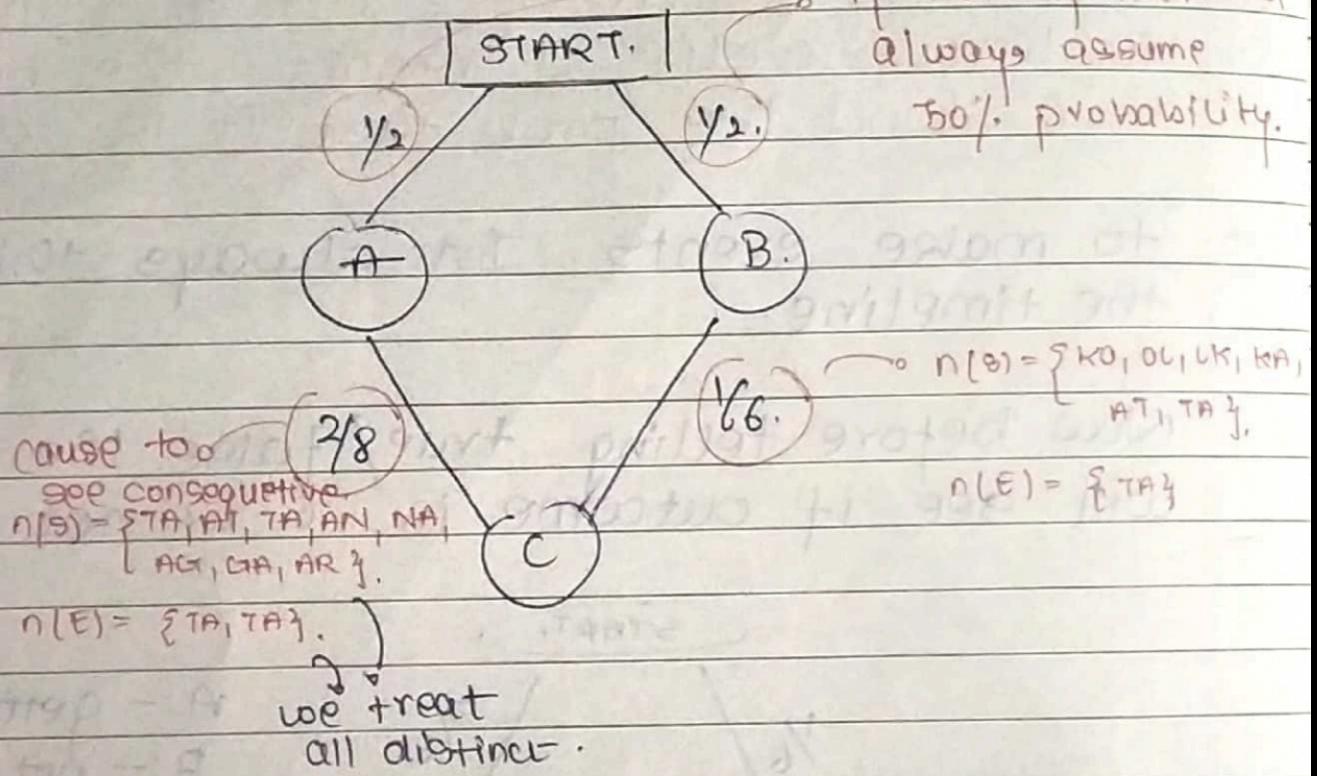
(Q) A letter is known to have come from either "TATANAGAR" or "KOLKATA" if somehow only two consecutive alphabets "TA" are visible on letter. Find prob that it came from TATANAGAR.

A:- came from "TATANAGAR"

B:- " " " KOLKATA"

C:- observing "TA"

o if nothing mentioned
always assume
50% probability.



$$\therefore P(\text{come from tatanagar}) = P(A/C)$$

$$= (\frac{1}{2})(\frac{2}{8})$$

$$= (\frac{1}{2})(\frac{2}{8}) + (\frac{1}{2})(\frac{1}{6}).$$

→ ans.

(9) An oil exploration company currently has two active projects, one in Asia and other in Europe. Let A be event that Asia project is successful and B be event that Europe project is successful. Suppose that A and B are independent events with $P(A) = 0.4$, $P(B) = 0.7$

(a) If the Asian project is not successful, what is the probability that the European project is also not successful?

$$= P(B'|A') = P(B'|A)/P(A) = P(A') \times P(B|A') = P(B')$$

~~but~~ since A and B are independent

$\Rightarrow A'$ and B' are also independent.

(b) What is the probability that atleast one of the two projects will be successful.

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

$$\boxed{0.82}$$

(c) Given that atleast one of the two projects is successful. What is the prob that only Asia proj is successful.

use venn-diagram to get this

$$= P((A \cap B')/(A \cup B))$$

$$= \frac{P((A \cap B') \cap (A \cup B))}{P(A \cup B)} = \frac{P(A \cap B')}{P(A) + P(B) - P(A \cap B)}$$

$$= \frac{P(A) - P(A \cap B)}{P(A) + P(B) - P(A)P(B)}$$

$$\begin{aligned} &= P(A) - P(A)P(B) \\ &\quad \text{B} \quad 0.82 \end{aligned}$$

$$= \frac{0.16}{0.82} = \boxed{0.1963} - \text{ans.}$$