***Quick Tip**: Use data tables to explore results of changing one or two variables. Use Scenarios if you want to change more than two variables.*

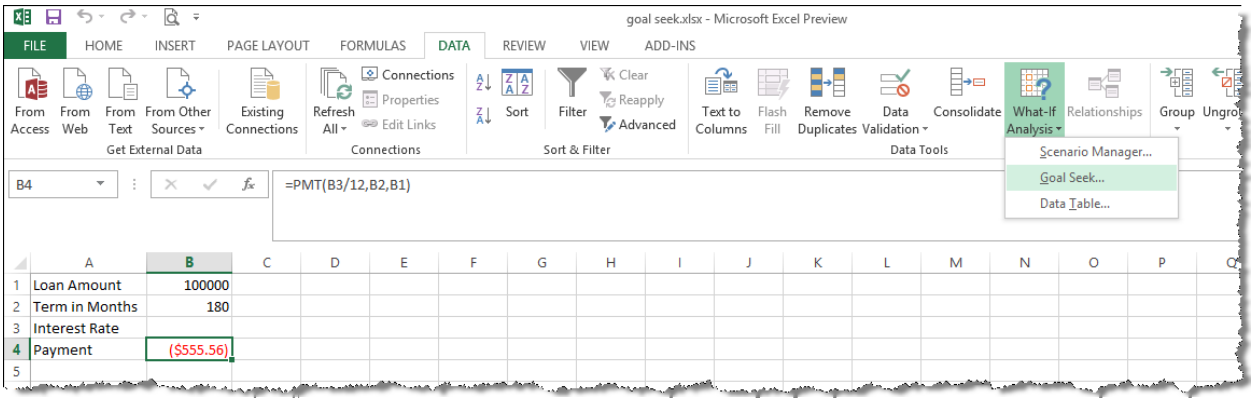
Module Nine: Using What If Analysis

"What-if" analysis allows you to have Excel change the values in cells so that you can see how those changes affect the formulas outcomes. There are three kinds of what if analysis: goal seek, scenarios, and data tables. Goal seek allows you to find the necessary value for an unknown in a formula to obtain desired results. Scenarios allow you to view multiple different possible results for up to 32 variables. Data tables allow you to quickly calculate multiple results for one or two variables in one operation. You can view and compare the results of all the different variations together on your worksheet. This module introduces these tools.

Using Goal Seek

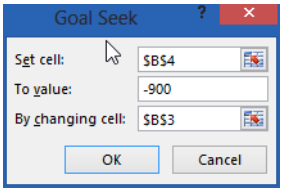
To use goal seek, use the following procedure.

1. When using goal seek, one value from a formula should be left blank.
2. Select the **Data** tab from the Ribbon.
3. Select **What If Analysis**.
4. Select **Goal Seek**.



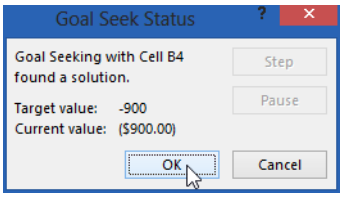
Excel displays the *Goal Seek* dialog box.

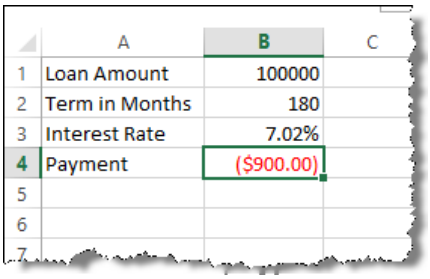
5. In the **Set Cell** field, enter or select from the worksheet the cell that contains the formula. In the sample file, select B4.
6. In the **To Value** field, enter the formula result you want. For example, in the sample file, you may want the resulting payment of $900. You would enter **-900** because it is a payment.
7. In the **By Changing Cell** field, enter or select the reference for the cell that contains the value you don't know. In the sample file, this is B3.



8. Select **OK**.

Excel displays the *Goal Seek Status* dialog box. Select **OK** to close it.





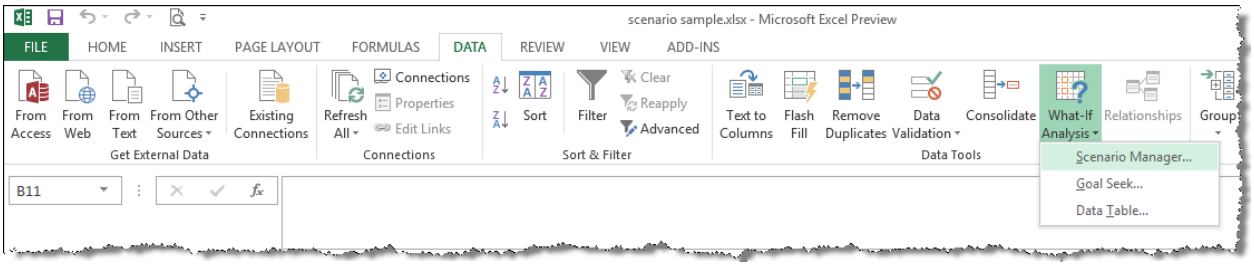
	A	B	C
1	Loan Amount	100000	
2	Term in Months	180	
3	Interest Rate	7.02%	
4	Payment	($900.00)	
5			
6			
7			

You may need to reformat the cell with the new answer to view the answer in the preferred format.

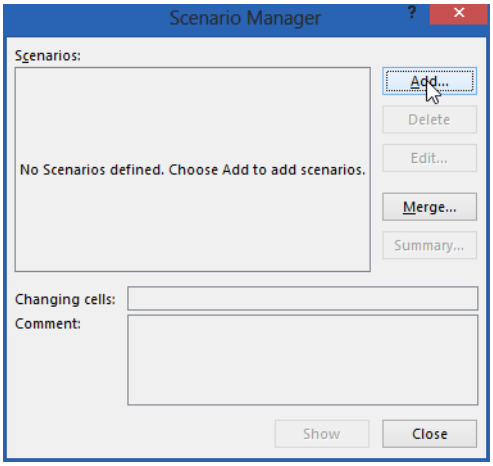
Using the Scenario Manager

To add a scenario, use the following procedure.

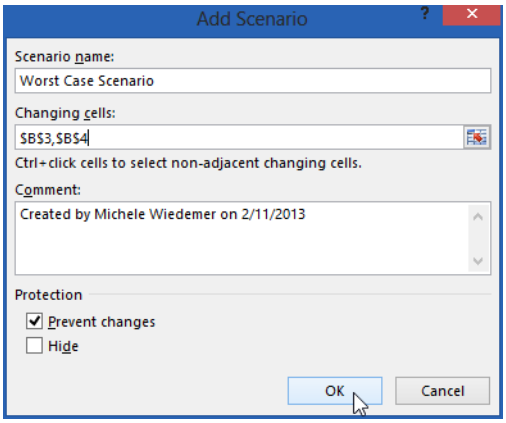
1. Select the **Data** tab from the Ribbon.
2. Select **What If Analysis**.
3. Select **Scenario Manager**.

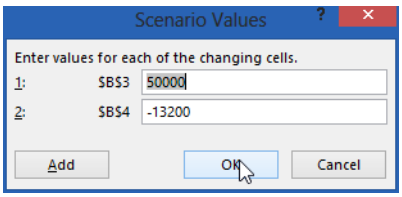


4. In the *Scenario Manager* dialog box, select **Add** to create a new scenario.



5. In the *Add Scenario* dialog box, enter a **Scenario Name**.
6. In the **Changing Cells** field, enter (or select from the worksheet) the multiple cells of changing values in the first scenario. Press the CTRL key while selecting each value.
7. Enter a **Comment**, if desired.
8. Protect the scenario by checking the **Prevent changes** and/or the **Hide** boxes.
9. Select **OK**.

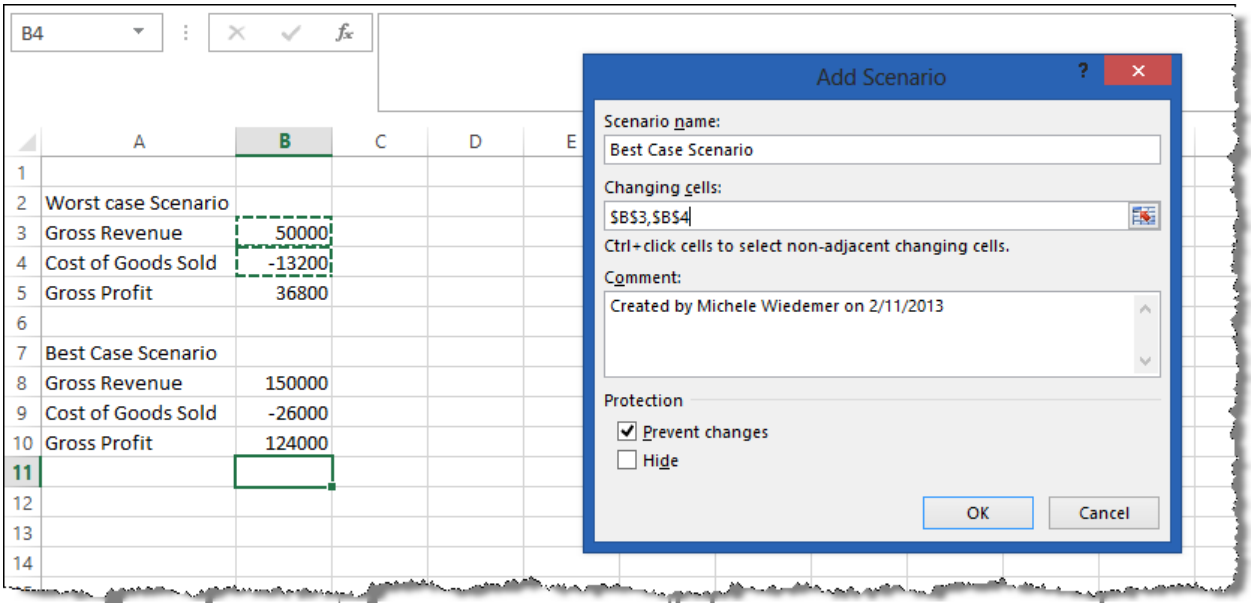


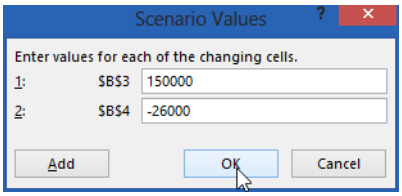


10. The *Scenario values* dialog box shows the values you selected.
    - For the original scenario, keep the values Excel displays.
    - For each subsequent scenario, enter the new values.

11. Select **Add** to create another set of values. If you have finished adding all the possibilities, select **OK** to return to the Scenario Manager.

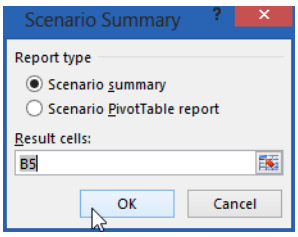
12. Repeat steps 4 through 10 to create another scenario.





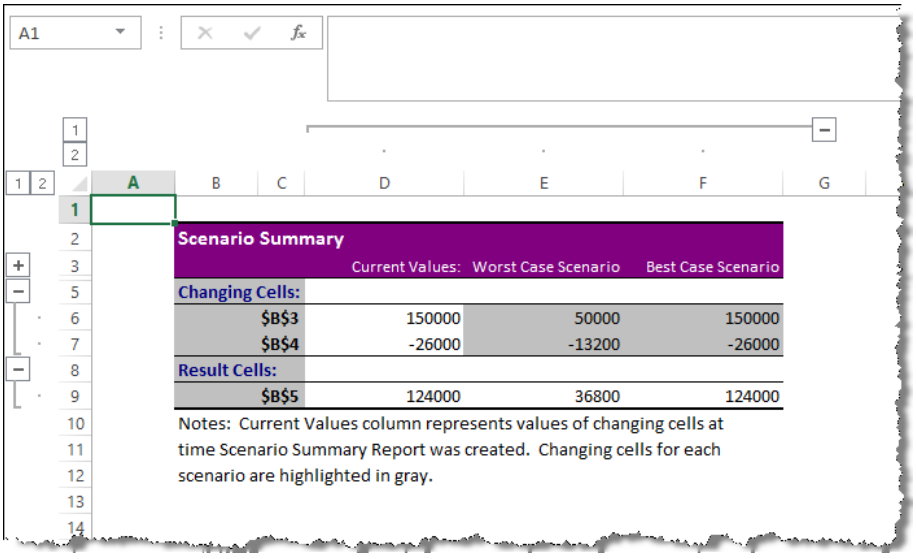
13. On the *Scenario Manager* dialog box, you can select a scenario name and select **Show** to see the results. The contents of the cells change, depending on which scenario you select and show. To view a report, select **Summary.**

Excel displays the *Scenario Summary* dialog box.



