

Generating random numbers based on a statistical distribution**(random data)****Normal**

Complete the following steps to enter the parameters for the [Normal distribution](#).

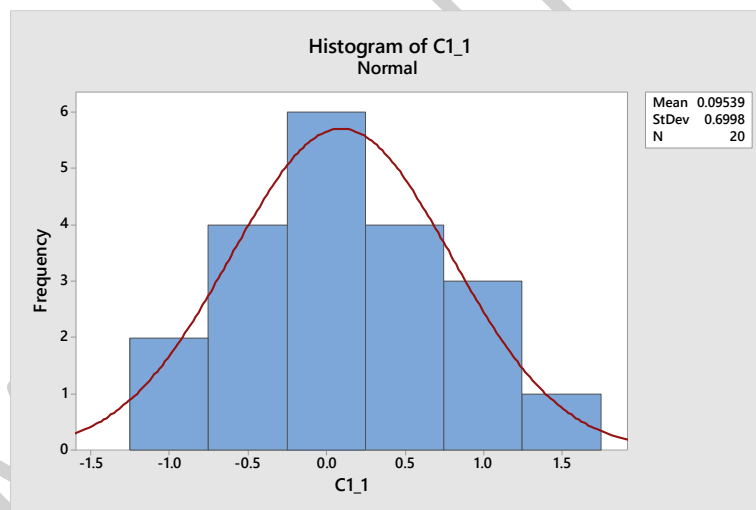
1. In Mean, enter the value for the center of the distribution.
2. In Standard deviation, enter the value for the spread of the distribution.

For example, this plot shows a normal distribution that has a mean of 0 and a standard deviation of 1.

MTB > Random 20 c2;

SUBC> Normal 0.0 1.0.

MTB >

**Chi-square**

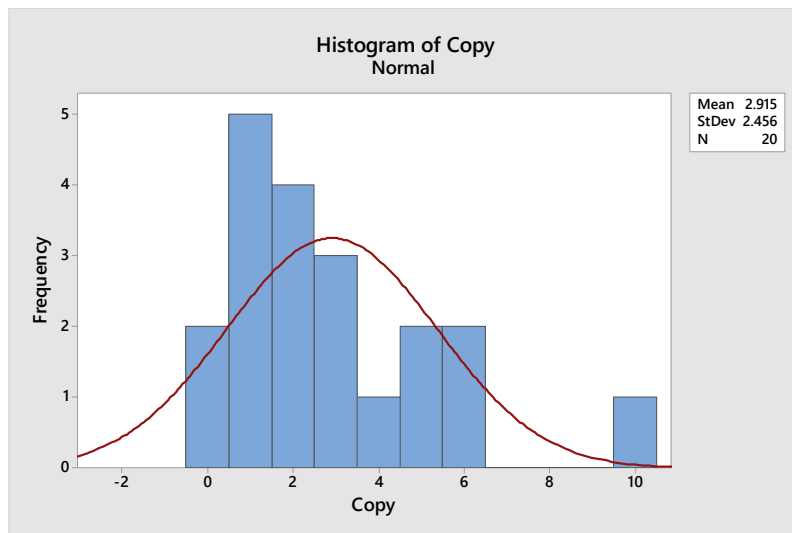
In Degrees of freedom, enter the number of degrees of freedom that define the [Chi-square distribution](#).

For example, this plot shows a chi-square distribution that has 4 degrees of freedom.

MTB > Random 20 c1;

SUBC> ChiSquare 4.

