NAME:

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1) A box contains three balls—one red, one blue, and one yellow. Consider an experiment that consists of withdrawing a ball from the box, replacing it, and withdrawing a second ball.

    a. What is the sample space of this experiment?

    b. What is the event that the first ball drawn is yellow?

    c. What is the event that the same ball is drawn twice?

2) Repeat the previous problem but now consider that the second ball is drawn without replacement of the first ball.

    d. What is the sample space of this experiment?

    e. What is the event that the first ball drawn is yellow?

    f. What is the event that the same ball is drawn twice?

3) Audrey and her boyfriend Charles must choose which colleges they will attend in the coming fall. Audrey was accepted at UC Davis (UCD), UC San Diego (UCSD), UC Irvine (UCI), and San Francisco State University (SFSU). Charles was accepted at UCI and SFSU. Let the outcome of the experiment consist of the colleges that Audrey and Charles choose to attend.

    a. List all the outcomes in sample space S.

    b. List all the outcomes in the event that Audrey and Charles attend the same school.

    c. List all the outcomes in the event that Audrey and Charles attend different schools.

4) A cafeteria offers a three-course meal. One chooses a main course, a starch, and a dessert. The possible choices are as follows:

Meal	Choices
Main course	Chicken or roast beef
Starch course	Pasta or rice or potatoes
Dessert	Ice cream or gelatin or apple pie

An individual is to choose one course from each category.

    a. List all the outcomes in the sample space.

    b. Let A be the event that ice cream is chosen. List all the outcomes in A.

    c. Let B be the event that chicken is chosen. List all the outcomes in B.

    d. List all the outcomes in the event A ∩ B.

    e. Let C be the event that rice is chosen. List all the outcomes in C.

    f. List all the outcomes in the event A ∩ B ∩ C

5) The following pairs of events E and F relate to the same experiment. Tell in each case whether E and F are disjoint (i.e. mutually exclusive) events.

    a. A die is rolled. Event E is that it lands on an even number, and F is the event that it lands on an odd number.

    b. A die is rolled. Event E is that it lands on 3, and F is the event that it lands on an even number.

c. A person is chosen. Event E is that this person was born in the United States, and F is the event that this person is a U.S. citizen.

d. A man is chosen. Event E is that he is over 30 years of age, and F is the event that he has been married for over 30 years.

e. A woman waiting in line to register her car at the department of motor vehicles is chosen. Event E is that the car is made in the United States, and F is the event that it is made in a foreign country.

6) A bowl contains 12 poker chips—3 red, 4 white, and 5 blue. If one of these poker chips is selected at random from the bowl, what is the probability that its color is
   a. red?

   b. red or white?

   c. not white?

7) A student council is made up of four women and six men. One of the women is president of the council. A member of the council is selected at random to report to the dean.
   a. What is the probability that a woman is selected?

   b. What is the probability that a man is selected?

   c. What is the probability that the president of the student council is selected?