How can I use the Binomial Distribution in Google Sheets?

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The Binomial Distribution is a mathematical concept that can be utilized in Google Sheets to calculate the probability of a specific number of successes in a series of independent trials. This can be achieved by using the BINOM.DIST function, which takes in the number of trials, probability of success, and the desired number of successes as inputs. By utilizing this function, users can easily analyze and predict the likelihood of certain outcomes in various situations, making it a useful tool for data analysis and decision making in Google Sheets.

Use the Binomial Distribution in Google Sheets

The in statistics describes the probability of obtaining *k* successes in *n* trials when the probability of success in a single experiment is *p*.

To calculate binomial distribution probabilities in Google Sheets, we can use the BINOMDIST function, which uses the following basic syntax:

BINOMDIST(k, n, p, cumulative)

where:

k: Number of successesn: Number of trialsp: Probability of success on a given trialcumulative: Whether to calculate a cumulative probability (Default is FALSE)

The following examples show how to use this function in practice.

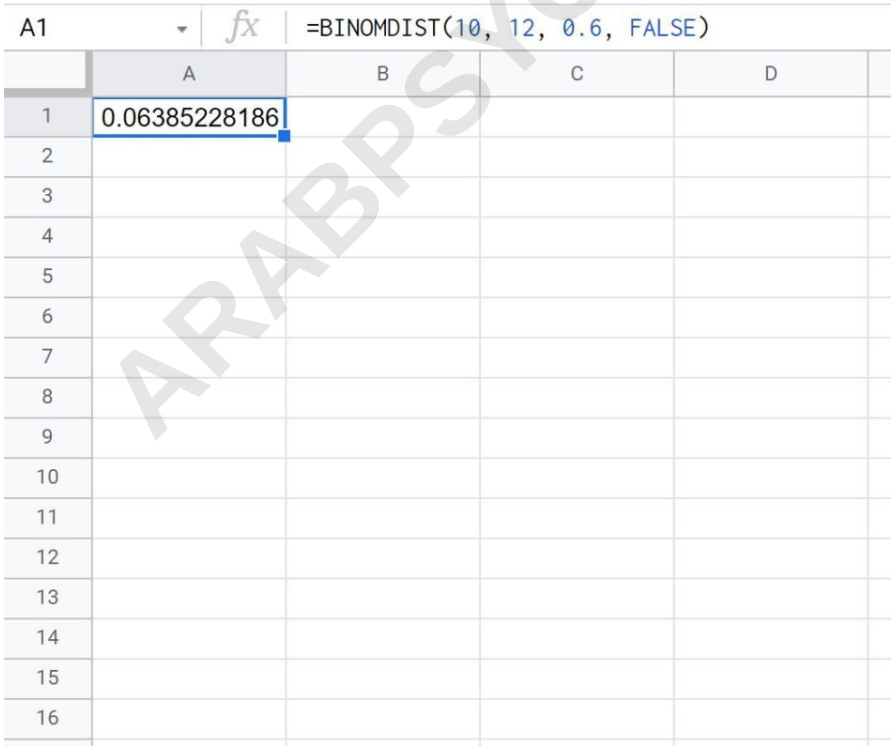
Example 1: Probability of Exactly k Successes

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

To answer this question, we can use the following formula in Google Sheets:

=BINOMDIST(10,12,0.6,FALSE)

The following screenshot shows how to use this formula in practice:



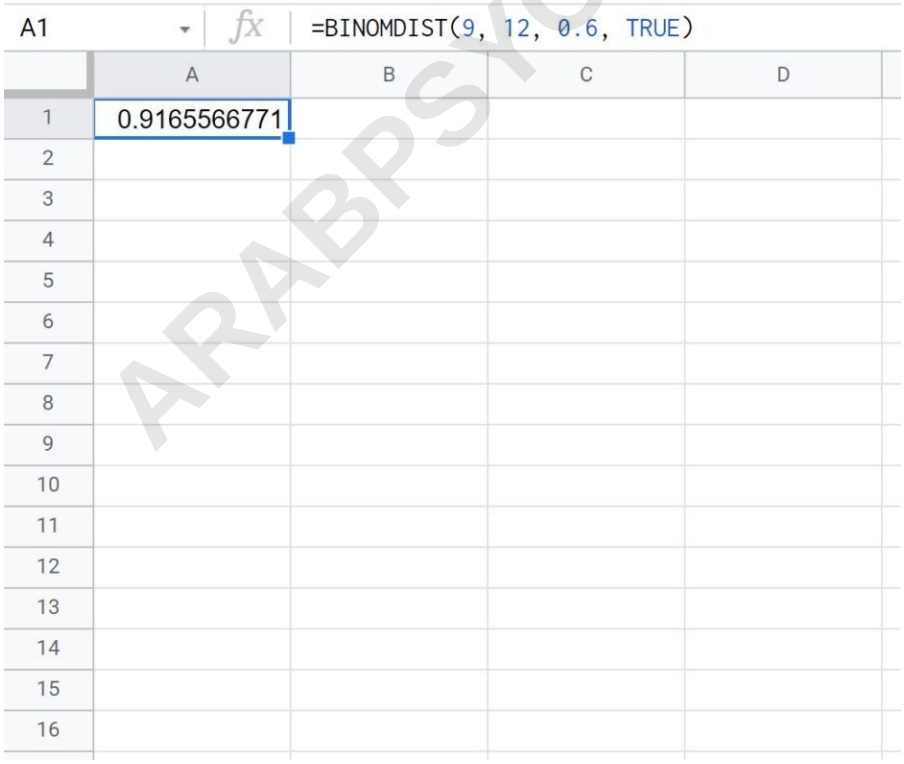
The probability that Ty makes exactly 10 free throw attempts out of 12 is 0.0639.