MTB >



Poisson

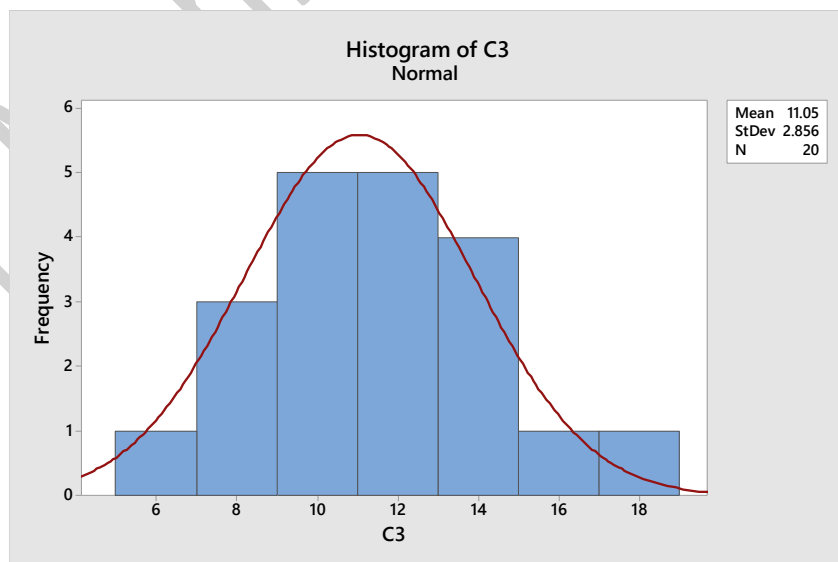
In Mean, enter the value for the average rate of occurrence.

For example, this plot shows a Poisson distribution that has a mean of 10.

MTB > Random 20 c3;

SUBC> Poisson 10.

MTB >



Gamma

Complete the following steps to enter the parameters for the [Gamma distribution](#).

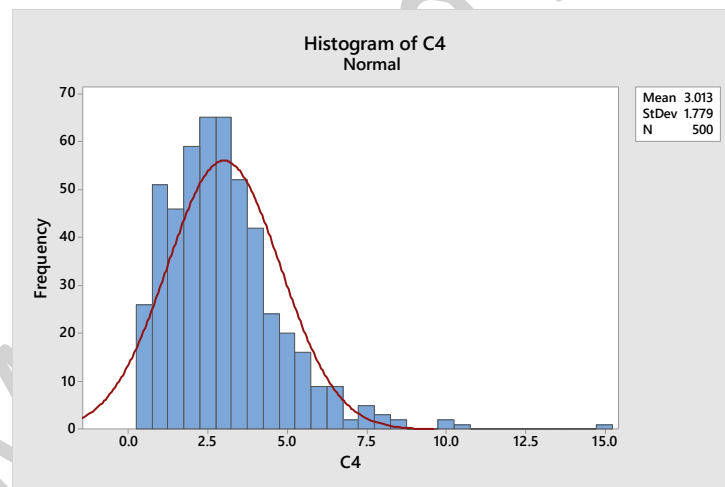
1. In Shape parameter, enter the value that represents the shape of the distribution.
2. In Scale parameter, enter the value that represents the scale of the distribution.
3. In Threshold parameter, enter the lower bound of the distribution.

For example, this plot shows a gamma distribution that has a shape of 3, a scale of 1, and a threshold of 0.

MTB >Random 20 c4;

SUBC> Gamma 3 1.

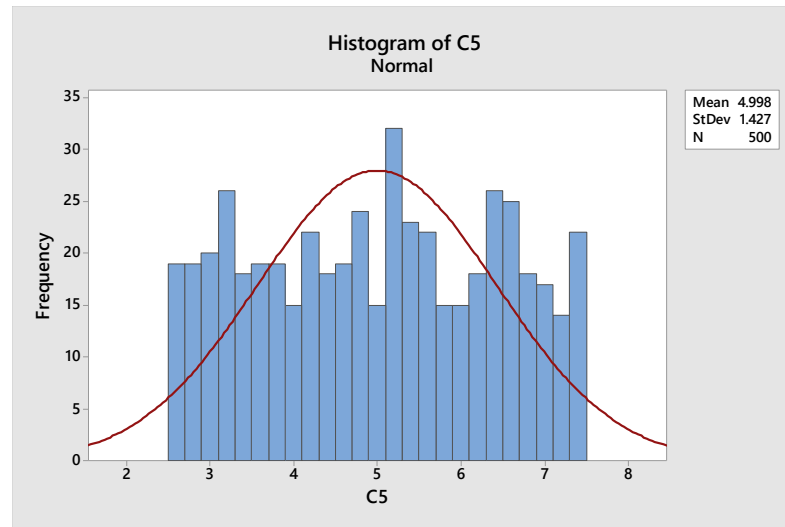
MTB >

**Uniform**

Complete the following steps to enter the parameters for the [Uniform distribution](#).

