5. 5. A fair coin is flipped 9 times. What is the probability of getting exactly 6 heads?

7. You flip a coin three times. (a) What is the probability of getting heads on only one of your flips? (b) What is the probability of getting heads on at least one flip?

9. A jar contains 10 blue marbles, 5 red marbles, 4 green marbles, and 1 yellow marble. Two marbles are chosen (without replacement). (a) What is the probability that one will be green and the other red? (b) What is the probability that one will be blue and the other yellow?

27. A refrigerator contains 6 apples, 5 oranges, 10 bananas, 3 pears, 7 peaches, 11 plums, and 2 mangos.

a. Imagine you stick your hand in this refrigerator and pull out a piece of fruit at random. What is the probability that you will pull out a pear?

b. Imagine now that you put your hand in the refrigerator and pull out a piece of fruit. You decide you do not want to eat that fruit so you put it back into the refrigerator and pull out another piece of fruit. What is the probability that the first piece of fruit you pull out is a banana and the second piece you pull out is an apple?

c. What is the probability that you stick your hand in the refrigerator one time and pull out a mango or an orange?

86. Roll two fair dice. Each die has six faces.

a. List the sample space.

b. Let A be the event that either a three or four is rolled first, followed by an even number. Find P(A).

c. Let B be the event that the sum of the two rolls is at most seven. Find P(B).

d. In words, explain what “P(A|B)” represents. Find P(A|B).

e. Are A and B mutually exclusive events? Explain your answer in one to three complete sentences, including numerical justification.

f. Are A and B independent events? Explain your answer in one to three complete sentences, including numerical justification.

98. At a college, 72% of courses have final exams and 46% of courses require research papers. Suppose that 32% of courses have a research paper and a final exam. Let F be the event that a course has a final exam. Let R be the event that a course requires a research paper.

a. Find the probability that a course has a final exam or a research project.

b. Find the probability that a course has NEITHER of these two requirements.

112. a. Complete the table.

b. What is the probability that a randomly selected child will have wavy hair?

c. What is the probability that a randomly selected child will have either brown or blond hair?

d. What is the probability that a randomly selected child will have wavy brown hair?

e. What is the probability that a randomly selected child will have red hair, given that he or she has straight hair?

f. If B is the event of a child having brown hair, find the probability of the complement of B.

g. In words, what does the complement of B represent?

72. You buy a lottery ticket to a lottery that costs $10 per ticket. There are only 100 tickets available to be sold in this lottery. In this lottery there are one $500 prize, two $100 prizes, and four $25 prizes. Find your expected gain or loss.

80. Florida State University has 14 statistics classes scheduled for its Summer 2013 term. One class has space available for 30 students, eight classes have space for 60 students, one class has space for 70 students, and four classes have space for 100 students.

a. What is the average class size assuming each class is filled to capacity?

b. Space is available for 980 students. Suppose that each class is filled to capacity and select a statistics student at random. Let the random variable X equal the size of the student’s class. Define the PDF for X.

c. Find the mean of X.

d. Find the standard deviation of X.

88. A school newspaper reporter decides to randomly survey 12 students to see if they will attend Tet (Vietnamese New Year) festivities this year. Based on past years, she knows that 18% of students attend Tet festivities. We are interested in the number of students who will attend the festivities.

a. In words, define the random variable X.

b. List the values that X may take on.

c. Give the distribution of X. X ~ \_\_\_\_\_(\_\_\_\_\_,\_\_\_\_\_)

d. How many of the 12 students do we expect to attend the festivities?

e. Find the probability that at most four students will attend.

f. Find the probability that more than two students will attend.