Numeric Functions

Introduction
Some of the most common forms of data analysis require mathematical transformation or processing of data. You may need to simply multiple values in a column by a number or round values to the nearest integer. Or, perhaps you're looking to do something more complex, like apply trigonometric functions. The Formula tool's numeric functions, which are found in the "Math" category of the expression builder, can help with any of these tasks.

Data in Designer
A dataset of monthly car sales contains the number of new and used vehicles sold. The annual totals of vehicles sold and revenue for the value in the column "Year" are appended to the dataset. Use the Formula tool to sum the number of new and used vehicles sold each month and calculate the percentage of annual sales each month represents.

Create a new column called [Monthly Total Car Sales] to sum the number of new and used vehicles sold each month, and set the data type to Int64.

Click the Columns and Constants window to select the column [New].

Operators, such as plus signs, are located in the Operators tool category in the function library. Click the Addition operator from the list to insert it into the Expression Editor.

Click the Columns and Constants window to select the column [Used].

Note that numeric expressions in Designer do not require any additional syntax, like an equal sign or semi-colon, at the beginning or end of an expression. After running the workflow, the column [Monthly Total Car Sales] appears in the Results.

Now, calculate the percentage of annual vehicle sales each month represents. Create another expression called [Monthly Percent] and write out to a Double data type to accommodate decimal places.

To calculate the percent of sales each monthly total represents, divide the values in the column [Monthly Total Car Sales] by the value in [Annual Total Sales] and multiply by 100. Enter the operators into the Expression Editor. Then, click Submit. .

After running the workflow, a new column contains the percentage each month of sales represents of the annual total.

Rounding Functions
Sometimes, it's easier to visualize and report on round numbers. For example, it may be easier to share the data in the column [Monthly Percent] as a rounded integer. In addition to standard operators, the function library includes specialized numeric functions in the Math category such as those used for rounding. The Ceiling and Floor functions will round

values up or down, respectively. However, this case calls for a function that will round in both directions. The SmartRound function rounds values dynamically to a multiple that is determined by Designer based on the spread of values in the column of interest. To control the multiple used for rounding, use the Round function.

The Round function requires two parameters: the column containing numeric values to round, and the multiple used for rounding. Insert the column [Monthly Percent] in the placeholder for "x".

Then, type in "1" in the placeholder for "mult" so that values are rounded to the nearest one.   Then click "Submit".

Note that the data preview shows the value in the first row of data formatted as the expected output. The actual value in the cell, 7.657, has been rounded up to 8. And, after running the workflow, a new column contains the rounded integers.