

Tracing Formulas

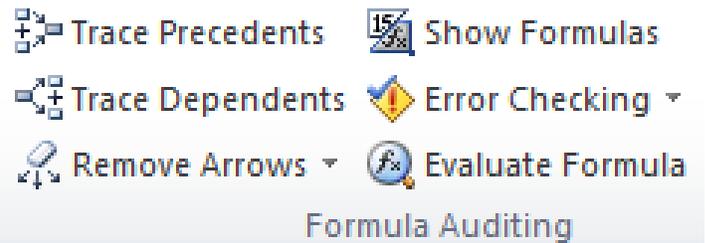
These are very important buttons on the Formulas Toolbar. They allow for easier formula tracing.

Trace Precedents draws lines to all cells that the highlighted cell uses in its result.

Trace Dependents draws lines to all cells that the depend on or use the value in the highlighted cell.

Remove Arrows clears all "Trace" arrows and lines.

Show Formulas will display the formulas of cells instead of the results of formulas.



Error Checking explains why cell formulas are resulting in errors

Evaluate Formula shows the evaluation steps and results of a formula one at a time.

Finding Formula Sources

There are two main ways to visualize the cell sources that a formula is referencing: color or arrows.

The image at right shows how clicking in the formula bar highlights colors to indicate where its sources are on a worksheet. In the example, the SUMPRODUCT() formula in C7 multiplies each cell in the array B2:B6 (all blue) by each cell in the array C2:C6 (all green).

	A	B	C	D
1		Rating	Freq	
2		1	3	
3		2	1	
4		3	15	
5		4	20	
6		5	18	
7		Avg: =SUMPROD		

	A	B	C	D
1		Rating	Freq	
2		1	3	
3		2	1	
4		3	15	
5		4	20	
6		5	18	
7		Avg: 3.86		

The image at left shows how the **Trace Precedents** button displays arrows and lines to indicate where a formula's sources are on a worksheet. Each of the two arrays (B2:B6 and C2:C6) used in the SUMPRODUCT() formula in C7 are bordered with a box and an arrow points to C7.

Finding Cell Dependents

Rating	Freq	
1	3	3 rated it 1
2	1	1 rated it 2
3	15	15 rated it 3
4	20	20 rated it 4
5	18	18 rated it 5
Avg:	3.86	

Like **Trace Precedents**, clicking the **Trace Dependents** button will create lines and arrows pointing to cells that depend on the highlighted cell. In the example at left, the “3” is used in two other cells. Changing the “3” to another value will change the other two cells.

Stepping Through Formulas

The **Evaluate Formula** tool is a hidden gem. It follows the mathematical order of operations, PEMDAS, to display each step of a cell’s formula. This can aid in diagnosis of unexpected results. The example at right steps through the calculation in cell C7 from previous examples. First, it completes the SUMPRODUCT() function, which results in “220.” The next step is a SUM() resulting in “57.” Finally, the formula divides “220/57” to produce the resulting “3.86.”

Evaluation:
`SUMPRODUCT(B2:B6,C2:C6)/SUM(C2:C6)`

Evaluate Evaluation:
`220/SUM(C2:C6)`

Evaluate Evaluation:
`220/57`

Evaluate Evaluation:
`3.86`

Evaluation:
`IF(AND(R2="blue",O2<18),"Kid with blue eyes","Not a kid with blue eyes")`

Evaluate Evaluation:
`IF(AND("grey"="blue",O2<18),"Kid with blue eyes","Not a kid with blue eyes")`

Evaluate Evaluation:
`IF(AND(FALSE,O2<18),"Kid with blue eyes","Not a kid with blue eyes")`

Evaluate Evaluation:
`IF(AND(FALSE,25.4054794520548<18),"Kid with blue eyes","Not a kid with blue eyes")`

Evaluate Evaluation:
`IF(AND(FALSE,FALSE),"Kid with blue eyes","Not a kid with blue eyes")`

Evaluate Evaluation:
`IF(FALSE,"Kid with blue eyes","Not a kid with blue eyes")`

Evaluate Evaluation:
`Not a kid with blue eyes`

The **Evaluate Formula** tool is an excellent way to learn how complex Excel functions work together.

The example at left steps through an IF() formula which codes data depending on information in column R (eye color) and column O (age). If column R matches the word “blue” and column O contains a number less than 18, then the cell output is “Kid with blue eyes.” Otherwise, the cell output is “Not a kid with blue eyes.”

EXCEL GURU GAL

Phone: 917-756-3914

E-mail: excelgurugal@gmail.com

www.excelgurugal.com