Example 2: Probability of Less Than k Successes

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

To answer this question, we can use the following formula in Google Sheets:

=BINOMDIST(9,12,0.6,TRUE)



The probability that Ty makes less than 10 free throw attempts out of 12 is 0.9166.

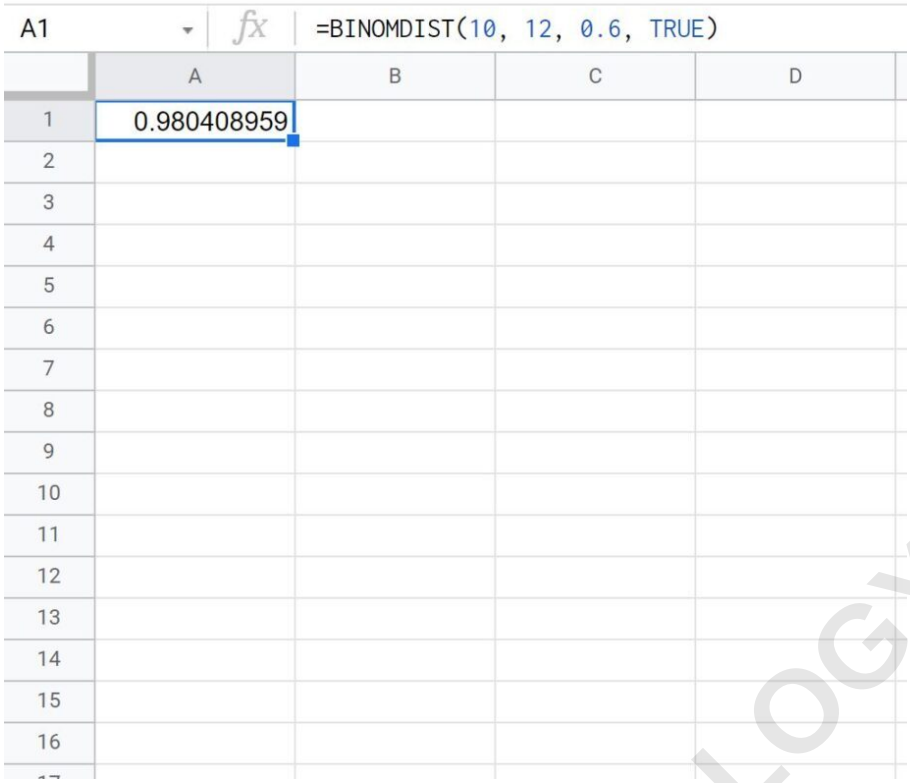
Example 3: Probability of Less Than Or Equal to k Successes

Ty makes 60% of his free-throw attempts. If he shoots 12 free throws, what is the probability that he makes less than or equal to 10?

To answer this question, we can use the following formula in Google Sheets:

=BINOMDIST(10,12,0.6,TRUE)

The following screenshot shows how to use this formula in practice:



The probability that Ty makes less than or equal to 10 free throw attempts out of 12 is 0.9166.

