Stat 171 - Worksheet for Section 4.2

Name: _____

1. Decide whether the experiment is a binomial experiment. If it is, specify the values of n, p, and q, and list the possible values of the random variable x.

   You take a multiple-choice test that consists of 10 questions. Each question has four possible answers, only one of which is correct. To complete the quiz, you randomly guess the answer to each question. The random variable represents the number of correct answers.

   (a) Identify a trial of the experiment and what is a success.

   (b) Determine whether the experiment satisfies the four conditions of a binomial experiment.

   (c) Make a conclusion and identify n, p, q, and the possible values of x, if possible.

2. A card is selected from a standard deck and replaced. This experiment is repeated a total of 5 times. Find the probability of selecting exactly three clubs.

   (a) Identify a trial, a success, a failure.

   (b) Identify n, p, q, and x.

   (c) Use the binomial probability formula.

3. Binomial probability distribution for Microfacture knee surgery: $n = 3$, $p = \frac{3}{4}$. List the possible values of x with the corresponding probability of each.

   (a) Identify a trial, a success, a failure.

   (b) Identify n, p, q, and x.

   (c) Use the binomial probability formula for each value of x.

   (d) Use a table to show that the properties of a probability distribution are satisfied.

4. The results of a recent survey indicate that 67% of U.S. adults consider air conditioning a necessity. If you randomly select 100 adults, what is the probability that exactly 75 adults consider air conditioning a necessity? (Do not simplify the answer.)

5. Sixty percent of households in the U.S. own a video game console. You randomly select six households and ask each if they own a video game console. Construct a probability distribution for the random variable x. Then graph the distribution. (Use Table 2 in Appendix B.)

6. In San Francisco, CA, about 44% of the days in a year are clear. Find the mean, variance, and standard deviation for the number of clear days during Summer. Interpret the results and determine any unusual events.

   (a) Identify a success and the values of n, p, and q.

   (b) Use the formulas for mean, variance and standard deviation.

   (c) Interpret results.

   (d) Determine any unusual events.