

1. A pack of playing cards was found to contain only 51 cards. If the first 13 cards which are examined are all red, what is the probability that the missing card is black.
2. A family has 2 children . What is the probability that both the children are boys given that at least one of them is a boy?
3. Probability of solving a specific problem independently by A and B are $\frac{3}{10}$ and $\frac{5}{7}$ respectively. If both try to solve the problem independently find the probability that
 1. the problem is solved
 2. exactly one of them solves the problem
4. A person has undertaken a construction job. The probability is 0.65 that there will be strike , 0.80 that the construction job will be completed on time if there is no strike and 0.32 that the job will be completed on time if there is a strike.Determine the probability that the job will be completed on time.
5. A man takes a step forward with a probability of 0.4 and backward with a probability of 0.6.Find the probability that at the end of 11 steps , he is just one step away from the starting point.
6. 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.
7. In answering a question on a multiple choice test, a student either knows the answer or guesses.Let $\frac{3}{4}$ be the probability that he knows the answer and $\frac{1}{4}$ be the probability that he guesses.Assuming that a student who guesses at the answer will be correct with a probability of $\frac{1}{4}$, what is the probability that the student knows the answer given that he answered it correctly.
8. In a hurdle race, a player has to cross 10 hurdles.The probabilities that he will clear each hurdle is $\frac{5}{6}$.What is the probability that he will knock down fewer than 2 hurdles.
9. A and B are two independent witnesses in a case.The probability that A will speak the truth is 'x' and the probability that B will speak the truth is 'y'.A and B agree in a certain statement.Show that the probability that this statement is true is $\frac{xy}{1 - x - y + 2xy}$

10. A Laboratory blood test is 99% effective in detecting a certain disease when it is in fact present. However the test also yields a false positive result for 0.5% of the healthy person tested. If 0.1% of the present population actually has the disease, what is the probability that a person has the disease given that his test result is positive.