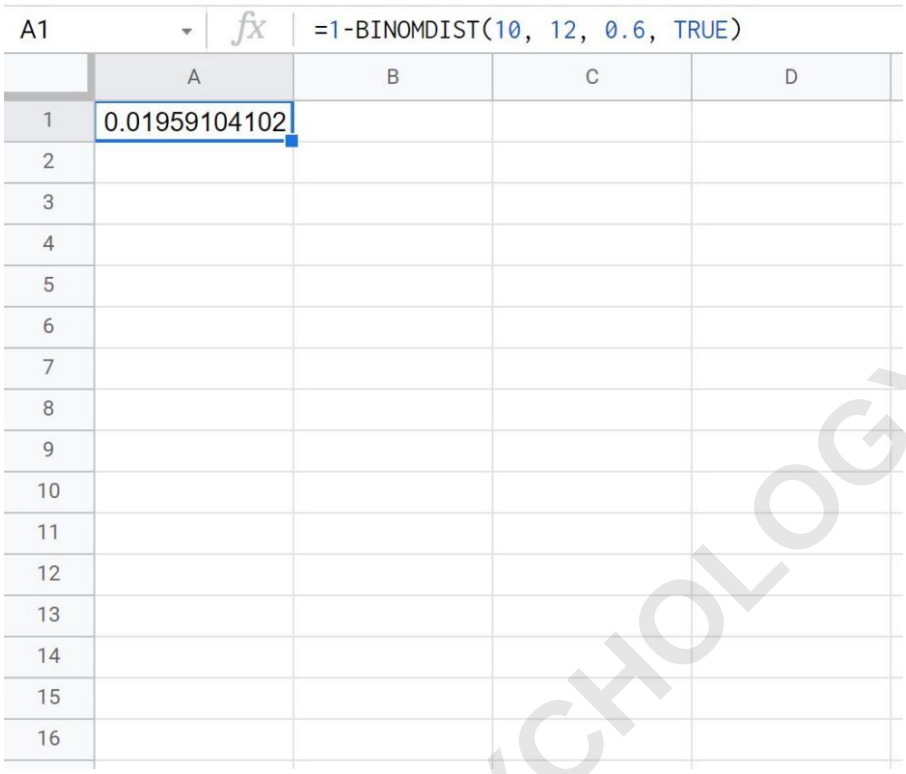
Example 4: Probability of Greater Than k Successes

Ty makes 60% of his free-throw attempts. If he shoots 12 free throws, what is the probability that he makes greater than 10?

To answer this question, we can use the following formula in Google Sheets:

=1-BINOMDIST(10,12,0.6,TRUE)

The following screenshot shows how to use this formula in practice:



The probability that Ty makes greater than 10 free throw attempts out of 12 is 0.0196.

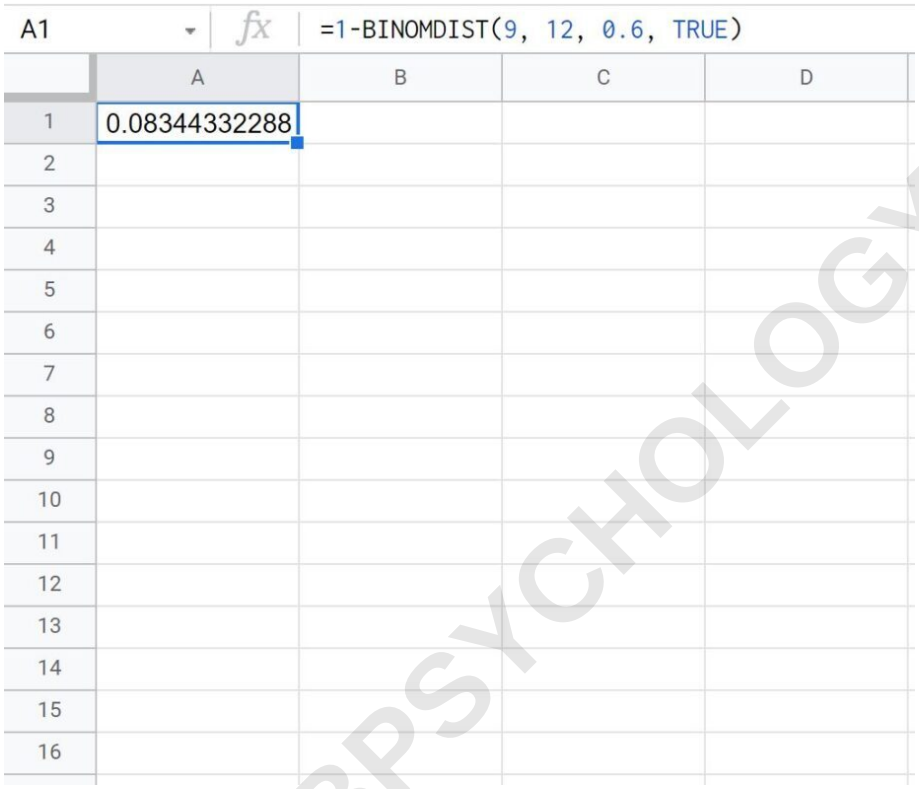
Example 5: Probability of Greater Than or Equal to k Successes

Ty makes 60% of his free-throw attempts. If he shoots 12 free throws, what is the probability that he makes greater than or equal to 10?

To answer this question, we can use the following formula in Google Sheets:

=1-BINOMDIST(9,12,0.6,TRUE)

The following screenshot shows how to use this formula in practice:



The probability that Ty makes greater than or equal to 10 free throw attempts out of 12 is 0.0834.

Bonus: You can use the to automatically calculate binomial probabilities for any values for *n*, *k*, and *p*.

Additional Resources

The following tutorials provide additional information about the binomial distribution: