2. Auditing Worksheets

In this lesson, you will learn...

1. To audit formulas.
2. To trace precedents to determine which cells impact a specific cell.
3. To trace dependents to determine which cells are impacted by a specific cell.
4. To remove precedent and dependent arrows.
5. To show formulas.
6. To check for errors frequently found in formulas.

Large spreadsheets are often very complicated with formulas referring to many cells each of which contain their own formulas referring to other cells that might be contained in other worksheets or even other workbooks. Excel's **Formula Auditing** commands are very helpful when working in large worksheets.

The two most common uses of the **Formula Auditing** commands are:

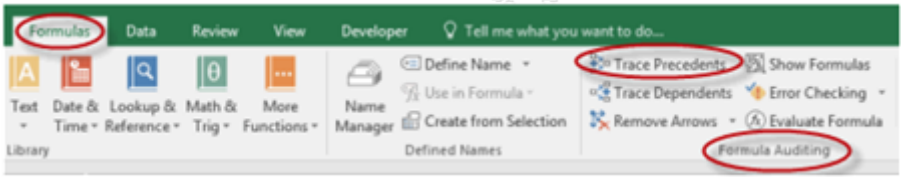
1. **To locate the cause of errors**. Often an error appearing in one cell is caused by an error in another cell. The **Formula Auditing** commands can help you find the cell causing the error.
2. **To better understand worksheets and information in specific cells**. In a complex worksheet, it can be difficult to ascertain where results come from. The **Formula Auditing** commands can help you understand how different cells in the worksheet relate to each other.

Detailed instructions for using the most commonly used **Formula Auditing** commands follow.

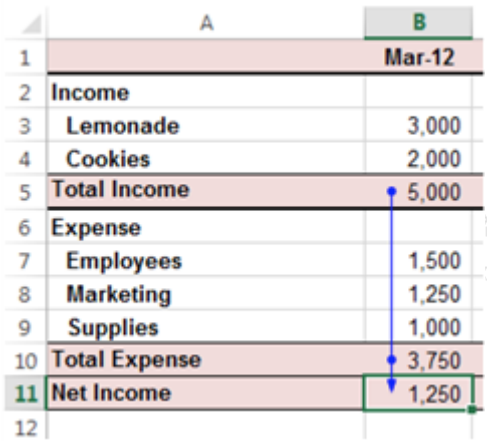
Tracing Precedents

Tracing precedents in Microsoft Excel allows you to visually see which cells impact a given cell. To trace precedents:

1. Select the cell to trace precedents for.
2. On the **Formulas** tab, in the **Formula Auditing** group, click the **Trace Precedents** command:

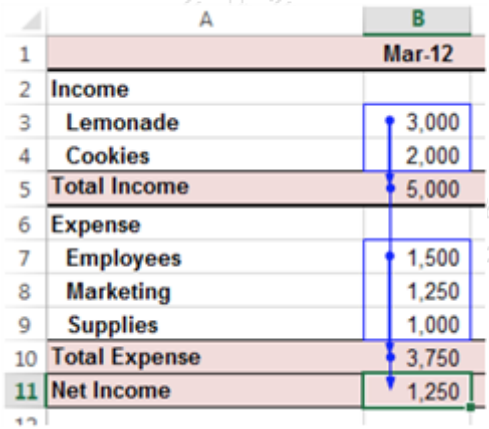


3. The following screen shot shows the precedents for cell **B11**:



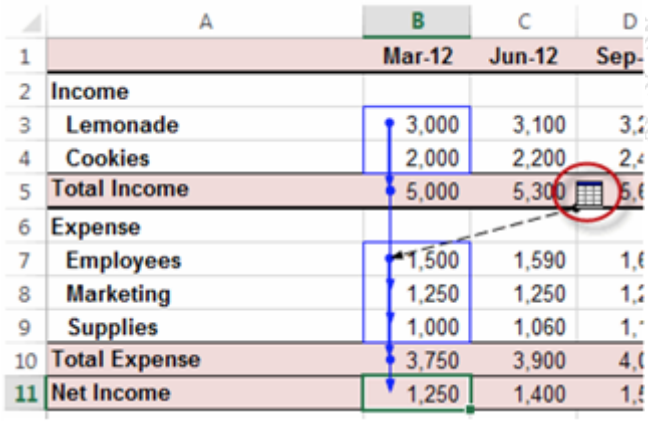
	A	B
1		Mar-12
2	Income	
3	Lemonade	3,000
4	Cookies	2,000
5	Total Income	5,000
6	Expense	
7	Employees	1,500
8	Marketing	1,250
9	Supplies	1,000
10	Total Expense	3,750
11	Net Income	1,250
12		

4. By clicking **Trace Precedents** a second time, we see another level of precedents (the precedents for the cells directly preceding the first cell):



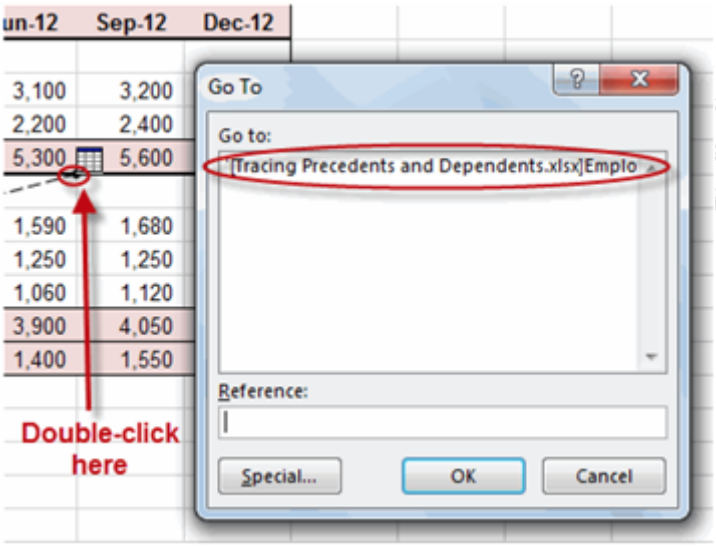
	A	B
1		Mar-12
2	Income	
3	Lemonade	3,000
4	Cookies	2,000
5	Total Income	5,000
6	Expense	
7	Employees	1,500
8	Marketing	1,250
9	Supplies	1,000
10	Total Expense	3,750
11	Net Income	1,250

5. Clicking **Trace Precedents** subsequent times shows additional levels of precedents. If one of the preceding cells is on another sheet, Excel will add an arrow pointing to an image of another sheet:

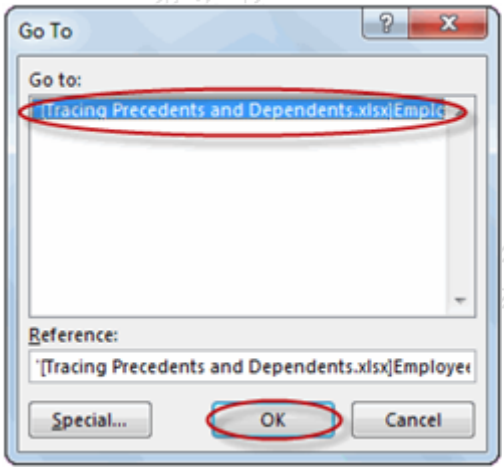


	A	B	C	D
1		Mar-12	Jun-12	Sep-
2	Income			
3	Lemonade	3,000	3,100	3,2
4	Cookies	2,000	2,200	2,4
5	Total Income	5,000	5,300	5,6
6	Expense			
7	Employees	1,500	1,590	1,6
8	Marketing	1,250	1,250	1,2
9	Supplies	1,000	1,060	1,1
10	Total Expense	3,750	3,900	4,0
11	Net Income	1,250	1,400	1,5

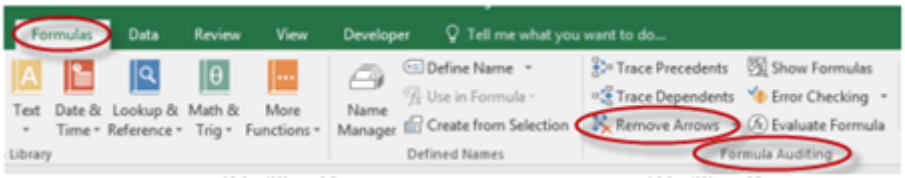
6. By double-clicking the small circle next to the image of the sheet, you can open the **Go To** dialog box to see which sheet the cell refers to:



7. Select the sheet and click **OK** to go to the specific cell in the other sheet:



8. To remove the arrows showing precedents, click **Remove Arrows** :



Exercise 2 Tracing Precedents

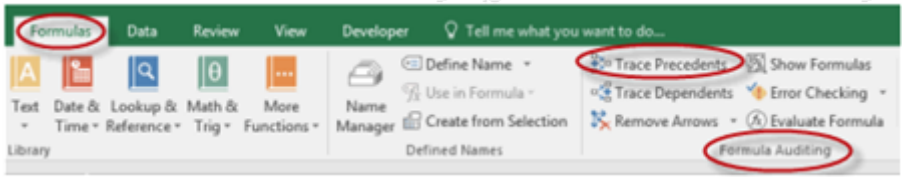
5 to 15 minutes

In this exercise, you will practice tracing precedents.

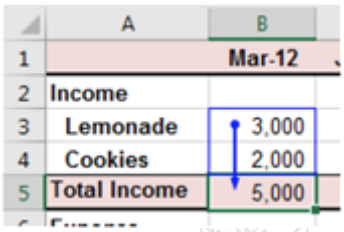
1. Open Auditing Formulas.xlsx from your Excel2016.3/Exercises folder.
2. What are the first-level precedents for cell **B5**?
3. What are the second-level precedents for cell **B5**?
4. What are the first-level precedents for cell **B11**?
5. What are the second-level precedents for cell **B11**?

Exercise Solution

1. The first-level precedents for cell **B5** are cells **B3** and **B4**. To figure this out:
   A. Select cell **B5**.
   B. On the **FORMULAS** tab, in the **Formula Auditing** group, click the **Trace Precedents** command:



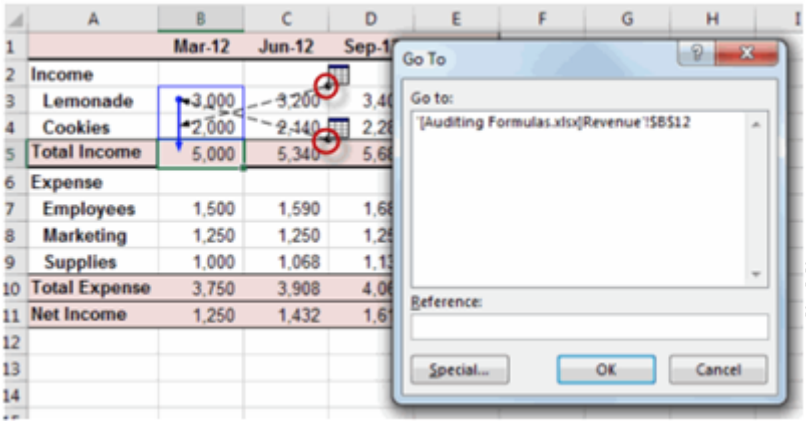
   C. The preceding cells are indicated by the arrow:



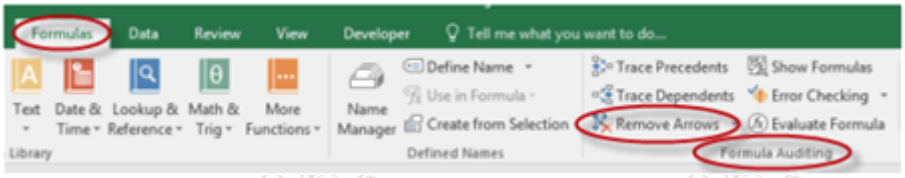
2. The second-level precedents for cell **B5** are cells **B12** and **B13** in the sheet named "Revenue". To figure this out:

   A. Click **Trace Precedents** again.

   B. Double-click the small circles next to the images of the sheets in order to open the **Go To** dialog box showing the sheets and cells:



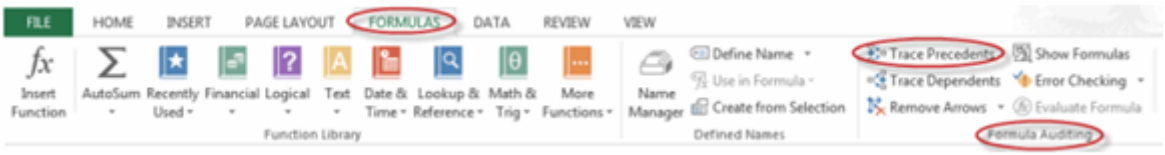
3. Remove the arrows showing the precedents for cell **B5** by clicking **Remove Arrows** :



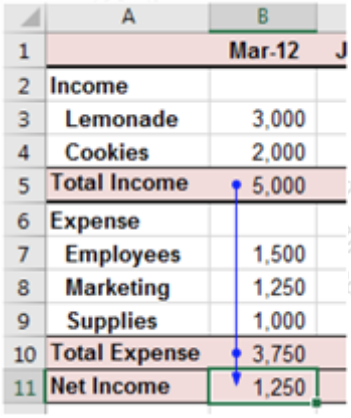
4. The first-level precedents for cell **B11** are cells **B5** and **B10**. To figure this out:

   A. Select cell **B11**.

   B. On the **FORMULAS** tab, in the **Formula Auditing** group, click the **Trace Precedents** command:



C. The preceding cells are indicated by the arrow:

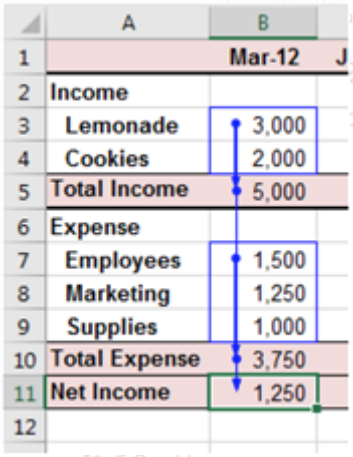


	A	B
1		Mar-12
2	Income	
3	Lemonade	3,000
4	Cookies	2,000
5	Total Income	5,000
6	Expense	
7	Employees	1,500
8	Marketing	1,250
9	Supplies	1,000
10	Total Expense	3,750
11	Net Income	1,250

5. The second-level precedents for cell **B11** are cells **B3:B4** and cells **B7:B9**. To figure this out:

   A. Click **Trace Precedents** again.

   B. The preceding cells are indicated by the arrows pointing to **B5** and **B10**:

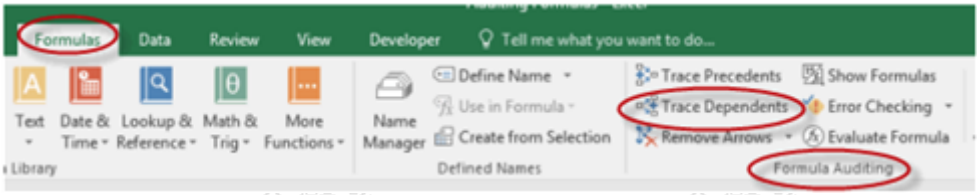


	A	B
1		Mar-12
2	Income	
3	Lemonade	3,000
4	Cookies	2,000
5	Total Income	5,000
6	Expense	
7	Employees	1,500
8	Marketing	1,250
9	Supplies	1,000
10	Total Expense	3,750
11	Net Income	1,250
12		

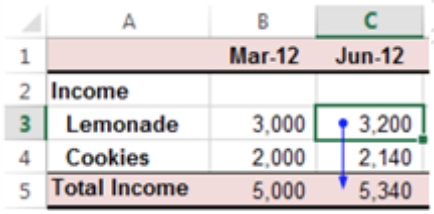
Tracing Dependents

Tracing dependents in Microsoft Excel allows you to visually see which cells are impacted by a given cell. To trace dependents:

1. Select the cell to trace dependents for.
2. On the **Formulas** tab, in the **Formula Auditing** group, click the **Trace Dependents** command:

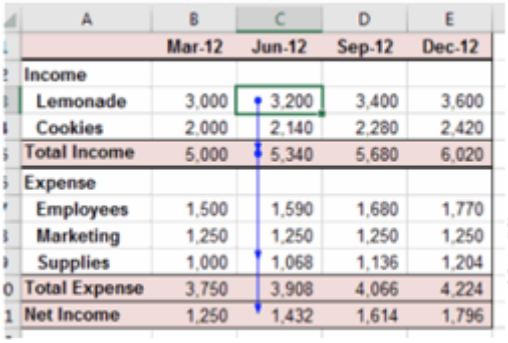


3. The following screen shot shows the dependents for cell **C3**:



	A	B	C
1		Mar-12	Jun-12
2	Income		
3	Lemonade	3,000	3,200
4	Cookies	2,000	2,140
5	Total Income	5,000	5,340

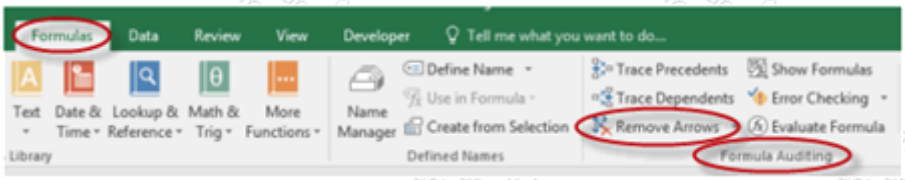
4. By clicking **Trace Dependents** a second time, we see another level of dependents (the dependents for the cells directly dependent upon the first cell):



	A	B	C	D	E
		Mar-12	Jun-12	Sep-12	Dec-12
	Income				
	Lemonade	3,000	3,200	3,400	3,600
	Cookies	2,000	2,140	2,280	2,420
	Total Income	5,000	5,340	5,680	6,020
	Expense				
	Employees	1,500	1,590	1,680	1,770
	Marketing	1,250	1,250	1,250	1,250
	Supplies	1,000	1,068	1,136	1,204
	Total Expense	3,750	3,908	4,066	4,224
	Net Income	1,250	1,432	1,614	1,796

5. As with precedents, clicking **Trace Dependents** subsequent times shows additional levels of dependents. If one of the dependent cells is on another sheet, Excel will add an arrow pointing to an image of another sheet.

6. To remove the arrows showing dependents, click **Remove Arrows** :



Exercise 3 Tracing Dependents

---

5 to 10 minutes

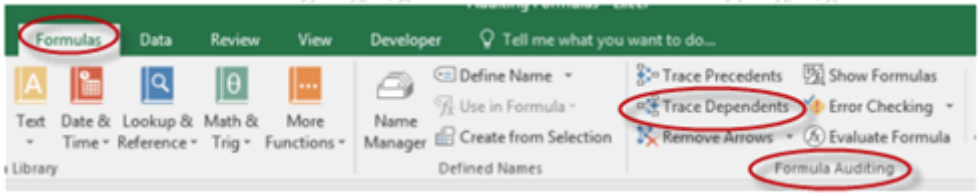
In this exercise, you will practice tracing dependents.

1. Open Auditing Formulas.xlsx from your Excel2016.3/Exercises folder.
2. What are the first-level dependents for cell **B4**?
3. What are the second-level dependents for cell **B4**?

