Name: _____ Group Members: _____

Exploration 9-7a: The Binomial Distribution

Date: _____

Objective: Calculate and plot probabilities in a binomial probability distribution.

1. Have one member of your group flip a thumbtack 10 times. Based on the results, what does the probability seem to be that the tack lands "point up" on any one flip?

2. Based on your answer to Problem 1, if you were to flip the tack 10 more times, what would be the probability that it lands point up all 10 of those times?

3. What is the probability that the tack in Problem 2 lands point down all 10 times?

4. What is the probability that the tack in Problem 2 lands point up exactly 1 time?

5. What is the probability that the tack in Problem 2 lands point up exactly 0 or exactly 1 time?

6. Let $P(x)$ be the probability that the tack in Problem 2 lands point up an exact number of times x. Calculate these values:

   $P(0)$ _____

   $P(1)$ _____

   $P(2)$ _____

   $P(3)$ _____

   $P(4)$ _____

   $P(5)$ _____

   $P(6)$ _____

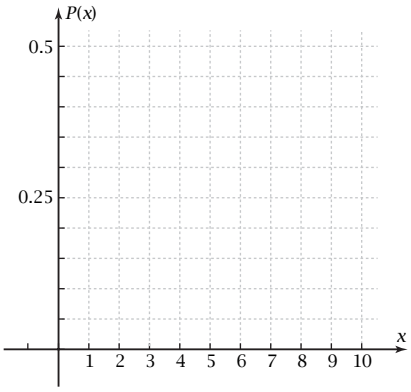
   $P(7)$ _____

   $P(8)$ _____

   $P(9)$ _____

   $P(10)$ _____

7. Plot the graph of this probability distribution.



8. What is the probability that the number of point-downs is between 4 and 7, inclusive?

9. What did you learn as a result of doing this Exploration that you did not know before?