Consolidating Data from Multiple Worksheets in a Single Worksheet

To summarize and report results from data on multiple worksheets, you can consolidate the data from each separate worksheet into one worksheet (or master worksheet). The worksheets you consolidate can be in the same workbook as the master worksheet or in other workbooks. When you consolidate data in one worksheet, you can more easily update and aggregate it on a regular basis.

For example, if you have a worksheet of business expense figures for each month, you might use data consolidation to summarize these figures on a summary expense worksheet (aka the ***master worksheet***). This master worksheet might contain totals and averages as well as other information.

There are four main ways to consolidate data:

- **Consolidate by position**: Use this method when the data from multiple source areas is **arranged in the same order** and uses the **same row and column labels**. For example, when you have a series of expense worksheets that are created from the same template.

- **Consolidate by category**: Use this method when the data from multiple source areas is **arranged differently**, but uses the **same row and column labels**. For example, when you have a series of inventory worksheets for each month that use the same layout, but each worksheet contains different items or a different number of items.

- **Consolidate by formula:** Use this method as an alternative to using the **Consolidate** command (Data tab→Data Tools group), which is required for both the Consolidate by position and Consolidate by category methods.

- **Consolidate by PivotTable:** Similarly, to Consolidate by Category, use this method when the data from multiple source areas is **arranged differently**, but uses the **same row and column labels**. Use Consolidate by PivotTable when you need more flexibility reorganizing categories than you can accomplish with the Consolidate by Category method.

Consolidate Data by Position

To consolidate data by position:

1. In each worksheet that contains the data that you want to consolidate, set up the data by doing the following:

   o Make sure that each range of data is in **list format**: each column has a **label** in the **first row** and contains similar facts, and there are **no blank rows or columns** within the list.

   o Put each range on a **separate worksheet**, but *do not* put any ranges on the **worksheet where you plan to put the consolidation**.

   o Make sure that each range has the **same layout**.

2. In the master worksheet, click the **upper-left cell** of the area where you want the consolidated data to appear.
   **Note:** To avoid overwriting existing data in the destination worksheet with the data you are consolidating, make sure that you leave enough cells to the right and below this cell for the consolidated data.

3. On the **Data** tab, in the **Data Tools** group, click **Consolidate**.
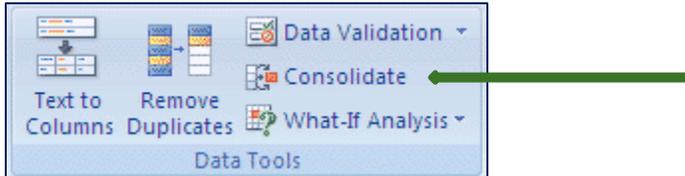
The **Consolidate** dialog box will appear.

4. In the **Function** box, click the summary function that you want Microsoft Excel to use to consolidate the data.
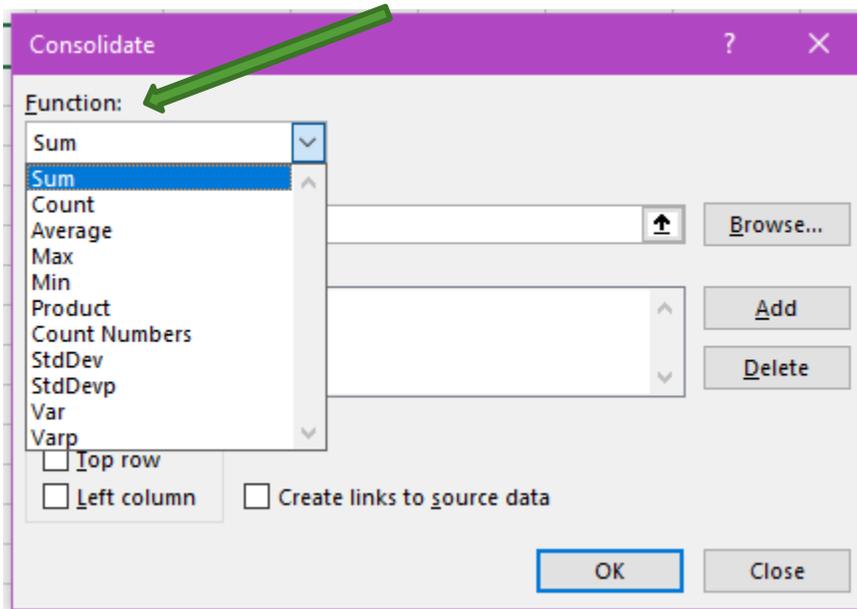
5. If the worksheet that contains the data that you want to consolidate is in the current workbook, do the following:

   o In the **Reference** box, click the **Collapse Dialog** button to select the data in the worksheet.

   o Click the worksheet that contains the data you want to consolidate, select the data, and then click the **Expand Dialog** button.