14. Indicate whether Excel should display the **Scenario Summary** or a **Scenario PivotTable Report**.
15. Select the cell that contains the results you want to compare (or the formula cell).
16. Select **OK**.

Excel displays your results in the selected format.



Scenario Summary	Current Values:	Worst Case Scenario	Best Case Scenario
Changing Cells:			
B3	150000	50000	150000
B4	-26000	-13200	-26000
Result Cells:			
B5	124000	36800	124000

Notes: Current Values column represents values of changing cells at time Scenario Summary Report was created. Changing cells for each scenario are highlighted in gray.

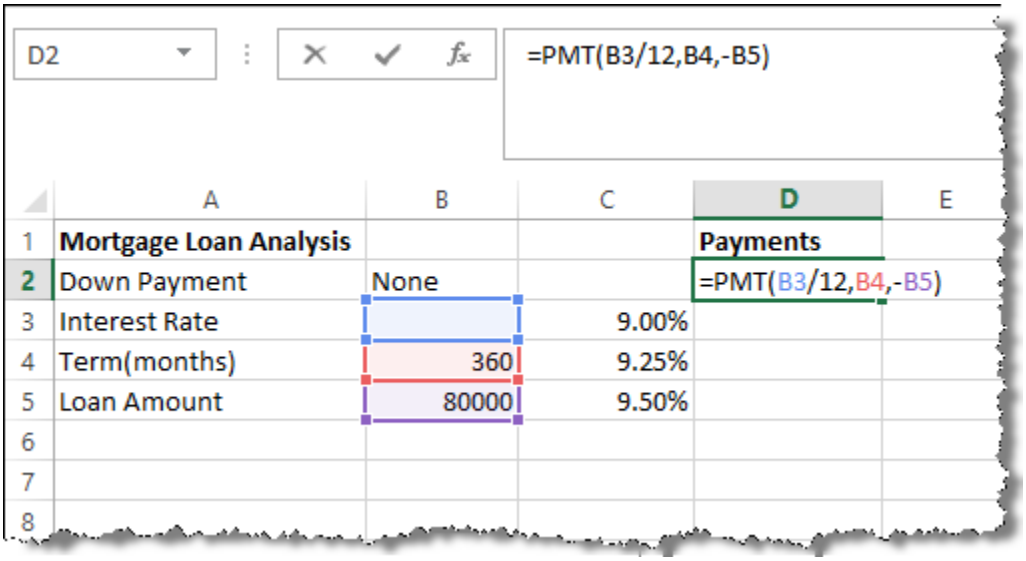
Using a One Input Data Table

To set up a one-input data table, use the following procedure.

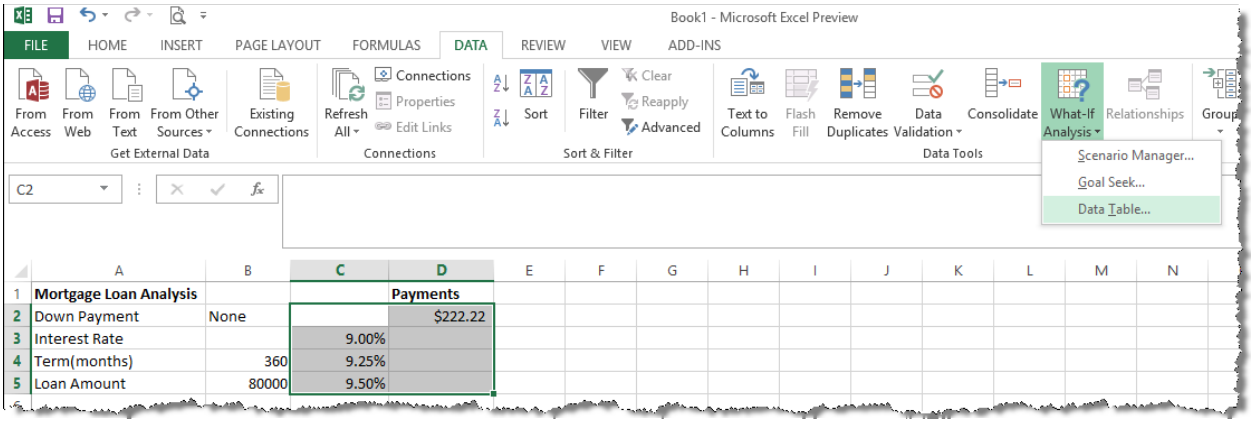
1. Enter the known values that the formula will use in evaluating the variable values.
2. Enter the list of values you want to use for the input cell for the formula either down one column or across one row. If you are entering the values in a column, as shown below, leave the column to the right empty. Also leave additional rows below the values empty. If you are entering the values in a row, leave the rows below the values empty. Also leave a few columns to the right empty.

