

# How to Calculate Binomial Probabilities on Your TI-84 Calculator

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## RECOMMENDED CITATION

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The TI-84 calculator is a powerful tool that can assist in calculating binomial probabilities. To use the calculator for this purpose, follow these steps:

1. Press the "2nd" button followed by the "VARS" button to access the "DISTR" menu.
2. Use the arrow keys to navigate to "Binomialpdf(" and press the "ENTER" button.
3. Enter the number of trials (n) followed by a comma.
4. Enter the probability of success (p) followed by a comma.
5. Enter the desired number of successes (x) followed by a comma.
6. Press the "ENTER" button to calculate the binomial probability.

The result displayed on the screen is the probability of getting exactly x successes in n trials with a probability of success p. This process can also be used to calculate cumulative binomial probabilities by using the "binomialcdf(" function in step 2.

By following these steps, the TI-84 calculator can be a useful tool in quickly and accurately calculating binomial probabilities.

## Calculate Binomial Probabilities on a TI-84 Calculator

**The is one of the most commonly used distributions in all of statistics. This tutorial explains how to use the following functions on a TI-84 calculator to find binomial probabilities:**

**$\text{binompdf}(n, p, x)$  returns the probability associated with the binomial pdf.**

**$\text{binomcdf}(n, p, x)$  returns the cumulative probability associated with the binomial cdf.**

where:

$n$  = number of trials  
 $p$  = probability of success on a given trial  
 $x$  = total number of successes

Both of these functions can be accessed on a TI-84 calculator by pressing 2nd and then pressing vars. This will take you to a DISTR screen where you can then use `binompdf()` and `binomcdf()`:

A screenshot of the TI-84 calculator's DISTR menu. The screen shows the following options: DISTR DRAW, 5:tpdf(), 6:tcdf(), 7:χ²pdf(), 8:χ²cdf(), 9:Fpdf(), 0:Fcdf(), A:binompdf(), and B:binomcdf().

```
DISTR DRAW
5:tpdf(
6:tcdf(
7:χ²pdf(
8:χ²cdf(
9:Fpdf(
0:Fcdf(
A:binompdf(
B:binomcdf(
```

The following examples illustrate how to use these functions to answer different questions.

Example 1: Binomial probability of exactly  $x$  successes

**Question:** Nathan makes 60% of his free-throw attempts. If he shoots 12 free throws, what is the probability that he makes exactly 10?

**Answer:** Use the function `binomialpdf(n, p, x)`:

$$\text{binomialpdf}(12, .60, 10) = 0.0639$$

**Example 2: Binomial probability of less than x successes**

**Question: Nathan makes 60% of his free-throw attempts. If he shoots 12 free throws, what is the probability that he makes less than 10?**

**Answer: Use the function  $\text{binomialcdf}(n, p, x-1)$ :**

$$\text{binomialcdf}(12, .60, 9) = 0.9166$$

**Example 3: Binomial probability of at most x successes**

**Answer: Use the function  $\text{binomialcdf}(n, p, x)$ :**

$$\text{binomialcdf}(12, .60, 10) = 0.9804$$

**Example 4: Binomial probability of more than x successes**

**Question: Nathan makes 60% of his free-throw attempts. If he shoots 12 free throws, what is the probability that he makes more than 10?**

**Answer: Use the function  $1 - \text{binomialcdf}(n, p, x)$ :**

$$1 - \text{binomialcdf}(12, .60, 10) = 0.0196$$

**Example 5: Binomial probability of at least x successes**

**Question: Nathan makes 60% of his free-throw attempts. If he shoots 12 free throws, what is the probability that he makes more than 10?**

**Answer: Use the function  $1 - \text{binomialcdf}(n, p, x-1)$ :**

$$1 - \text{binomialcdf}(12, .60, 9) = 0.0834$$

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