6. If the worksheet that contains the data that you want to consolidate is in another workbook, click **Browse** to locate that workbook, and then click **OK** to close the **Browse** dialog box. The file path is entered in the **Reference** box followed by an exclamation point.

7. In the **Consolidate** dialog box, click **Add**, and then repeat steps 5 and 6 to add all of the ranges that you want.

8. Specify how you want to update the consolidation, by doing one of the following:

   To set up the consolidation so that it updates *automatically* when the source data in another workbook changes, select the **Create links to source data** check box.

   Important! Select this check box **only** if the worksheet that contains the data is in **another workbook**. Once you select this check box, you won't be able to change which cells and ranges are included in the consolidation.

To set up the consolidation so that you can update the consolidation *manually* by changing the included cells and ranges, clear the **Create links to source data** check box.

Tip: If you frequently consolidate data, it might help to base your worksheets on a worksheet template that uses a consistent layout.

Consolidate Data by Position | Practice Exercise

**Instructions:** In this exercise, you will consolidate data from two worksheets by completing the following steps.

1) Open Excel, click **Blank workbook**. Save the workbook as *ConsolData*, and complete the following steps.

2) Type the following data on **Sheet1** starting with **cell A1**. Use the **Accounting** number format and adjust the column widths as needed.

|	A	B	C	D
1	Profit	Expenses	Budget	Total
2	$ 10.00	$ 5.00	$ 55.00	$ 60.00
3	$ 20.00	$ 10.00	$ 65.00	$ 75.00
4	$ 30.00	$ 15.00	$ 75.00	$ 90.00
5	$ 40.00	$ 20.00	$ 85.00	$ 105.00
6	$ 50.00	$ 25.00	$ 95.00	$ 120.00

3) Insert a new sheet after Sheet1. The new worksheet should be named **Sheet2** by default. Type the following data on **Sheet2**: Once again, use the Accounting number format and adjust column widths as needed.

	A	B	C	D
1	Profit	Expenses	Budget	Total
2	$ 60.00	$ 30.00	$ 110.00	$ 140.00
3	$ 70.00	$ 40.00	$ 120.00	$ 150.00
4	$ 80.00	$ 50.00	$ 125.00	$ 155.00
5	$ 90.00	$ 60.00	$ 135.00	$ 165.00
6	$ 100.00	$ 70.00	$ 200.00	$ 230.00

4) Insert a blank worksheet after Sheet2. The new worksheet should be named **Sheet3** by default. Rename the sheet **ConsolPosition**.

5) Make cell **A1** in **ConsolPosition** the active cell.

6) On the **Data** tab in the *Data Tools* group, click **Consolidate**. The **Consolidate** dialog box appears.

Sum function →

Areas to be consolidated →

Check box Indicates labels in first row →
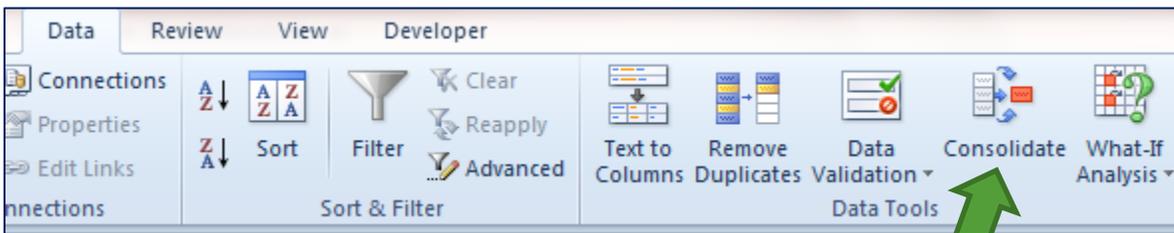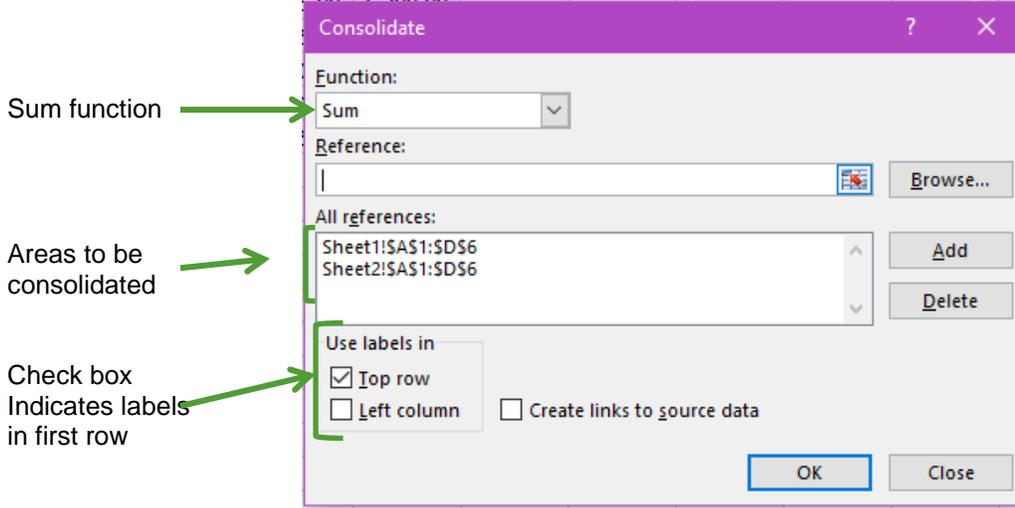
7) In the **Function** list, select the summary function that you want Excel to use to consolidate the data. In this exercise, use **Sum**.

