Names: _____ _____ _____

Activity #3: Counting **Statistics**

1. Suppose we flip a coin 12 times in a row. In how many ways can the coin come up heads exactly four times?

2. A standard-issue Oklahoma state license plate for a car or truck consists of six characters; three numerals followed by three letters. How many different license plates can Oklahoma issue using this scheme?

3. How many different 4-card hands can be drawn from a standard deck?

4. Suppose we roll two 4-sided dice and then draw two cards from a standard deck. How many possible outcomes does this experiment have?

5. As of 2016 the U.S. Senate includes 20 women and 80 men.

   (a) Suppose three senators are selected at random. What is the probability that all three are women?

   (b) Suppose three senators are selected to form a committee, consisting of a chair, vice chair, and ranking member. In how many ways can this committee be formed?

6. The Powerball lottery winner is decided by drawing 5 white balls and 1 red ball from a drum. There are 69 white balls, labeled 1 through 69, and 26 red balls, labeled 1 through 26. To win the jackpot you must correctly guess the numbers on the five white balls (in any order) as well as the red ball.

   (a) How many different Powerball draws are there?

   (b) What is the probability of winning the jackpot with a single lottery ticket?

7. A particular aptitude test consists of 10 true-false questions. To get a passing score, you must correctly answer at least 7 questions.

   (a) If you decide to answer the questions at random (by flipping a coin, say) what is the probability that you will get a passing score?

   (b) Your friend claims to have answered the questions at random and correctly answered 8 of them. Do you believe them? Why or why not?