

Practice Problems

1. An urn contains six chips, numbered 1 through 6. Two are chosen at random without replacement and their numbers are added together. What is the probability that the sum is equal to 5? What is the probability that the sum is equal to 4 or 5?
2. Suppose after 10 years of service, 40% of computers have problems with motherboards, 30% have problems with hard drives and 15% have problems with both.
 - (a) What is the probability that a 10-year old computer still has a fully functioning motherboard and hard drive?
 - (b) What is the probability that a 10-year old computer has at least one of the problems?
3. A computer is tested by 3 independent tests. When there is an error, these tests will discover it with probabilities .2, .3, and .5 respectively. Suppose that the program contains an error. What is the probability that it will be found by at least one test?
4. Iowa State plays Texas in a football game. Handicappers think that if ISU's first string quarterback is healthy, Texas has a 40% chance of winning the game. If ISU has to start the backup quarterback, the probability of Texas winning raises to 75%. ISU's trainer says there is a 70% chance that the first string quarterback will play. What is the probability that Iowa State wins the game?
5. Among 10 laptop computers, five are good and five have defects. A customer buys 6 laptops.
 - (a) What is the probability of exactly 2 defective laptops among them?
 - (b) Given that at least 2 purchased laptops are defective, what is the probability that exactly 2 are defective?
6. A computer maker receives parts from three suppliers S1, S2, and S3. Fifty percent come from S1, twenty percent from S2, and thirty percent from S3. Among all the parts supplied by S1, 5% are defective. For S2 and S3, the proportion of defective parts is 3% and 6% respectively.
 - (a) What is the probability of receiving a defective part?
 - (b) A customer complains that a certain part in her recently purchased computer is defective. What is the probability that it was supplied by S1?