

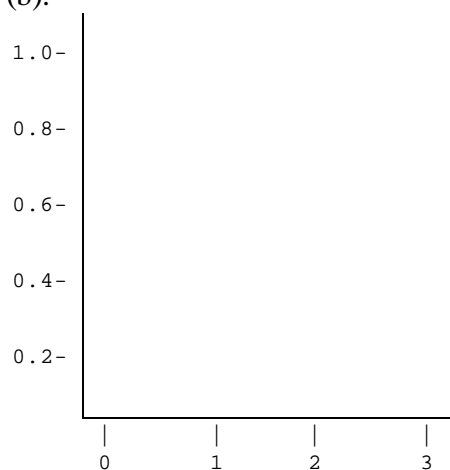
## Chapter 5 Worksheet 1

1. Elmer Hoover is a door-to-door vacuum cleaner sales professional. Twenty percent of the time his presentation leads to a sale and we will assume the probability of making a sale is not affected by the results of earlier presentations (i.e., we assume independence).
- a) Sketch and solve the probability tree for three sales attempts.

- b) Using your results from part (A) above, complete the following probability distribution:

X=sales generated	P(X)
0	
1	
2	
3	
Total	1.000

- c) Plot the distribution from part (b).



- d) How would you characterize the *skew* of this distribution?
- e) Compute the *expected value* of the number of sales generated in three sales calls.
- f) Compute the *variance* of the number of sales generated in three sales calls.

g) Use the Binomial *formula* to compute the probabilities for Hoover. Show your work here.

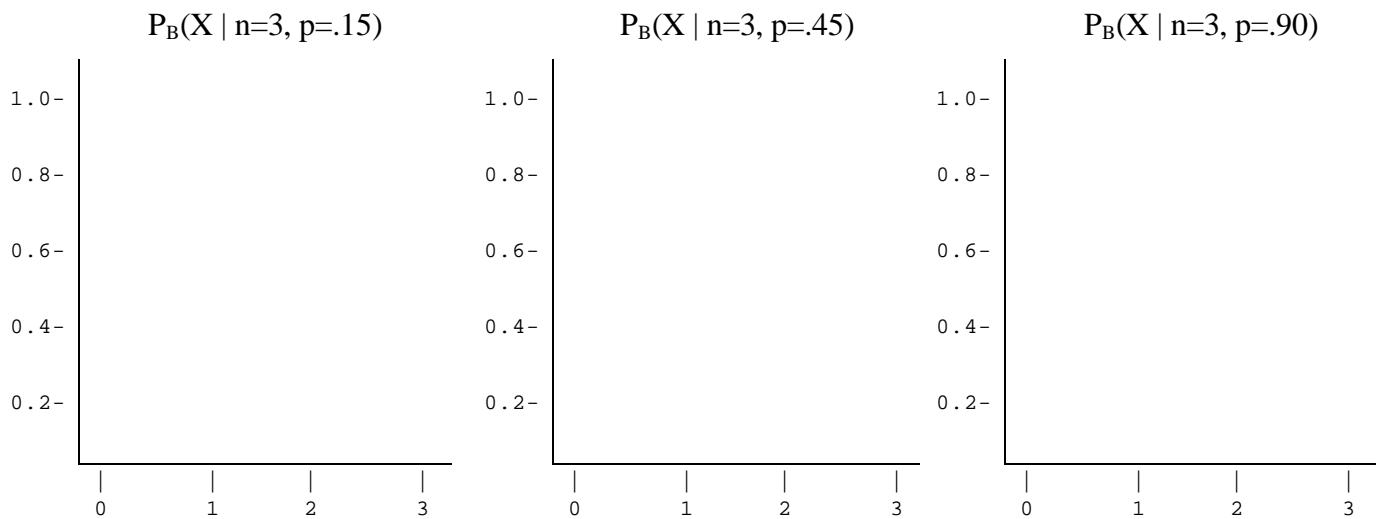
$$P_B(X=0 \mid n=3, p=.20) =$$

$$P_B(X=1 \mid n=3, p=.20) =$$

$$P_B(X=2 \mid n=3, p=.20) =$$

$$P_B(X=3 \mid n=3, p=.20) =$$

2. Using the Binomial tables booklet, plot each of the following distributions



3. Twenty-five percent of SCC students receive some form of financial aid. Use the Binomial tables **booklet** to find the following.

- In a sample of 5 students, what is the probability that *none* receive financial aid?
- In a sample of 7 students, what is the probability *2 or fewer* students receive financial aid?
- In a sample of 12 students, what is the probability *more than 5* receive financial aid?

4. By keeping accurate records, a Maytag repair facility knows an average of 1.5 service request calls are received per hour. Assuming the occurrence of calls follows the Poisson distribution:

a) Use the *formula* to compute the probability of no calls in a randomly selected hour.

b) Use the *formula* to compute the probability of one call in a randomly selected hour.

c) Use the Poisson tables to complete the probability distribution below:

X= number of calls	P(x)
0	
1	
2	
3	
4	
5	
6	
7	
8	
9	

d) Determine the probability of receiving 5 calls in a randomly selected 2 hour shift.

e) Determine the probability of receiving 3 calls in a randomly selected 20-minute period.