Chapter 16 : Probability

Sample Questions

Question 1 :

Find the sample space associated with the experiment of tossing of two coins simultaneously.

Solution :

The sample space is S = { HH, HT, TH, TT }

Question 2 :

Find the sample space associated with the experiment of rolling a pair of dice once.

Solution :

The sample space is

{(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)}

Question 3 :

In a class of 40 students, 16 are boys and rest are girls.
Find the probability that a selected student will be a girl

Solution :

Number of boys = 16

Number of girls = 40 - 16 = 24

$\therefore$ P(G) = $\frac{24}{40} = \frac{3}{5}$

Question 4 :

A box contains 20 balls from 1 to 20. One ball is drawn at random. Find the probability that the ball number is multiple of 3 or 4.

Solution :

$A=\{3,6,9,12,15,18\}$

$n(A)=6$

$B=\{4,8,12,16,20\}$

$n(B)=5$

$A\cap B=12$

$n(A\cap B)=1$

$P(\text{multiple of 3 or 4})$

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

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

$=\frac{6}{20}+\frac{5}{20}-\frac{1}{20}=\frac{10}{20}=\frac{1}{2}$

Question 5 :

Given that $P(A)=0.35$, $P(B)=0.73$ and $P(A\cap B)=0.14$,

Find $P(A\cup B)$, $P(A'\cap B)$, $P(A\cap B')$, $P(A'\cup B')$

Solution :

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

$=0.35+0.73-0.14=0.94$

$P(A'\cap B)=P(B)-P(A\cap B)$

$=0.73-0.14=0.59$

$P(A\cap B')=P(A)-P(A\cap B)$

$=0.35-0.14=0.21$

$P(A'\cup B')=1-P(A\cap B)$

$=1-0.14=0.86$

EXERCISE

1.

a) In a random experiment, 6 coins are tossed simultaneously. Write the number of sample points in the sample space.

b) If $P(A)= 0.5$, $P(B)=0.6$ and $P(A \cap B) = 0.3$,

Find $P(A')$, $P(A \cup B)$, $P(A' \cap B')$, $P(A' \cup B')$

(March 2016)

Hint or Answer: 0.5, 0.8, 0.2, 0.7

2.

a) If A and B are mutually exclusive and exhaustive events, then $P(A) + P(B) = \ldots$

b) Two students A and B appeared in an examination. The probability that A will qualify the examination is 0.25 and B will qualify is 0.45 and both will qualify the examination is 0.2. Find the probability the examination.

Both A and B will not qualify the exam

One of them will qualify the exam **(Imp 2015)**

Hint or Answer: 1, 0.5, 0.3.

3.

a) The number of outcomes in the sample space of the random experiment of throwing two dice is....

b) Two students, Anil and Ashima appeared in an examination. The probability that Anil will qualify the examination is 0.05 and that Ashima will qualify the examination is 0.10. The probability that both will qualify the examination is 0.02.

Find the probability that both will not qualify the examination.

(March 2015)

Hint or Answer: 36, 0.13, 0.87.

4.

a) If $P(A)= 0.42$, $P(B)=0.48$ and $P(A \cap B) = 0.16$,

Find $P(A')$,$P(B')$, $P(A \cup B)$

(March 2016)

Hint or Answer: 0.58, 0.52, 0.74

5.

A bag contains 3 white, 4 black and 2 yellow balls. Two balls are drawn at random.

a) a) Find the probability that the two balls drawn are of the same colour.

b) b) Find the probability that none of the balls drawn are yellow inn colour.

(Imp 2012)

Hint or Answer: 21,7/12.

Prepared By

Fassal Peringolam

(Maths & Science Tutor)

Blog: Science Tablet

"Brains Moozhikkal"