EXAMPLE - Comparison Functions2

In the town of Circleville, citizens are allowed to maintain a single crop circle in their backyard, as long as it confirms to the town regulations. Below is some data on the size of crop circles in town, with a separate entry for each home. Limits are displayed in the adjacent columns, with the `inclusive` columns indicating whether the minimum or maximum values are inclusive.

> **Tip:** As part of this exercise, you can see how to you can extend your recipe to perform some simple financial analysis of the data.

Source:

Location	Radius_ft	minRadius_ft	minInclusive	maxRadius_ft	maxInclusive
House1	55.5	10	Y	25	N
House2	12	10	Y	25	N
House3	14.25	10	Y	25	N
House4	3.5	10	Y	25	N
House5	27	10	Y	25	N

Transformation:

After the data is loaded into the Transformer page, you can begin comparing column values:

Transformation Name	New formula
Parameter: Formula type	Single row formula
Parameter: Formula	LESSTHANEQUAL(Radius_ft,minRadius_ft)
Parameter: New column name	'tooSmall'

While accurate, the above transform does not account for the `minInclusive` value, which may be changed as part of your steps. Instead, you can delete the previous transform and use the following, which factors in the other column:

Transformation Name	New formula
Parameter: Formula type	Single row formula
Parameter: Formula	IF(minInclusive == 'Y',LESSTHANEQUAL(Radius_ft,minRadius_ft), LESSTHAN(Radius_ft,minRadius_ft))
Parameter: New column name	'tooSmall'

In this case, the `IF` function tests whether the minimum value is inclusive (values of `10` are allowed). If so, the `LESSTHANEQUAL` function is applied. Otherwise, the `LESSTHAN` function is applied. For the maximum limit, the following step applies:

Transformation Name	New formula

Parameter: Formula type	Single row formula
Parameter: Formula	IF(maxInclusive == 'Y', GREATERTHANEQUAL(Radius_ft, maxRadius_ft),GREATERTHAN(Radius_ft,maxRadius_ft))
Parameter: New column name	'tooBig'

Now, you can do some analysis of this data. First, you can insert a column containing the amount of the fine per foot above the maximum or below the minimum. Before the first `derive` command, insert the following, which is the fine ($15.00) for each foot above or below the limits:

Transformation Name	New formula
Parameter: Formula type	Single row formula
Parameter: Formula	15
Parameter: New column name	'fineDollarsPerFt'

At the end of the recipe, add the following new line, which calculates the fine for crop circles that are too small:

Transformation Name	New formula
Parameter: Formula type	Single row formula
Parameter: Formula	IF(tooSmall == 'true', (minRadius_ft - Radius_ft) * fineDollarsPerFt, 0.0)
Parameter: New column name	'fine_Dollars'

The above captures the too-small violations. To also capture the too-big violations, change the above to the following:

Transformation Name	New formula
Parameter: Formula type	Single row formula
Parameter: Formula	IF(tooSmall == 'true', (minRadius_ft - Radius_ft) * fineDollarsPerFt, if(tooBig == 'true', (Radius_ft - maxRadius_ft) * fineDollarsPerFt, '0.0'))
Parameter: New column name	'fine_Dollars'

In place of the original "false" expression (0.0), the above adds the test for the too-big values, so that all fines are included in a single column. You can reformat the `fine_Dollars` column to be in dollar format:

Transformation Name	Edit column with formula
Parameter: Columns	fine_Dollars
Parameter: Formula	NUMFORMAT(fine_Dollars, '$###.00')

Results:

After you delete the columns used in the calculation and move the remaining ones, you should end up with a dataset similar to the following:

Location	fineDollarsPerFt	Radius_ft	minRadius_ft	minInclusive	maxRadius_ft	maxInclusive	fineDollars
House1	15	55.5	10	Y	25	N	$457.50
House2	15	12	10	Y	25	N	$0.00
House3	15	14.25	10	Y	25	N	$0.00
House4	15	3.5	10	Y	25	N	$97.50
House5	15	27	10	Y	25	N	$30.00

Now that you have created all of the computations for generating these values, you can change values for `minRadius_ft`, `maxRadius_ft`, and `fineDollarsPerFt` to analyze the resulting fine revenue. Before or after the transform where you set the value for `fineDollarsPerFt`, you can insert something like the following:

Transformation Name	`Edit column with formula`
Parameter: Columns	`minRadius_ft`
Parameter: Formula	`'12.5'`

After the step is added, select the last line in the recipe. Then, you can see how the values in the `fineDollars` column have been updated.