**Manual scenario creation**

1.

Let's set up a new sheet to begin our fresh analysis.

* Create a new sheet and rename it "Scenario Analysis".
* Insert a table in A1 and name it "Scenario1".

**Hint**

* To add the new worksheet:
  + Click on the + on the bottom ribbon to add another *worksheet*.
  + Double-click the new *worksheet* tab and type "Scenario Analysis".
* To insert the new table:
  + Click on *Table* under the *Insert* ribbon, then click OK.
  + Type in "Scenario1" for the *Table Name* under the *Table Design* ribbon.

2.

Let's start our analysis in the Scenario1 table by finding the total opportunity.

* Create a column called "Upsell Opportunity" that uses SUM() to calculate the total Current Upsell $ from the Account Sales History worksheet.

**Hint**

* The formula for Upsell Opportunity should be:
* =SUM(Sales[\_\_\_\_])

3.

Now, let's calculate a projected upsell amount that assumes a certain amount of Upsell Opportunity will convert to actual sales.

* Create a column called "Conversion Rates" and set this to "50%".
* Create a column called "Projected Upsell Amount" that multiplies Upsell Opportunity and Conversion Rate

**Hint**

* The formula for Projected Upsell Amount should look like this: =\_\_\_\_\*\_\_\_\_.

4.

This was a pretty interesting and simple scenario analysis so far. If 50% of our opportunity is converted to actual sales; Bananas could make $19,046.50 more per month. However, let's say each subscription type has a different conversion rate. This makes sense because we expect less conversion as the subscription price increases.

* Insert a *table column* called "Subscription Type" to the left of Upsell Opportunity.
* Ensure the new column and Conversation Rates are filled as below:

| **Subscription Type** | **Conversion Rates** |
| --- | --- |
| Basic | 50% |
| Premium | 45% |
| Business | 30% |
| Enterprise | 15% |

**Hint**

To insert a column, right-click on the Scenario1 table > *Insert* > *Table columns to the left*.

5.

We must update the inputs for our Projected Upsell Amount formula.

* Change the Upsell Opportunity formula to a SUMIF() function that calculates the Current Upsell $ for each Subscription Type.
* Add in a row total using the *Table Design* feature.

**Hint**

* The Upsell Opportunity formula should look like this:
* =SUMIF(\_\_\_\_,\_\_\_\_,Sales[Current Upsell $]).
* The Projected Upsell Amount formula should look like this: =[@[Conversion Rates]]\*[\_\_\_\_]
* To add the row total, check *Total Rows* in the *Table Design*.

6.

**What is the total Projected Upsell Amount? Format your answer as a currency with 2 decimals (i.e. $10,000.00).**

$15945.70

**Hint**

1. The formula for Upsell Opportunity should be: =SUMIF(Sales[Subscription Type],[@[Subscription Type]],Sales[Current Upsell $])

=[@[Upsell Opportunity]]\*[@[Conversion Rates]]

* The final table should look like this:

| **Subscription Type** | **Upsell Opportunity** | **Conversion Rates** | **Projected Upsell Amount** |
| --- | --- | --- | --- |
| Basic | $ 18,350.00 | 50% | $ 9,175.00 |
| Premium | $ 8,460.00 | 45% | $ 3,807.00 |
| Business | $ 8,475.00 | 30% | $ 2,542.50 |
| Enterprise | $ 2,808.00 | 15% | $ 421.20 |
| Total |  |  | $ \_\_\_\_ |

*If you're still stuck, review the solution in 3\_1\_scenario\_analysis.xlsx from the Workbooks folder.*

**Using Goal Seek**

1.

In order for *Goal Seek* to work, we need to construct a scenario model. We will create a new table and construct our scenario model, then run the analysis tool.

* Continue working in the Scenario Analysis worksheet.
* Insert a table in A9 of your worksheet and name it "Scenario2".

**Hint**

* Click on *Table* under the *Insert* ribbon and then click *OK*.
* Type in "Scenario2" for the *Table Name* under the *Table Design* ribbon.

2.

First, let's find the last month's sales to have a base for our scenario model.

* Create a new column called "Sales Last Month" that uses SUMIF() and MAX() to calculate the Sales Amount for the last Sales Month from the data in the Account Sales History sheet.
* Format this as a $ with 0 decimals.

**Hint**

* The formula for Sales Last Month should look like this:
* =SUMIF(Sales[\_\_\_\_],MAX(Sales[\_\_\_\_]),Sales[Sales Amount])

3.

Now we need to construct our formula.

* Create a new column in the table called "Growth Rate" and insert any random percentage you feel like.
  + Format this as a %
* Create a formula in a new column called "Sales Target" that calculates how much sales would be given the Sales Last Month and the Growth Rate
  + Format this as a $ with 0 decimals.

**Hint**

* Remember that a growth rate calculation needs to be 1 + r.
* The Sales Target formula should look like this: =\_\_\_\_\*(1+\_\_\_\_]

4.

