Name:_____   Math 130 Day 9 In Class Worksheet
Date: Section 6.2: The Binomial Random Variable

1. Suppose a penny is going to be flipped 20 times. Let X = the total number of times the coin lands on heads.

a) Explain why this is a binomial random variable

b) What are all possible values of this variable?

c) Identify the following in the context of this problem:

$n =$ $success =$

$p =$ $failure =$

$q =$ $X =$

d) What is the probability that after the coin is flipped 20 times, it will land on heads exactly 8 times?

e) What is the probability that after the coin is flipped 20 times, it will land on heads between 8 and 11 times (inclusive)?

f) What is the probability that after the coin is flipped 20 times, it will land on heads at least 3 times?

g) What is the expected value, standard deviation and variance of this random variable?

h) Explain the meaning of the probabilities found in parts d, e, and f.

i) Explain the meaning of the expected value found in part g.

2. In a recent survey, it was found that 64% of college students operate the flusher of toilets in public restrooms with their foot. Suppose 12 college students are randomly selected. Let X = the total number of these students that operate the flusher of toilets in public restrooms with their foot.

a) Explain why this is a binomial random variable

b) What are all possible values of this variable?

c) Identify the following in the context of this problem:

$n =$ $success =$

$p =$ $failure =$

$q =$ $X =$

d) What is the probability that exactly 7 of these students use their foot to operate the flusher in public restrooms?

e) What is the probability that between 3 and 5 (inclusive) of these students use their foot to operate the flusher in public restrooms?

f) What is the probability that at least 4 of these students use their foot to operate the flusher in public restrooms?

g) What is the expected value, standard deviation and variance of this random variable?

h) Explain the meaning of the probabilities found in parts d, e, and f.

i) Explain the meaning of the expected value found in part g.