8) In the **Reference** box, type each source area you want to consolidate, and then click **Add.**
In this exercise, type the first area, **Sheet1!$A$1:$C$6**, and then click **Add.** Next, type the second area, **Sheet2$A$1:$C$6** and then click **Add**. Repeat this step for all of the source areas that you want to consolidate.

9) Under **Use labels in**, select the **Top row** check box because in this exercise there are labels on the first row.
10) Click **OK**.

After consolidation, **ConsolPosition** (the *Master worksheet*), should look like the example below.

	A	B	C	D
1	Profit	Expenses	Budget	Total
2	$ 70.00	$ 35.00	$ 165.00	$ 200.00
3	$ 90.00	$ 50.00	$ 185.00	$ 225.00
4	$ 110.00	$ 65.00	$ 200.00	$ 245.00
5	$ 130.00	$ 80.00	$ 220.00	$ 270.00
6	$ 150.00	$ 95.00	$ 295.00	$ 350.00

For additional practice, try selecting different source areas and functions.
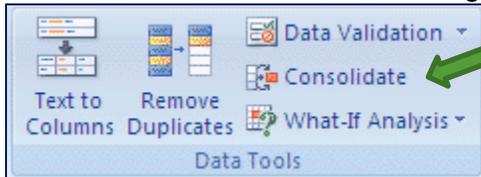
Consolidate Data by Category

To consolidate data by category:

1. In each worksheet that contains the data that you want to consolidate, set up the data by doing the following:

    o Make sure that each range of data is in list format: each column has a label in the first row and contains similar facts, and there are no blank rows or columns within the list.

    o Put each range on a separate worksheet, but don't put any ranges on the worksheet where you plan to put the consolidation.

    o Make sure that each range has the same layout.

2. In the master worksheet, click the upper-left cell of the area where you want the consolidated data to appear.
   Note: To avoid overwriting existing data in the destination worksheet with the data you are consolidating, make sure that you leave enough cells to the right and below this cell for the consolidated data.

3. On the **Data** tab, in the **Data Tools** group, click **Consolidate**.

4. In the **Function** box, click the summary function that you want Excel to use to consolidate the data.

5. If the worksheet is in another workbook, click **Browse** to locate the file, and then click **OK** to close the **Browse** dialog box.
   The file path is entered in the **Reference** box followed by an exclamation point.

6. If the worksheet is in the current workbook, do the following: Click the reference button to the right of the **Reference** box, to open the **Consolidate - Reference** dialog box.
   • Open the worksheet that contains the data you want to consolidate, select the data, and then click the button to the right of the box.

7. In the **Consolidate** dialog box, click **Add**, and then repeat steps 6 and 7 to add all of the ranges that you want.

8. Decide how you want to update the consolidation. Do one of the following:

    • To set up the consolidation so that it updates automatically when the source data changes,

      select the **Create links to source data** check box.

      Important   You can only select this check box if the worksheet is in another workbook. Once you select this check box, you won't be able to change which cells and ranges are included in the consolidation.

    • To set up the consolidation so that you can update the consolidation manually by changing the included cells and ranges, clear the **Create links to source data** check box.

9. Select the check boxes under **Use labels in** that indicate where the labels are located in the source ranges: either the **Top row**, the **Left column**, or both.