1. In Lower endpoint, enter the minimum value for the distribution.
2. In Upper endpoint, enter the maximum value for the distribution.

For example, this plot shows a uniform distribution that has a lower endpoint of 2.5 and an upper endpoint of 7.5.

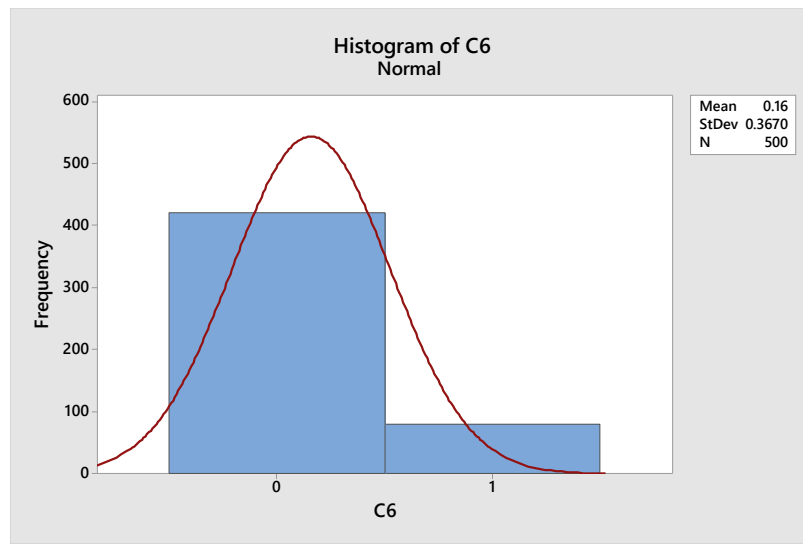
**Bernoulli**

In Event probability, enter a number between 0 and 1 for the probability that the outcome of interest occurs. An occurrence is called an "event". For more information, go to [Bernoulli distribution](#).

Use the Bernoulli distribution when a random process has exactly two outcomes—event or nonevent. Sequences of independent Bernoulli trials generate the other distributions, such as the binomial distribution, which models the number of successes in n trials. For example, this plot shows a random sample from a binomial distribution that has 1 trial and an event probability of 0.15.

```
MTB > Random 500 c6;
```

```
SUBC> Bernoulli 0.15.
```



Binomial

Complete the following steps to enter the parameters for the [Binomial distribution](#).

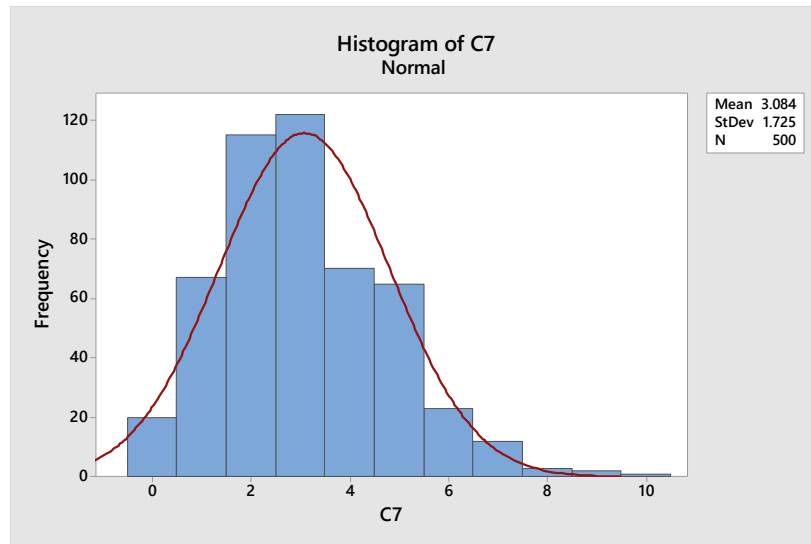
1. In Number of trials, enter the sample size.
2. In Event probability, enter a number between 0 and 1 for the probability that the outcome of interest occurs. An occurrence is called an "event".