The Sales Target probably looks strange right now because the growth rate is currently just a random number.

* Use *Goal Seek* to find what the Growth Rate needs to be if Sales Target = $100,000.

**Hint**

* Click on *Data* > *What-If Analysis* > *Goal Seek*.
* Set the Sales Target cell to 100000.
* Reference the Growth Rate cell in the *By changing cell* section.

5.

**What does the growth rate need to be in order to hit $100,000 in monthly sales? Format your answer as a percentage with 0 decimals (i.e. 5%).**

**24%**

**Hint**

* The formula for Sales Last Month should be: =SUMIF(Sales[Sales Month],MAX(Sales[Sales Month]),Sales[Sales Amount])
* The formula for Sales Target should be: =[Sales Last Month]\*(1+[Growth Rate])

*If you're still stuck, review the solution in 3\_2\_goal\_seek.xlsx from the Workbooks folder.*

**What-if analysis with Scenario Manager**

1.

First, let's set up a new table for our analysis. Since Basic subscriptions are the free product version, we'll leave them out.

* Continue working in the *Scenario Analysis* worksheet.
* Insert a new table in A13 and name it "Scenario3".
* Create the two columns and add the values as per the table below:

| **Subscription Type** | **License Price** |
| --- | --- |
| Premium | $ 10.00 |
| Business | $ 25.00 |
| Enterprise | $ 23.00 |

**Hint**

* Click on *Table* under the *Insert* ribbon, then click *OK*.
* Type in "Scenario3" for the *Table Name* under the *Table Design* ribbon.

2.

We must find the Licenses Bought for each Subscription Type.

* Create a new column called "Licenses Bought" that uses SUMIFS() and MAX() that can add all the Licenses Bought in the last Sales Month for each Subscription Type.

**Hint**

* The Licenses Bought formula look like this:
* =SUMIFS(Sales[Licenses Bought],Sales[Sales Month],MAX(\_\_\_\_),Sales[\_\_\_\_],[@[\_\_\_\_]])

3.

Finally, we need to create our calculation for the scenario analysis.

* Create a new column called "Projected Sales" that finds the sales amount based on the License Price and Licenses Bought
* Add a row total at the bottom.

**Hint**

* The Projected Sales formula should look like this: =[@[Licenses Bought]]\*[@[License Price]]
* To add the row total, check *Total Rows* in the *Table Design*.

4.

Nice! Now we're going to create two different scenarios to reflect proposed price changes.

* Add a scenario called "Current" that changes the License Price:
  + Premium = $10
  + Business = $25
  + Enterprise = $23
* Add a scenario called "High" that changes the License Price:
  + Premium = $15
  + Business = $35
  + Enterprise = $33

**Hint**

To add scenarios to the *Scenario Manager*:

* Click *Data* > *What-If Analysis* > *Scenario Manager*, then click on *Add*.
* Add the corresponding *Scenario Name* from the table given.
* Set the cells for Licenses Price in the *Changing Cells*, then click *OK*.
* Type in the values for each cell, then click *OK*.
* Repeat this for each scenario: Current and High.

| **Scenario Name** | **Premium** | **Business** | **Enterprise** |
| --- | --- | --- | --- |
| Current | 10 | 25 | 23 |
| High | 15 | 35 | 33 |

5.

Click on *Show* to run the various scenarios. Take your time to review how the Projected Sales change.

**Hint**

Make sure the *Scenario Manager* is open.

6.

We can also export a summary of all the results to make it easier to compare.

* Create a summary of results for the row total in Projected Sales.
* Find the difference in total Projected Sales between the Current scenario and the High scenario.

**Hint**

To create the summary table:

* In the *Scenario Manager* window click on *Summary…*.
* Select the *Scenario summary* report type.
* Reference the row total cell for Projected Sales and click *OK*.
* This will create a new *worksheet* called *Scenario Summary*.
* To find the difference, simply subtract the results for High by the results for Current.

7.

**What is the difference between the projected sales for the current scenario and the high scenario? Format your answer as a currency with 2 decimals (i.e. $10,000.00).**

$35390.00

Hint

* The Licenses Bought formula should be: =SUMIFS(Sales[Licenses Bought],Sales[Sales Month],MAX(Sales[Sales Month]),Sales[Subscription Type],[@[Subscription Type]])
* The Projected Sales formula should be: =[@[Licenses Bought]]\*[@[License Price]]
* The summary table should look like this:

| **Scenario Summary** |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | Current Values: | Current | High |
| Changing Cells: |  |  |  |  |
|  | $B$14 | $10.00 | $10.00 | $15.00 |
|  | $B$15 | $25.00 | $25.00 | $35.00 |
|  | $B$16 | $23.00 | $23.00 | $33.00 |
| Result Cells: |  |  |  |  |
|  | $D$17 | $ 80,305.00 | $ 80,305.00 | $ 115,695.00 |

**Sensitivity analysis with Data Tables**

1.