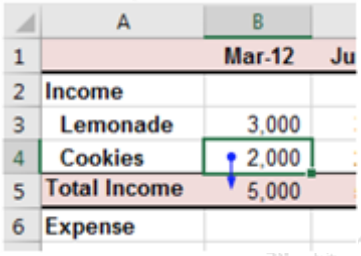
Exercise Solution

---

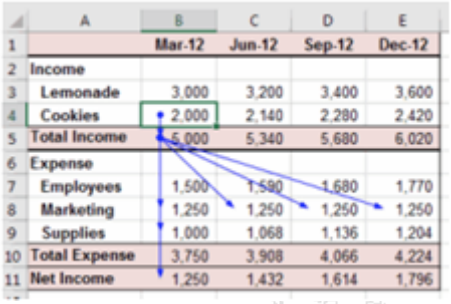
1. The first-level dependent for cell **B4** is cell **B5**. To figure this out:
   A. Select cell **B4**.
   B. On the **Formulas** tab, in the **Formula Auditing** group, click the **Trace Dependents** command:



   C. The dependent cells are indicated by the arrow:

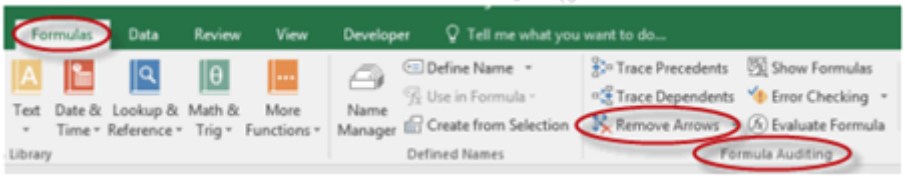


2. The second-level dependents for cell **B4** are cells **B8:E8** and cells **B9** and **B11**. To figure this out:
   A. Click **Trace Dependents** again.
   B. The dependent cells are indicated by the arrows:



	A	B	C	D	E
1		Mar-12	Jun-12	Sep-12	Dec-12
2	Income				
3	Lemonade	3,000	3,200	3,400	3,600
4	Cookies	2,000	2,140	2,280	2,420
5	Total Income	5,000	5,340	5,680	6,020
6	Expense				
7	Employees	1,500	1,590	1,680	1,770
8	Marketing	1,250	1,250	1,250	1,250
9	Supplies	1,000	1,068	1,136	1,204
10	Total Expense	3,750	3,908	4,066	4,224
11	Net Income	1,250	1,432	1,614	1,796

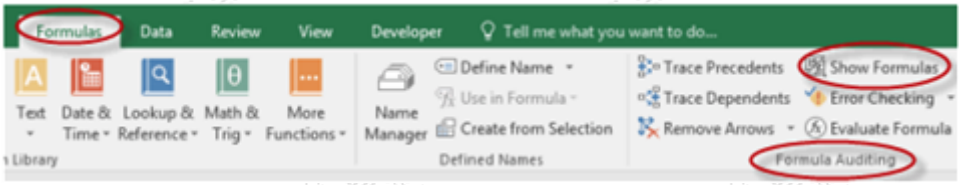
3. Remove the arrows by clicking **Remove Arrows** :



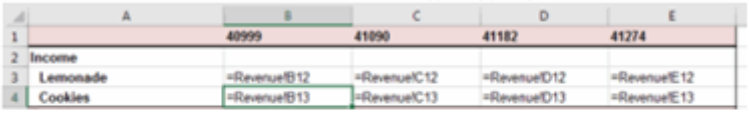
Showing Formulas

Sometimes it is useful to see the formulas in all the cells in a worksheet rather than the values. To show formulas:

1. Select any cell in the worksheet in which you want to show the formulas.
2. On the **Formulas** tab, in the **Formula Auditing** group, click the **Show Formulas** command:



3. Instead of values, you can now see the formulas in each cell:



	A	B	C	D	E
1		40999	41090	41182	41274
2	Income				
3	Lemonade	=Revenue!B12	=Revenue!C12	=Revenue!D12	=Revenue!E12
4	Cookies	=Revenue!B13	=Revenue!C13	=Revenue!D13	=Revenue!E13

4.

To go back to showing values, simply click the **Show Formulas** command again.

Conclusion

In this lesson, you learned to audit formulas, to trace precedents and dependents to determine how cells are impacted by other cells, to remove precedent and dependent arrows, and to show formulas.