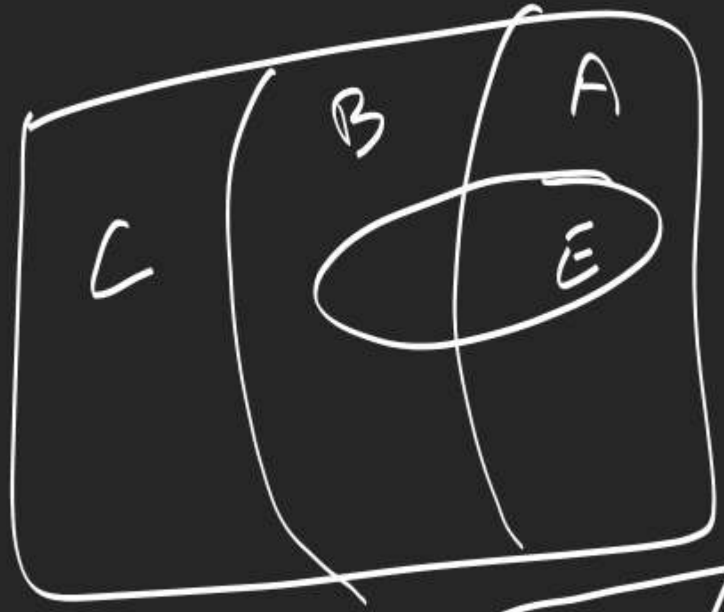
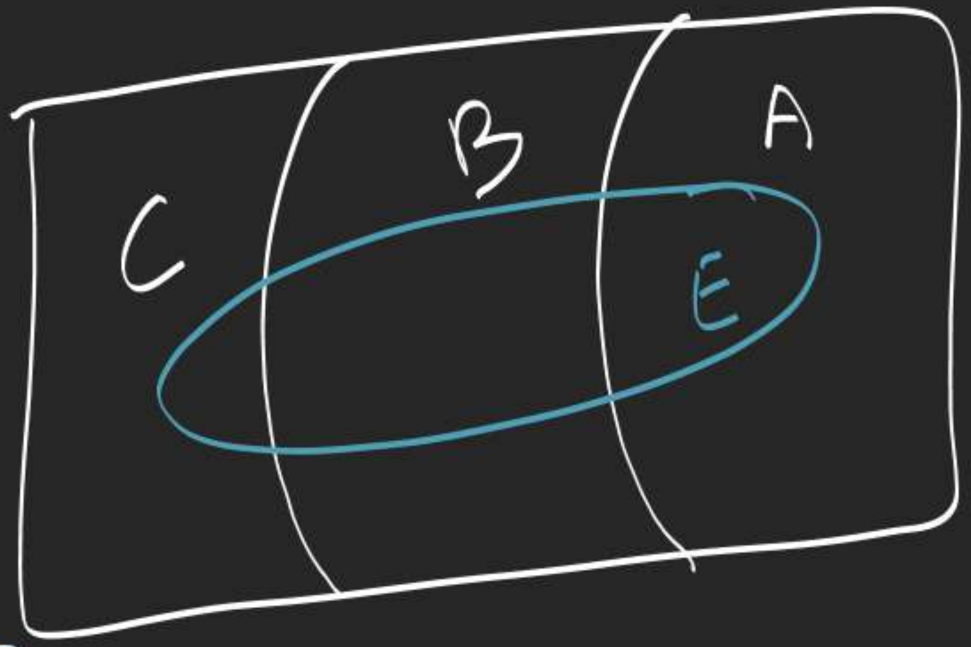
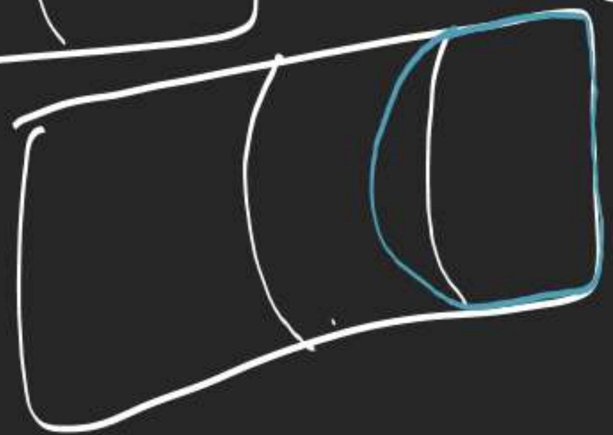
Nishant Jindal

1.

$$\frac{\frac{1}{10}\times 1}{\frac{8}{10}\times\left(\frac{1}{2}\right)^5 + \frac{1}{10}\times 1^5 + \frac{1}{10}\times 0^5} = \frac{4}{5}.$$







