Probability

TEST – 01

Q01. The probability that Anu hits a target is $\frac{1}{4}$. He fires 64 times. Find the expected number (μ) of times he will hit the target and also the variance (σ^2).

Q02. Two cards are drawn simultaneously from a pack of 52 cards. Compute the mean and standard deviation of the number of aces.

Q03. Two cards are drawn simultaneously without replacement from a well shuffled pack of 52 cards. Find the probability distribution of the number of kings.

Q04. The probability that a CFL bulb produced by a factory will fuse after 100 days of use is 0.05. Find the probability that out of 5 such bulbs
(a) not more than one (b) more than one
will fuse after 100 days of use. Why should we prefer using CFLs over the conventional bulbs?

Q05. A company has two plants to manufacture bicycles. The first plant manufactures 60% of the bicycles and he second plant 40%. Also 80% of the bicycles are rated of standard quality at the first plant and 90% of the standard quality at the second plant. A bicycle is picked up at random and found to be of standard quality. Find the probability that it comes from the second plant.

Q06. A family has two children. Find the probability that both are boys, if it is known that
(a) at least one of the children is a boy (b) the elder child is a boy.

Q07. Two groups are competing for the position on the Board Of Directors of a company. The probabilities that the first and the second group will win are 0.6 and 0.4 respectively. Further, if the first group wins, the probability of introducing a new product is 0.7 and the corresponding probability is 0.3, if the second group wins. Find the probability that the new product was introduced by the second group.

Q08. A man is known to speak the truth 3 out of 5 times. He throws a die and reports it is a number greater than 4. Find the probability that it is actually a number greater than 4? 'Lying is a bad habit. ' Why?

TEST – 02

Q01. A black and a red dice are rolled once. What is the probability of getting a sum greater than 9, given that the black die resulted in a 5?

Q02. Probability of not solving a problem is $\frac{1}{2}$ and $\frac{2}{3}$ by M and N respectively. If both try to solve the problem independently, find the probability that it is solved. 'Unity is strength.' Elaborate.

Q03. Two cards are drawn simultaneously from a well shuffled pack of 52 cards. Find the mean, variance and standard deviation of the number of kings.

Q04. If a machine is set up properly, it produces 90% good items. If it is not set up properly, it produces only 40% good items. Past experience reveals that 80% of the set ups are correctly done. If after a certain set up, the machine produces 2 acceptable items, find the probability that machine was set up properly. 'Machines have proved beneficial for mankind.' How?

Q05. A man is known to speak the truth 3 out of 4 times. He throws a die and reports it as a six. What is the probability that it is actually a six? How does being a liar impact one's character?

Q06. Show that E and $\bar{F}$ are independent events if it is known that E and F are independent events.

Q07. A card from a pack of 52 cards is lost. From the remaining cards of the pack, two cards are drawn and are found to be both spades. Find the probability of the lost card being a spade.

Q08. An insurance company insured 3000 scooters, 4000 cars and 5000 trucks. The probabilities of the accident involving a scooter, a car and a truck are 0.02, 0.03 and 0.04 respectively. One of the insured vehicles meet with an accident. Find the probability that it is a
(a) scooter (b) car and (c) truck.

Answers of Probability

TEST 01

Q01. 16, 12 Q02. $\frac{2}{13}, \frac{24}{169}$ Q03.

X	0	1	2
P(X)	$\frac{188}{221}$	$\frac{32}{221}$	$\frac{1}{221}$

Q04. (a) $\frac{6}{5}\times\left(\frac{19}{20}\right)^4$ (b) $1-\frac{6}{5}\times\left(\frac{19}{20}\right)^4$

Q05. $\frac{3}{7}$ Q06. (a) $\frac{1}{3}$ (b) $\frac{1}{2}$ Q07. $\frac{2}{9}$ Q08. $\frac{3}{7}$.

TEST 02

Q01. $\frac{2}{6}$ Q02. $\frac{4}{6}$ Q03. $\frac{34}{221}, \frac{6800}{(221)^2}, \frac{\sqrt{6800}}{221}$ Q04. $\frac{81}{85}$ *i.e.,* 0.95

Q05. $\frac{3}{8}$ Q07. $\frac{11}{50}$ Q08. (a) $\frac{3}{19}$ (b) $\frac{6}{19}$ (c) $\frac{10}{19}$.

If you've any query regarding any question in this test, please write to me on email id at ***theopgupta@gmail.com***