For example, this plot shows a binomial distribution that has 100 trials and an event probability of 0.03.

MTB > Random 500 c7;

SUBC> Binomial 100 0.03.

MTB >



t

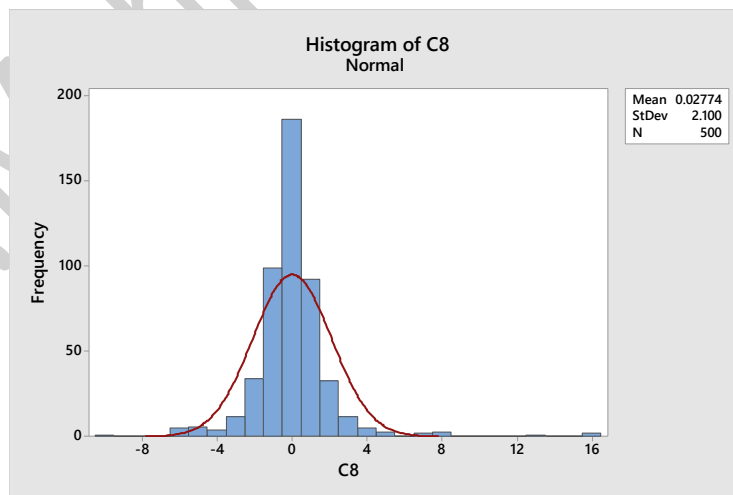
In Degrees of freedom, enter the degrees of freedom to define the t-distribution. For more information

For example, this plot shows a t-distribution that has 2 degrees of freedom.

Random 500 c8;

SUBC> T 2.

MTB >



F

Generate distributions, probability density function, cumulative density function **2025/2026**
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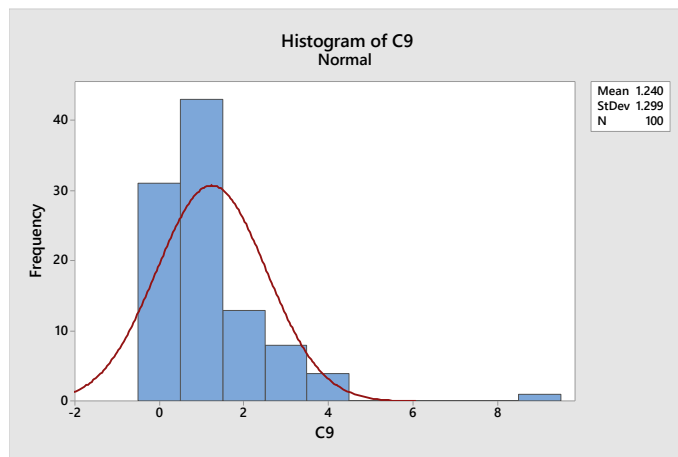
In Numerator degrees of freedom and Denominator degrees of freedom, enter the numerator and denominator degrees of freedom to define the F-distribution. For more information, go to [F-distribution](#)

For example, this plot shows an F-distribution that has 1 numerator degrees of freedom and 1 denominator degrees of freedom.

MTB > Random 500 c9;

SUBC> F 1 1.

MTB >



Logistic

Complete the following steps to enter the parameters for the [Logistic distribution](#).

