

1. A man tosses two fair dice. The conditional probability that the sum of the two dice will be 7 when
  - i. The two dice had the same outcome is \_\_\_\_\_
  - ii. The sum is greater than 6 is \_\_\_\_\_
  - iii. The sum is odd \_\_\_\_\_
2. A certain form of cancer is known to be found in women over 60 with probability 0.07. A blood test exists for the detection of the disease, but the test is not infallible. In fact, it is known that 10% of the time the test gives a false negative (i.e., the test incorrectly gives a negative result) and 5% of the time the test gives a false positive (i.e., incorrectly gives a positive result). If a woman over 60 is known to have taken the test and received a favorable (i.e., negative) result, the probability that she has the disease is \_\_\_\_\_.
3. Two coins are tossed. The conditional probability that two heads results, given that there is at least one head is \_\_\_\_\_.
4. A paint-store chain produces and sells latex and semi-gloss paint. Based on long-range sales, the probability that a customer will purchase latex paint is 0.75. Of those that purchase latex paint, 60% also purchase rollers. But only 30% of semi-gloss paint buyers purchase rollers. A randomly selected buyer purchases a roller and a can of paint. The probability that the paint is latex is \_\_\_\_\_.
5. A box contains 15 items, 4 of which are defective and 11 are good. Two items are selected. The probability that the first is good and second is defective is \_\_\_\_\_.
6. In a certain region of the country it is known from past experience that the probability of selecting an adult over 40 years of age with cancer is 0.05. If the probability of a doctor correctly diagnosing a person with cancer as having the disease is 0.78 and the probability of incorrectly diagnosing a person without cancer as having the disease is 0.06, the probability that an adult over 40 years of age is diagnosed as having cancer is \_\_\_\_\_.
7. The probability that the head of a household is home when a telemarketing representative calls is 0.4. Given that the head of the house is home, the probability that goods will be bought from the company is 0.3. The probability that the head of the house is home and goods are bought from the company is \_\_\_\_\_.
8. A rare disease exists with which only 1 in 500 is affected. A test for the disease exists, but of course it is not infallible. A correct positive result (patient actually has the disease) occurs 95% of the time, while a false positive result (patient does not have the disease) occurs 1% of the time. If a randomly selected individual is tested and the result is positive, the probability that the individual has the disease is \_\_\_\_\_.
9. An urn contains four balls which are known to be either all white or two white and two black. A ball is drawn at random and found to be white. The probability that all the balls are white is \_\_\_\_\_.
10. An event has the probability  $p = \frac{3}{8}$ . The probability distribution for all 5 trials is \_\_\_\_\_.
11. A box contains 5 red, 4 white and 3 blue marbles. If 6 marbles are drawn with replacement, the combine probability of marbles in which 3 are red, 2 are white and one is blue is \_\_\_\_\_.
12. If the probability of getting caught copying someone else's exam is 0.2, the total probability of not getting caught in three attempts is \_\_\_\_\_ when all attempts are independent.
13. The names of 5 men and 5 women are written on slip of paper and placed in a hat. Four names are drawn. The probability that two are men and two are women is \_\_\_\_\_.
14. The probability that a man aged 50 years will die within a year is 0.01125. The probability that 12 of such men at least 11 will reach their fifty first birthday is \_\_\_\_\_.
15. Telephone calls are being placed through a certain exchange at random times on average of four per minute. The probability that in a 15 second interval, there are 3 or more calls is \_\_\_\_\_.

16. An athlete finds that in a high jump he can clear a height of at least 1.68 m once in five attempt and a height of at least 1.52 m nine times out of ten attempts. For the various normal distribution, the mean is \_\_\_\_\_ and standard deviation is \_\_\_\_\_.
17. In a normal distribution with mean is 13.5 and standard deviation is 3.6, the two points such that a single observation has 95% chance for falling between them is \_\_\_\_\_ and \_\_\_\_\_.
18. A lawyer commutes daily from his suburban home to his midtown office. The average time for a one-way trip is 24 minutes, with a standard deviation of 3.8 minutes. Assume the distribution of trip times to be normally distributed.
- (a) The probability that a trip will take at least 1/2 hour is \_\_\_\_\_
  - (b) If the office opens at 9:00 A.M. and the lawyer leaves his house at 8:45 A.M. daily, the percentage of the time he is late for work is \_\_\_\_\_
  - (c) If he leaves the house at 8:35 A.M. and coffee is served at the office from 8:50 A.M. until 9:00 A.M., the probability that he misses coffee is \_\_\_\_\_
  - (d) The length of time above which we find the slowest 15% of the trips is \_\_\_\_\_
  - (e) The probability that 2 of the next 3 trips will take at least 1/2 hour is \_\_\_\_\_