

Name: _____

Statistics: Review (Test 2)

1. Suppose we flip a coin 12 times in a row. In how many ways can the coin come up heads exactly five times?
2. A standard-issue California state license plate for a car or truck consists of seven characters; a numeral, followed by three letters, followed by three more numerals. How many different license plates can California issue using this scheme?
3. How many different 5-card hands can be drawn from a standard deck?
4. Suppose we roll two 12-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 men?
 - (b) Suppose four senators are selected to form a committee, consisting of a chair, vice chair, ranking member, and quartermaster. In how many ways can this committee be formed?
6. The Ultraball lottery winner is decided by drawing 5 white balls and 2 red balls from a drum. There are 69 white balls, labeled 1 through 69, and 31 red balls, labeled 1 through 31. To win the jackpot you must correctly guess the numbers on the five white balls (in any order) as well as the numbers on the red balls (in any order).
- (a) How many different Ultraball 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 6 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?

8. Compute the mean and standard deviation of the following discrete random variable.

x	0	1	2	3	4
$P(x)$	$3/20$	$3/10$	$1/5$	$1/5$	$3/20$

9. You have an opportunity to play a dice game for \$2. You will roll two 12-sided dice (of different colors); if the sum of the numbers on the dice is exactly 17, you win \$8, and otherwise you get nothing.
- (a) Make a table to represent this game as a discrete random variable. What are the possible outcomes? What is the net value of each outcome? What is the probability of each outcome?
 - (b) Compute the expected value of this game.