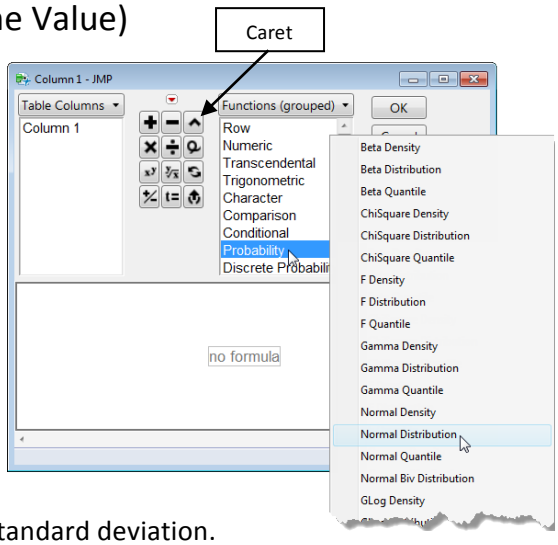
Finding the Area Under a Normal Curve

This page shows how to find the under the normal curve using formulas and the **Distribution Calculator**.

Column Formula for Area Under a Normal Curve (One Value)



1. Select **File > New > Data Table**.
2. Add one row - select **Rows > Add Rows**, and type "1."
3. Right-click on **Column 1**, and select **Formula** to access the formula editor.
4. Under **Functions (grouped)**, select **Probability > Normal Distribution.** This will give the following formula:

   Normal Distribution(x)

5. Click the caret on the keypad twice to add fields for the mean and standard deviation.

   Normal Distribution(x, mean, std dev)

6. In the fields provided, type the value of x, the mean, and the standard deviation.
7. Click **OK**. JMP will populate the row in the data table with the cumulative probability value (the area under the lower tail of the normal curve).

   Note: To find the area in the upper tail, or the area between two values, use the following formulas:

   - Upper tail: 1 - Normal Distribution(x, mean, std dev)
   - Between two values: Normal Distribution(x, mean, std dev) - Normal Distribution(x, mean, std dev)

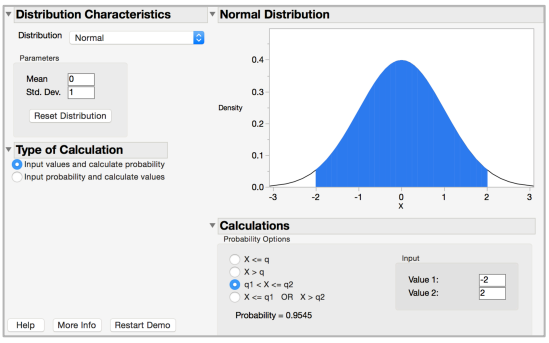
Column Formula for Area Under a Normal Curve (Multiple Values)

1. Open an existing data table (**File > Open**), or open a new data table (**File > New > Data Table**) and create a column containing the values of interest.
2. Select **Cols > New Column** to create an additional column, and rename the column. We'll name our column **Prob Height**.
3. Click **Column Properties**, and select **Formula** to access the **JMP Formula Editor**.
4. Follow steps 4 and 5 above.
5. Click on the box containing "x," and from **Table Columns**, select the variable name.
6. Type the mean and standard deviation in the fields provided.
7. Click **OK**. JMP will populate the column with cumulative probability values for each value of the variable.

Normal Distribution(*height*, 62.55, 4.24)

	name	age	sex	height	weight	Prob Height
1	KATIE	12	F	59	95	0.2012220526
2	LOUISE	12	F	61	123	0.3573444607
3	JANE	12	F	55	74	0.0374839749
4	JACLYN	12	F	66	145	0.7920856365
5	LILLIE	12	F	52	64	0.0064194391
6	TIM	12	M	60	84	0.2737817738
7	JAMES	12	M	61	128	0.3573444607

Distribution Calculator



- In JMP 12: **Help > Teaching Demos > Distribution Calculator**.
- In JMP 11 and earlier, download add-in from **jmp.com/tools**.

Enter the mean and the standard deviation, select the type of calculation, and enter the values or the probabilities. Click the **Help** button for instructions and use notes.