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 \( E \cap F = \emptyset \).

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. Find the sample space.

   (a) Find the sample space.

   (b) describe the event a quarter is drawn.

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