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**Activity #3: Counting**

**Statistics**

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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?