	A	B	C	D
1	**Mortgage Loan Analysis**			**Payments**
2	Down Payment	None		
3	Interest Rate		9.00%	
4	Term(months)	360	9.25%	
5	Loan Amount	80000	9.50%	
6				
7				
8				
9				

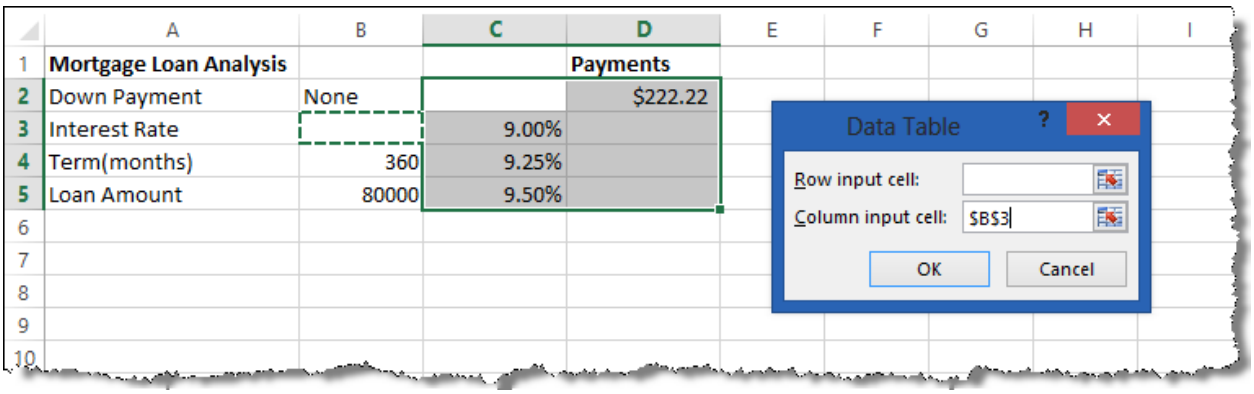
3. If you have entered your data in columns, enter the formula one cell above and one cell to the right of the list of data values. You can enter additional formulas in the cells to the right of this cell to evaluate how the data values affect other formulas. If you have entered your data in rows, enter the formula one column to the left of the first value and one cell below the row of values.



4. Select the data table values and the formula. In this example, the range is C2:D5.
5. Select the **Data** tab from the Ribbon.
6. Select **What If Analysis**.
7. Select **Data Table**.

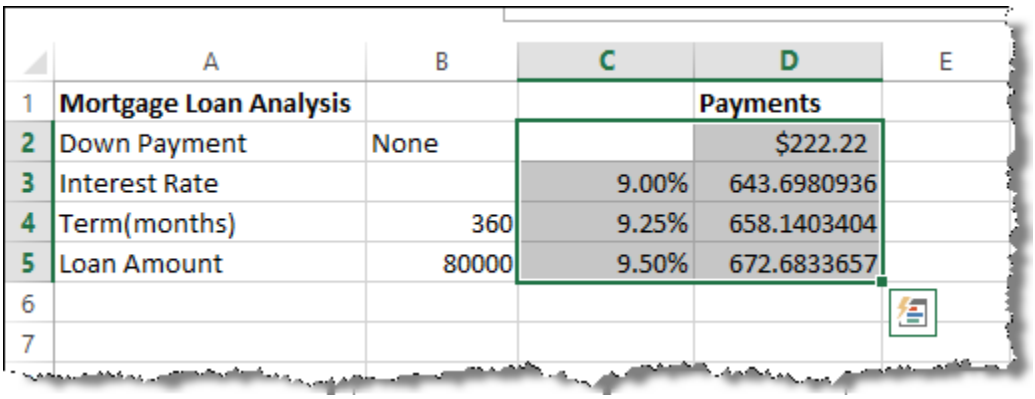


8. Select the input cell in the formula. In a one-input data table, you will only have one input. In this example, the cell B3 is the **Column Input** cell.



