

Binomial Probability Distribution

Name: _____

Calculate probabilities for Binomial distribution:

1. Press **2nd** then, **VAR**s 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 $P(\text{at most } x)$, probability of getting at most x success.

If you want to calculate $P(\text{at least } x)$, use the complement. That is, **$P(\text{at least } x) = 1 - P(\text{at most } (x-1))$** .

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.
 $n = 10, p = 0.54, x = 6$
 $P(6) = \text{binompdf}(10, 0.54, 6) = 0.233$
- 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.
 $n = 10, p = 0.54, x = 4$
 $P(\text{at most } 4) = \text{binomcdf}(10, 0.54, 4) = 0.283$
- 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.
 $n = 10, p = 0.54, x = 3$
 $P(\text{at least } 3) = 1 - P(\text{at most } 2) = 1 - \text{binomcdf}(10, 0.54, 2) = 0.968$

