Binomial Probability Distribution

Name: _____

Calculate probabilities for Binomial distribution:

1. Press 2nd then, VARS keys to access the DISTR (distributions) menu.
2. Select binompdf and click ENTER.
3. Enter the values for trials, n, probability, p, and number of successes x to complete the command **binompdf(n, p, x).** Press ENTER.

Note:

Binompdf(n, p, x) calculate P(x), probability of getting exactly x success.
Binomcdf(n, p, x) calculate P(at most x), probability of getting at most x success.
If you want to calculate P(at least x), use the complement. That is, **P(at least x) = 1 – P(at most (x-1)).**

Example: Assume that when adults with smartphones are randomly selected, 54% use them in meetings or classes

a. If 10 adult smartphone users are randomly selected, find the probability that **exactly 6** of them use their smartphones in meetings or classes.
   n = 10, p = 0.54, x = 6
   P(6) = binompdf(10, 0.54, 6) = 0.233

b. If 10 adult smartphone users are randomly selected, find the probability that **at most 4** of them use their smartphones in meetings or classes.
   n = 10, p = 0.54, x = 4
   P(at most 4) = binomcdf(10, 0.54, 4) = 0.283

c. If 10 adult smartphone users are randomly selected, find the probability that **at least 3** of them use their smartphones in meetings or classes.
   n = 10, p = 0.54, x = 3
   P(at least 3) = 1 – P(at most 2) = 1 – binomcdf(10, 0.54, 2) = 0.968

Exercises:

1. There are 25 multiple choice questions, each with five possible answers (a, b, c, d, e), one of which is correct. Assume that you guess the answers to all 25 questions.
   a. Find the probability that you get exactly 8 correct answers.

   b. Find the probability that you get at most 5 correct answers.

   c. Find the probability that you get at least 10 correct answers.

2. Based on a Harris poll, among adults who regret getting tattoos, 20% say that they were too young when they got their tattoos. Assume that five adults who regret getting tattoos are randomly selected.
   a. Find the probability that none of the selected adults say that they were too young to get tattoos.

   b. Find the probability that at least 4 of the selected adults says that they were too young to get tattoos.