9. Select **OK**.

For each possible value for the variable listed in the data table, Excel displays the results.

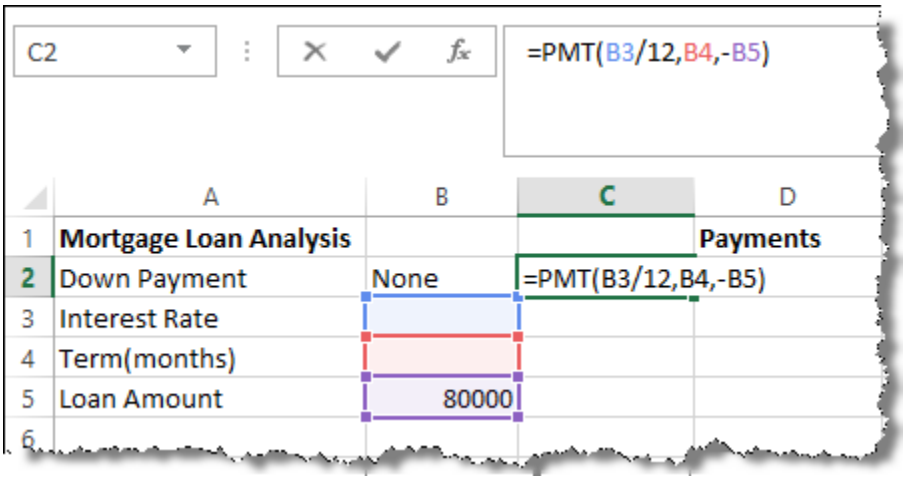


You may want to format the cells to show the results with the desired formatting (such as currency in this example).

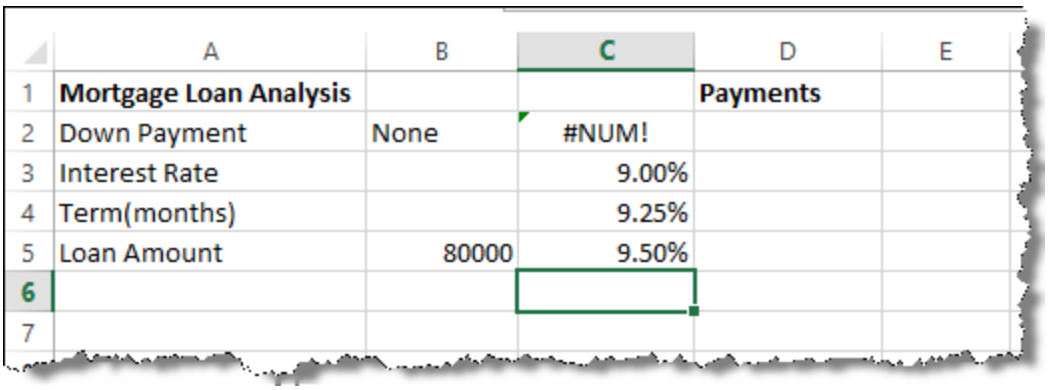
Using a Two Input Data Table

To set up a two input data table, use the following procedure.

1. Enter the known values that the formula will use in evaluating the variable values. In this example, using the previous lesson's workbook, delete the numbers except for the Loan Amount.
2. Enter the formula. In this example, it should be entered in cell C2.

