Names: _____ _____ _____

Activity #2: Probability **Statistics**

1. Suppose we roll a single 20-sided die, whose faces are numbered from 1 to 20. What is the probability that we roll a number strictly less than 11?

2. Suppose we draw a single card from a standard 52-card deck. What is the probability that we draw either a heart or a face card?

3. Suppose we roll two 6-sided dice, one red and one purple, whose faces are numbered from 1 to 6. What is the probability that we roll two numbers whose sum is exactly 8?

4. Suppose we roll a single 12-sided die with faces labeled 1 through 12.

   (a) What is the sample space of this experiment?
   (b) Find the probabilities of the following events.
      i. Roll a 1
      ii. Roll a number greater than 11

5. Suppose we roll two 6-sided dice, one pink and one blue, with faces labeled 1 through 6. Compute the probability of the following events.

   (a) The dice show the same number.
   (b) The sum of the numbers on the dice is exactly 4.

6. Suppose we select a single card from a standard deck. Compute the probability of the following events.

   (a) The card is a 2.
   (b) The card is black.
   (c) The card is a diamond.
   (d) The card is a face card (Jack, Queen, or King).

7. Suppose we flip a coin four times in a row, to get a sequence of coin flips. For example, if we flip heads, then tails, then heads, then heads, the result is (H, T, H, H). Write down the sample space for this experiment. Then compute the probability of the following events.

   (a) We flip tails four times.
   (b) We flip exactly two heads.
   (c) We flip at least three tails.
   (d) The first two flips are tails.

8. Suppose E and F are events of some experiment such that $P(E) = 0.3$, $P(F) = 0.2$, and $P(E \text{ OR } F) = 0.4$. What is $P(E \text{ AND } F)$?