Math 1040 Worksheet 6 – Chapter 6 **Name**_____
Trygstad

Solutions are included at the end of the worksheet. This worksheet is optional and will not be turned in, but may be helpful in reviewing material and studying for exams.

Provide an appropriate response.

1) A lab orders a shipment of 100 rats a week, 52 weeks a year, from a rat supplier for experiments that the lab conducts. Prices for each weekly shipment of rats follow the distribution below:

Price	$10.00	$12.50	$15.00
Probability	0.2	0.3	0.5

How much should the lab budget for next year's rat orders assuming this distribution does not change. (Hint: find the expected price.)

2) A psychic network received telephone calls last year from over 1.5 million people. A recent article attempts to shed some light onto the credibility of the psychic network. One of the psychic network's psychics agreed to take part in the following experiment. Five different cards are shuffled, and one is chosen at random. The psychic will then try to identify which card was drawn without seeing it. Assume that the experiment was repeated 40 times and that the results of any two experiments are independent of one another. If we assume that the psychic is a fake (i.e., they are merely guessing at the cards and have no psychic powers), how many of the 40 cards do we expect the psychic to guess correctly?

3) Assume that male and female births are equally likely and that the birth of any child does not affect the probability of the gender of any other children. Suppose that 400 couples each have a baby; find the mean and standard deviation for the number of boys in the 400 babies.

4) Consider the discrete probability distribution when answering the following question.
Find the probability that x equals 4.

x	2	4	7	9
P(x)	0.05	?	0.13	0.14

5) Decide whether the experiment is a binomial experiment. If it is not, explain why. Selecting five cards, one at a time without replacement, from a standard deck of cards. The random variable is the number of picture cards obtained.

6) Assume that male and female births are equally likely and that the birth of any child does not affect the probability of the gender of any other children. Find the probability of exactly nine girls in ten births.

7) A recent article in the paper claims that government ethics are at an all–time low. Reporting on a recent sample, the paper claims that 30% of all constituents believe their representative possesses low ethical standards. Suppose 20 of a representative's constituents are randomly and independently sampled. Assuming the paper's claim is correct, find the probability that more than eight but fewer than 12 of the 20 constituents sampled believe their representative possesses low ethical standards.

8) Classify the following random variable according to whether it is discrete or continuous.

the number of bottles of juice sold in a cafeteria during lunch

9) A manager asked her employees how many times they had given blood in the last year. The results of the survey are given below. The random variable x represents the number of times a person gave blood and P(x) represents the probability of selecting an employee who had given blood that percent of the time. What is the mean number of times a person gave blood based on this survey?

x	0	1	2	3	4	5	6
$P(x)$	0.30	0.25	0.20	0.12	0.07	0.04	0.02

1) $689.00
2) 8
3) $\mu = np = 400(0.5) = 200; \sigma = \sqrt{npq} = \sqrt{400(0.5)(0.5)} = 10.00$
4) 0.68
5) Not a binomial experiment. The probability of success is not the same for each trial.
6) 0.010
7) 0.108193
8) discrete
9) 1.6