Let's perform our sensitivity analysis based on the Projected Sales. We will create a new list of prices that the *Data Table* tool will plug into our formula. **DO NOT** put this into a table. Find an open space in the Scenario Analysis worksheet.

* Create a new list of license prices starting in cell A21, ranging from $12.50 to $25.00 at $2.50 intervals.
* Navigate to cell B20 and reference the Projected Sales for Premium subscriptions.
* **Hint**
* Your new data should look like this:

|  | **=D14** |
| --- | --- |
| $ 12.50 |  |
| $ 15.00 |  |
| $ 17.50 |  |
| $ 20.00 |  |
| $ 22.50 |  |
| $ 25.00 |  |

2.

Run the scenario analysis with *Data Table* by changing the License Price for Premium subscriptions from the Scenario3 table.

**Hint**

To run the analysis with *Data Table*

* Highlight the entire table from cell A20 to B26.
* Click on *Data* > *What-If Analysis* > *Data Table…*.
* Reference the License Price cell (B14) for Premium subscriptions in *Column input cell*, then click *OK*.

3.

When prices go up, demand goes down. This is known as **elasticity of demand**. Let's add this assumption to our calculation.

* Insert a column to the left of Projected Sales on the Scenario3 table called "Elasticity".
* Fill in the new column with -5% for "Premium", -3% for "Business", and -2% for "Enterprise" subscription types.
* Format the column as a % with 2 decimals.

**Hint**

* Select the header of the column Projected Sales.
* Under the *Home* tab, click on *Insert*, then click on *Insert Table Columns to the Left*.

4.

Update the Projected Sales formula to consider the negative impact of the Elasticity of demand on sale.

* *Hint: Remember to add 1 when multiplying a rate of change.*

**Hint**

* The new Projected Sales formula should look like this: =[@[Licenses Bought]]\*[@[License Price]]\*(1+\_\_\_\_).

5.

We can run another scenario analysis with these two variables to see their relationship. We'll need to move some things around first.

* Delete the second column of your *Data Table* analysis.
* Reference the Projected Sales for “Premium” subscriptions in cell A20.
* In B20, start a range of percentages from -1.25% that double until -80.00% in cell H20.
* Run the scenario analysis with *Data Table* by changing the License Price and Elasticity for "Premium" subscriptions.

**Hint**

Your new table should look like this:

| **=Cell Reference** | **-1.25%** | **-2.50%** | **-5.00%** | **-10.00%** | **-20.00%** | **-40.00%** | **-80.00%** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| $ 12.50 |  |  |  |  |  |  |  |
| $ 15.00 |  |  |  |  |  |  |  |
| $ 17.50 |  |  |  |  |  |  |  |
| $ 20.00 |  |  |  |  |  |  |  |
| $ 22.50 |  |  |  |  |  |  |  |
| $ 25.00 |  |  |  |  |  |  |  |
| $ 25.00 |  |  |  |  |  |  |  |

To run the analysis with *Data Table*

* Highlight the entire table, from A20 to H26.
* Click on *Data* > *What-If Analysis* > *Data Table…*.
* Reference the Elasticity cell for Premium subscriptions in *Row input cell*.
* Reference the License Price cell for Premium subscriptions in *Column input cell*, then click *OK*.

6.

Great work! Let's format the *Data Table* and add some conditional formatting to make this easier to read.

* Ensure any values that are not percentages are $ with 2 decimal places
* Add the title "Elasticity of Demand - Premium" above the column headers.
* Set the conditional formatting to highlight the rows in the *Data Table* that are less than “$21,014”.

**Hint**

* Select all the monetary values in the table from cell B21 to H26.
* Click on *Home* > *Conditional Formatting* > \_Highlight Cells Rules > \_Less Than…\_.
* Type in 21014 and then click *OK*.

7.

**At which elasticity of demand do projected sales first become less than $21,014?**

* -5.00%
* -10.00%
* -20.00%
* -40.00%
* -80.00%

**Hint**

* The updated Projected Sales formula should be: =[@[Licenses Bought]]\*[@[License Price]]\*(1+[@[Elasticity]])
* The table should look like this before you run the *Data Table* analysis:

| **=E14** | **-1.25%** | **-2.50%** | **-5.00%** | **-10.00%** | **-20.00%** | **-40.00%** | **-80.00%** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| $ 12.50 |  |  |  |  |  |  |  |
| $ 15.00 |  |  |  |  |  |  |  |
| $ 17.50 |  |  |  |  |  |  |  |
| $ 20.00 |  |  |  |  |  |  |  |
| $ 22.50 |  |  |  |  |  |  |  |
| $ 25.00 |  |  |  |  |  |  |  |

*If you're still stuck, review the solution in 3\_4\_data\_table.xlsx from the Workbooks folder.*