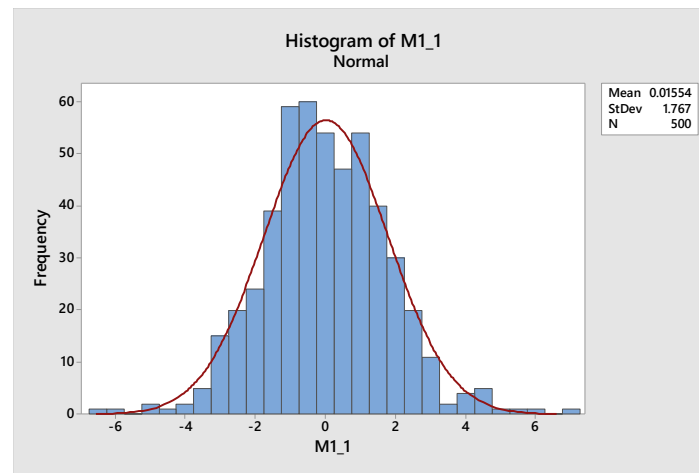
1. In Location, enter a value that represents the location of the peak of the distribution.
2. In Scale, enter a value that represents the spread of the distribution.

For example, this plot shows a logistic distribution that has a location of 0 and a scale of 1.

MTB > Random 500 c10;

SUBC> Logistic 0.0 1.0.

MTB >

**Sample data from columns**

To take a random sample from specified columns, complete the following steps.

In Number of rows to sample, specify the sample size.

In From columns, enter the columns that you want to sample from. If you enter several columns, Minitab samples from the same row across the multiple columns. All columns must be the same length.

In Store samples in, specify the columns where you want to store the sampled values. The number of storage columns must be the same as the number of columns sampled from.

(Optional) Check Sample with replacement if you want to be able to sample the same item more than once. If you don't select this option, each row can be in the sample only one time.

MTB > Sample 20 C13 c14;

SUBC> Replace.

MTB >

Multivariate normal

In this example, the data are from three correlated, normal random variables. The means are in C1, and the variance-covariance matrix is in columns C2–C4.

First, Minitab must read in the variance-covariance matrix and store it.

Choose Data > Copy > Columns to Matrix.

In Copy from columns, enter C2-C4.

In Store Copied Data, under In current worksheet, in matrix:, enter M1.

Click OK.

Now, you can generate random data from the multivariate normal distribution.

Choose Calc > Random Data > Multivariate Normal.

In Number of rows of data to generate, enter the number of rows that you want. For this example, enter 20.

In Store in column(s), enter your storage columns. For this example, enter C5-C7.

In Mean column, enter the column that contains the means. For this example, enter C1.

In Variance-Covariance matrix, enter the matrix. For this example, enter M1.

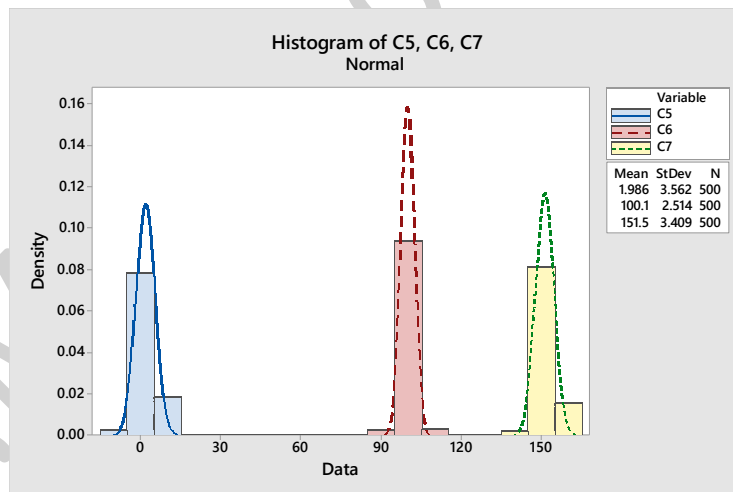
Click OK.

MTB > COPY C2-C4 M1

MTB > Random 20 C5-C7;

SUBC> Mnormal C1 M1.

MTB >



Exponential

Complete the following steps to enter the parameters for the [Exponential distribution](#).

1. In Scale, enter the scale parameter. The scale parameter equals the mean when the threshold parameter equals 0.
2. In Threshold, enter the lower bound of the distribution.

For example, this plot shows an exponential distribution that has a scale of 1 and a threshold of 0.

MTB > Random 500 C15;

SUBC> Exponential 1.0.

MTB >

