Week in Review–Additional Material sections 7.1

Section 7.1: Experiments, Sample Spaces, and Events.

- An **experiment** is an activity with observable results.
- **Sample space**, S, is the set consisting of all possible outcomes of an experiment.
- The outcomes of an experiment are also called **sample points**.
- An **event** is a subset of a sample space.
  - The impossible event is the empty set
  - The certain event is the sample space.
- The events E and F are mutually exclusive if $E \cap F = \phi$.

1. Suppose a card is randomly drawn from a standard deck of cards and the face value (denomination) is recorded. Find the sample space.

2. An experiment consists of selecting a letter at random from the letters in the word **REPRESENTATIVE** and observing the outcome.

   (a) Describe an appropriate sample space.

   (b) How many events does this sample space have?

   (c) Describe the event "the letter selected was a vowel".

3. An experiment consists of picking an integer from 0 to 10.

   (a) Describe an appropriate sample space.

   (b) Describe the event E that the number picked was even.

   (c) Describe the event F that the number was a multiple of 3.

   (d) Describe the event G that the number was a multiple of 5.

   (e) Describe the event H that the number was odd and greater than 5.

   (f) Find the event $F^C \cap (H \cup G)$.

   (g) Which pairs of event, E, F, G, and H are mutually exclusive?

   (h) If the number 6 was picked, which of the events E, F, G and H occurred?

4. The numbers 0, 1, 2, 3, 4 are on separate pieces of paper in a hat. Two pieces of paper are drawn at the same time and the product of the numbers is recorded. Find the sample space.

5. Three quarters, four dimes and a nickel are in a piggy bank. Two coins are drawn at the same time and the total dollar amount is recorded.

   (a) Find the sample space.

   (b) describe the event a quarter is drawn.

   (c) Describe the event the total is less than $0.33.