

## Probability class 09 Solved Question paper -1 [2016]

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1. Q. Two unbiased coins are tossed. What is the probability of getting at most one head ? [3/4]

Solution: Total outcomes = [HH, TT, TH, HT]

Favourable outcomes = [HH, TH, HT] {Please note we need atmost one tail, not atleast one tail.}

So probability =  $\frac{3}{4}$

2. Q. Two dice are thrown together. What is the probability that the sum of the numbers on the two faces is divisible by 4 or 6 ? [7/18]

Solution: Total outcomes = 36

Let E be the event that the sum of the numbers on the two faces is divided by 4 or 6.

Then ,E = {(1,3),(1,5),(2,2),(2,4),(2,6),(3,1),(3,3),(3,5),(4,2),(4,4),(5,1),(5,3),(6,2),(6,6)}

n(E) = 14. Hence, P(E) =  $\frac{14}{36} = \frac{7}{18}$

3. Q. Jasmine has a bag of sweets, which has 3 yellow sweets, 5 green sweets, 7 red sweets, 4 purple sweets and 1 black sweets. If Jasmine takes out one sweet, find the colour of the sweet which has  $\frac{1}{4}$  probability.

Solution: Let the no of colour of the sweet which has  $\frac{1}{4}$  probability = x  $\Rightarrow \frac{1}{4} = \frac{x}{20} \Rightarrow x = 5$

So, Desired sweet = Green

4. Q. A coin is tossed for a certain number of times. If the probability of getting a head is 0.4 and the head appeared up for 24 times, find the number-of times the coin was tossed. Hence, find the probability of getting a tail and verify that P(H) + P(T) = 1

Solution: Let x be the number of times a coin is tossed but, The probability of getting a head is 0.4

The no of times head appear =  $0.4x$

$$\Rightarrow 24 = 0.4x$$

$$\Rightarrow x = 60$$

$\Rightarrow$  60 times the coin was tossed

Hence, No. of times tail turned up =  $60 - 24 = 36$

Probability of getting tail =  $\frac{36}{60} = 0.6$

$$\text{So, } P(H) + P(T) = 0.4 + 0.6 = 1$$

5. Q. The probability of guessing the correct answer to a certain question is  $\frac{x}{2}$ . If probability of not guessing the correct answer is  $\frac{2}{3}$ , then find  $x$ . [Ans:  $\frac{2}{3}$ ]

Solution: Let, probability of guessing the correct answer to a certain question =  $P(A) = \frac{x}{2}$

Probability of not guessing the correct answer =  $P(B) = \frac{2}{3}$

$$\text{So, } P(A) + P(B) = 1$$

$$\Rightarrow \frac{x}{2} + \frac{2}{3} = 1$$

$$\Rightarrow \frac{x}{2} = 1 - \frac{2}{3} \Rightarrow x = \frac{2}{3}$$

6. Q. The probability of guessing the correct answer to a certain question is  $\frac{x}{3}$ . If probability of not guessing the correct answer is  $\frac{x}{3}$ , then find  $x$ . [Ans:  $\frac{3}{2}$ ]

Solution: Let, probability of guessing the correct answer to a certain question =  $P(A) = \frac{x}{3}$

Probability of not guessing the correct answer =  $P(B) = \frac{x}{3}$

$$\text{So, } P(A) + P(B) = 1$$

$$\Rightarrow \frac{x}{3} + \frac{x}{3} = 1$$

$$\Rightarrow \frac{2x}{3} = 1 \Rightarrow x = \frac{3}{2}$$

7. Q. Two coins are tossed simultaneously for 360 times. The number of times '2 Tails' appeared was three times 'No. Tail' appeared and number of times '1 tail' appeared is double the number of times 'No Tail' appeared. Find the probability of getting 'Two tails'.

Ans: Let no. of times No Tail appeared =  $x$ ; No. of times 1 Tail appeared =  $2x$ ; No. of times 2 Tail appeared =  $3x$

$$\Rightarrow x + 2x + 3x = 360 \Rightarrow x = 60$$

$$\text{Then, } p[2T] = \frac{180}{360} = 0.5$$

8. Q. A coin is tossed 15 times and observed that 11 times head comes up. Find the probability that a tail comes up.[Ans: 4/15]

Solution: No. of times heads come up = 11 and A coin is tossed 15 times

No. of times tail come up =  $15 - 11 = 4$

Probability of tails =  $\frac{4}{15}$

9. Q. What is the probability of getting 6 when a dice is thrown 30 times?

Ans: the probability of getting 6 when a dice is thrown once =  $1/6$

Then the probability of getting 6 when a dice is thrown once =  $1/6 \times 30 = 5$  times

10. Q. A box contains 50 bolts and 150 nuts. On checking the box, it was found that half of the bolt and half of the nuts are rusted. if one item is chosen at random, find the probability that it is rusted.

Solution: Total item in box contains  $50 + 150 = 200$  .

On checking the box, it was found that half of the bolt and half of the nuts are rusted

Total item rusted in box contains =  $\frac{200}{2} = 100$  .

The probability that item is rusted =  $\frac{100}{200} = 0.5$

11. Q. Find the probability that a leap year, selected at random will have 53 Sundays

Solution: A Leap year has 366 days. In which we have 52 weeks and 2 days

These two days can be

Sunday , Monday;

Monday, Tuesday;

Tuesday, Wednesday;

Wednesday, Thursday ;

Thursday, Friday;

Friday, Saturday;

Saturday, Sunday

For 53 Sundays, probability =  $\frac{2}{7}$