$A \to$ DH selected

$B \to$ NC —"— —

$C \to$ DT —"— —

$E \to$ 5 times head occur

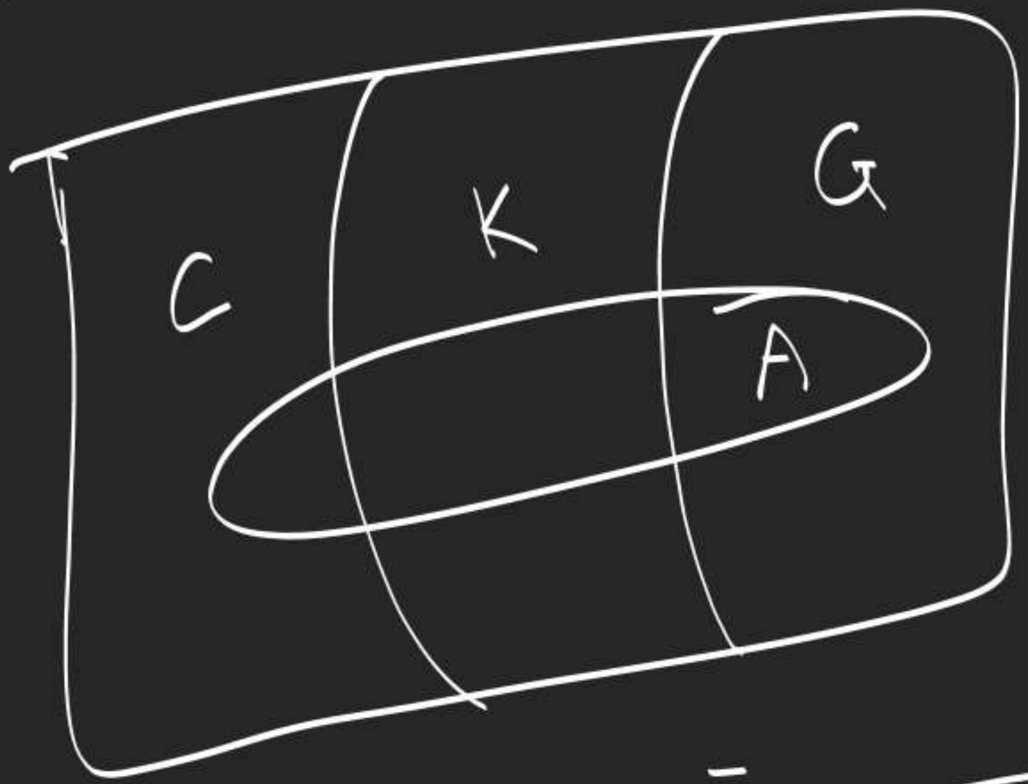
$$P(A/E) = \frac{P(A)P(E/A)}{P(A)P(E/A) + P(B)P(E/B) + P(C)P(E/C)}$$

Nishant Jindal

2.

$$\frac{\frac{1}{2}\times 1}{\frac{1}{3}\times \frac{1}{15} + \frac{1}{6}\times\frac{1}{8} + \frac{1}{2}\times 1} = \frac{360}{391}$$

$\frac{1}{4}$



$A \to$ Answer correctly

$$P(K/A)$$

$$= \frac{P(K)\,P(A/K)}{P(C)\,P(A/C) + P(G)\,P(A/G) + P(K)\,P(A/K)}$$

Nishant Jindal

3.

$$\frac{\frac{1}{4}\times 1}{\frac{3}{4}\times\frac{1}{9}+\frac{1}{4}\times 1} = \boxed{\frac{3}{4}}$$

Nishant Jindal

Binomial Probability

Experiment

↓

consists of 'n' independent trials (called Bernoulli's trials)

↓

s.t. each trial may result in 2 outcomes only

Success

$P(S) = p$

Failure

$P(F) = q$

$p + q = 1$

$P(\underbrace{SS..S}_{r}\underbrace{FF..F}_{n-r}) = p^r q^{n-r}$

$P(\text{'r' successes}) = {}^nC_r p^r q^{n-r}$

Nishant Jindal

Mathematical Expectation

Expectation = pM

Nishant Jindal

4.

$$^{100}C_{50}\, p^{50}(1-p)^{50} = {}^{100}C_{51}\, p^{51}(1-p)^{49}$$

$$p = \frac{51}{101}$$

hurdle race

5.

$$\left(\frac{2}{3}\right)^9 + {}^9C_1\left(\frac{2}{3}\right)^8\left(\frac{1}{3}\right)$$

Nishant Jindal

$${}^{11}C_5 (0.4)^5 (0.6)^6 + {}^{11}C_5 (0.4)^6 (0.6)^5$$

Ex–III (remaining)

Ex–IV (41–

$P(A) = P(SSS \text{ or } \boxed{SSF}\underline{S})$

$= \frac{1}{2^3} + 3 \times \frac{1}{2^4} = \frac{5}{16}$

FF, SFF, SSFF

$P(B) = \left(\frac{1}{2}\right)^2 + 2 \times \left(\frac{1}{2}\right)^3 + 3 \times \frac{1}{2^4}$

$= \frac{11}{16}$

$E_A = \frac{5}{16} \times 16000 = 5000$

$E_B = 11000$

Nishant Jindal

$$E_A = P\left(A / A\cap\bar{B} \text{ or } \bar{A}\cap B\right) \times 2800$$

$$= \frac{0.8\times 0.6}{0.8\times 0.6 + 0.2\times 0.4} \times 2800$$

$$= 2400/-$$

$$E_B = 400/-$$