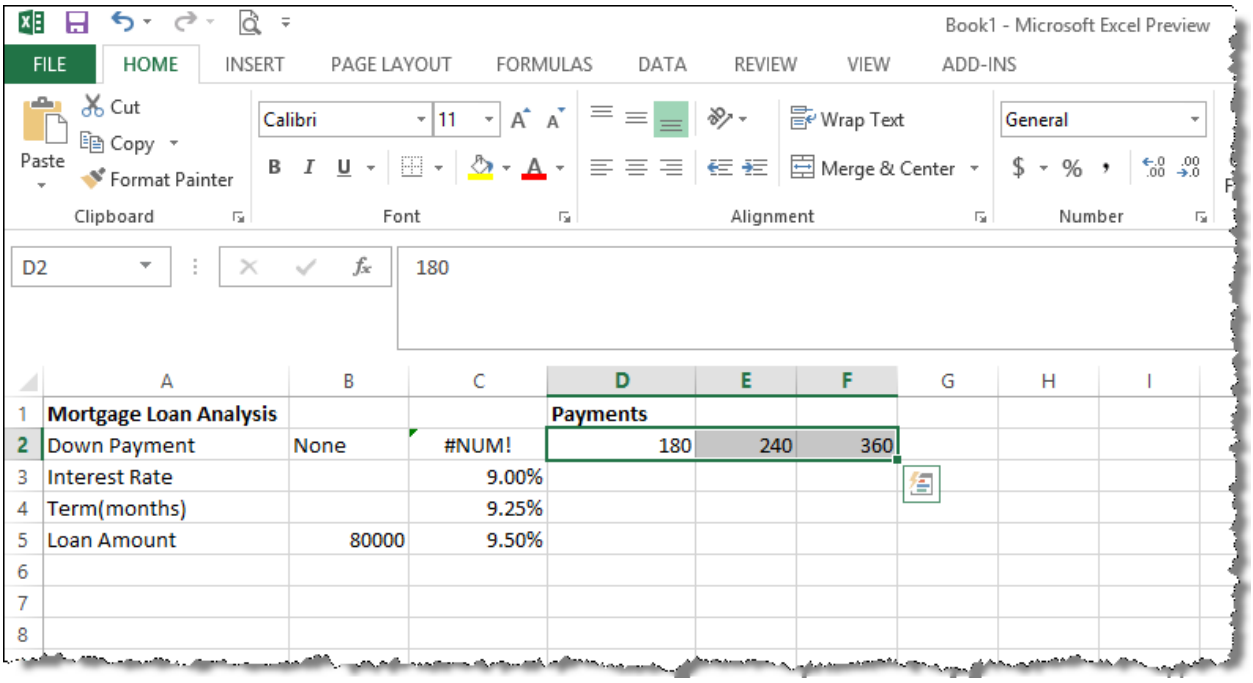


4. Enter the list of values for the first input cell for the formula down one column under the formula. In this example, the unknown interest rate is the first input cell.



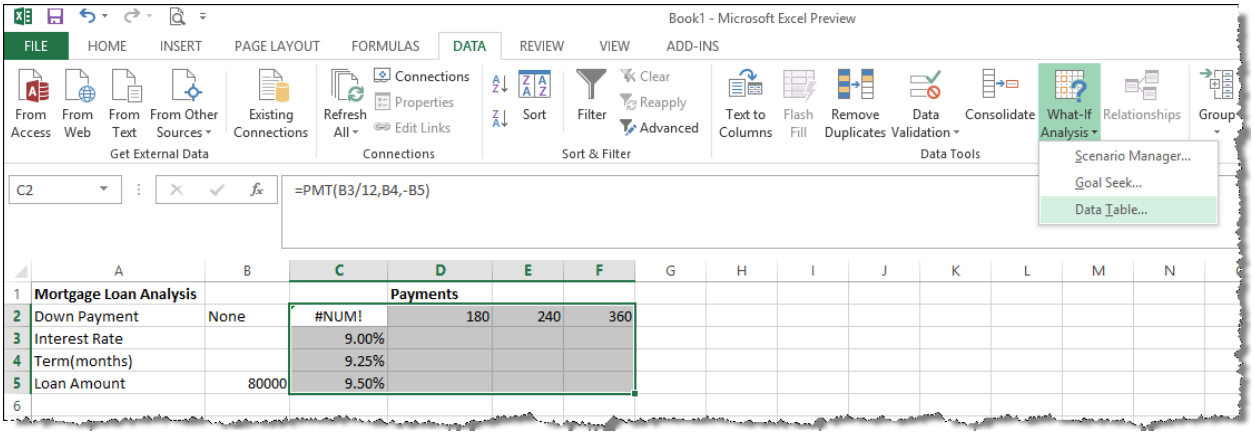
	A	B	C	D	E
1	**Mortgage Loan Analysis**			**Payments**	
2	Down Payment	None	#NUM!		
3	Interest Rate		9.00%		
4	Term(months)		9.25%		
5	Loan Amount	80000	9.50%		
6					
7					

5. Enter the list of values for the second input cell for the formula across in one row next to the formula. In this example, the unknown term is the second input cell.

