

### Case Study: Fitting a Normal Distribution to a List of Values

The TK Library includes a family of routines for fitting data to probability distributions. This example shows a normal (Gaussian) distribution.

A random number generator was used to generate a list of 5000 values from a normal distribution with mean 100 and standard deviation 15. The list, called abc, was then processed by the curve-fitting routine and the results are summarized below.

First the variables.

Status	Input	Name	Output	Unit	Comment
					Analysis of Normal Distributions
	'abc	data			Input listname of data values
					Summary Statistics
		n	5000		Sample size
		MEAN	99.9070054		Mean
		VAR	223.030246		Variance
		SD	14.9341972		Standard Deviation
					Normal Distribution
					$CDF=(1+\text{erf}((x-\text{MEAN})/\text{SD}/\text{sqrt}(2)))/2$
		test	1.4669247		Goodness of Fit Test
		p	.961661283		Chi-Square Probability (6 d.f.)

Next a plot of the data along with the best-fit cumulative distribution and a bar chart showing the observed and expected frequencies in seven intervals.