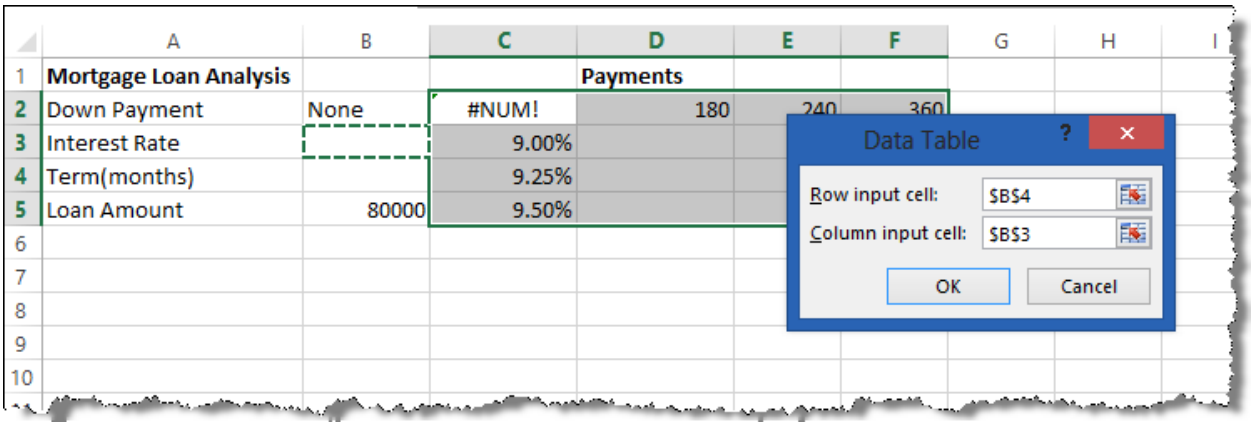


	A	B	C	D	E	F	G	H	I
1	**Mortgage Loan Analysis**			**Payments**					
2	Down Payment	None	#NUM!	180	240	360			
3	Interest Rate		9.00%						
4	Term(months)		9.25%						
5	Loan Amount	80000	9.50%						
6									
7									
8									

6. Select the range that includes data table values, the formula, and the area where Excel will display the results. In this example, the range is C2:D5.
7. Select the **Data** tab from the Ribbon.
8. Select **What If Analysis**.
9. Select **Data Table**.

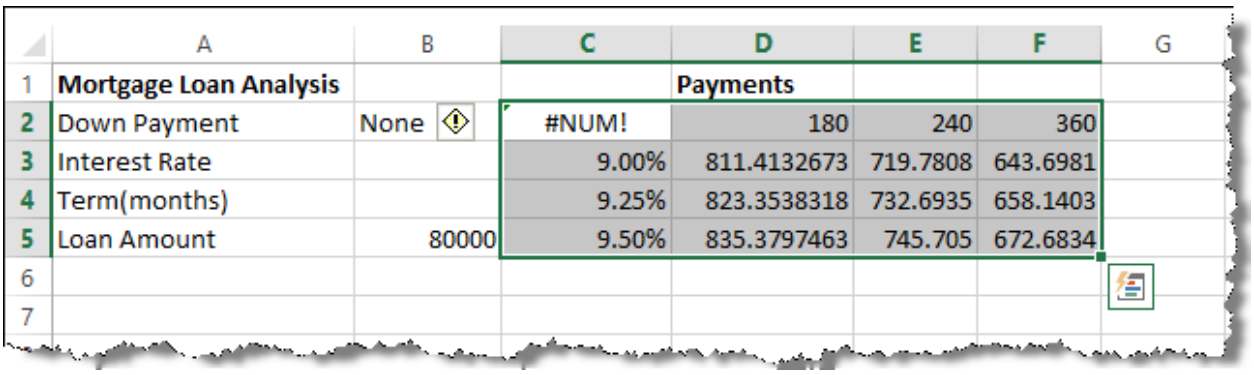


10. Select the **Row input cell** in the formula. In this example, the cell B4 is the Row Input cell.
11. Select the Column input cell in the formula. In this example, the cell B3 is the Column Input cell.



12. Select **OK**.

For each possible value for the variable listed in the data table, Excel displays the results.



You may want to format the cells to show the results with the desired formatting (such as currency in this example).