Notes:

- Any labels that don't match up with labels in the other source areas result in separate rows or columns in the consolidation.

- Make sure that any categories that you don't want to consolidate have unique labels that appear in only one source range.

Consolidate Data by Position | Practice Exercise

Instructions: Insert a new blank Excel worksheet to the right of **ConsolPosition** and complete the following steps.

1) Type the following data on **Sheet4** (the new blank worksheet) starting in cell **A1.** Leave **Rows 7** and **8** blank.

	A	B	C	D
1	Profit	Expenses	Budget	Total
2	$ 10.00	$ 5.00	$ 55.00	$ 60.00
3	$ 20.00	$ 10.00	$ 65.00	$ 75.00
4	$ 30.00	$ 15.00	$ 75.00	$ 90.00
5	$ 40.00	$ 20.00	$ 85.00	$ 105.00
6	$ 50.00	$ 25.00	$ 95.00	$ 120.00
7				
8				
9	Profit	Expenses	Budget	Total
10	$ 60.00	$ 30.00	$ 110.00	$ 140.00
11	$ 70.00	$ 40.00	$ 120.00	$ 150.00
12	$ 80.00	$ 50.00	$ 125.00	$ 155.00
13	$ 90.00	$ 60.00	$ 135.00	$ 165.00
14	$ 100.00	$ 70.00	$ 200.00	$ 230.00

2) Insert a blank worksheet after Sheet4. The new worksheet should be named **Sheet5** by default. Rename the worksheet **ConsolCateg**

3) Make cell **A1** of **ConsolCateg** the active cell.

4) On the **Data** tab, click **Consolidate** in the *Data Tools* group. The **Consolidate** window appears.

5) In the **Function** list, select **Max**.

6) In the **Reference** box, type the first area, **Sheet4$A$1:$D$6** and then click **Add.** Type the second area, **Sheet4!$A$10:$D$14** and then click **Add**. Repeat step 6 for all areas that you want to consolidate.

7) Under **Use labels in**, click the **Top row** check box.

Note: Click **Create links to source data** check box if you would like Excel to update your consolidation table automatically when the source data changes. Keep in mind, however, that you cannot create links when source and destination areas are on the same sheet.

8) Click **OK**.

After consolidation, **ConsolCateg** (the *Master worksheet*), should look like the example below.

◢	A	B	C	D
1	Profit	Expenses	Budget	Total
2	$ 60.00	$ 30.00	$110.00	$140.00
3	$ 70.00	$ 40.00	$120.00	$150.00
4	$ 80.00	$ 50.00	$125.00	$155.00
5	$ 90.00	$ 60.00	$135.00	$165.00
6	$100.00	$ 70.00	$200.00	$230.00

For additional practice, try selecting different source areas and functions.

Consolidate Data by Formula

In addition to consolidating data by position or by category, you can also consolidate data by using formulas.

To use a formula to consolidate data:

1. On the master worksheet, copy or enter the column or row labels that you want for the consolidated data.

2. Click a cell that you want to contain consolidated data.

3. Type a formula that includes a cell reference to the source cells on each worksheet that contains data that you want to consolidate. Regarding cell references, do one of the following:

   - **If the data to consolidate is in different cells on different worksheets**

     o Enter a formula with cell references to the other worksheets, one for each separate worksheet. For example, to consolidate data from worksheets named Sales (in cell B4), HR (in cell F5), and Marketing (in cell B9), in cell A2 of the master worksheet, you would enter the following:

     Tip: To enter a cell reference, such as Sales!B4, in a formula without typing, type the formula up to the point where you need the reference, click the worksheet tab, and then click the cell.

   - **If the data to consolidate is in the same cells on different worksheets**

     o Enter a formula with a 3-D reference that uses a reference to a range of worksheet names. For example, to consolidate data in cells A2 from Sales through Marketing inclusive, in cell A2 of the master worksheet you would enter the following:

     Note: If the workbook is set to automatically calculate formulas, a consolidation by formula always updates automatically when the data in the separate worksheets change.

Consolidate Data Using a PivotTable Report

You can create a PivotTable report from multiple consolidation ranges. This method is similar to consolidating by category, but it offers more flexibility to reorganize the categories. For more information about pivot tables, see ***Create a PivotTable to Analyze Worksheet Data***.

Guidelines for Selecting Source Areas for a Consolidation Table

Use the following guidelines when you specify the source areas of the data that you want to summarize in the **Reference** box of the **Consolidate** dialog box:

- When the sources and destination are on the **same worksheet**, use *cell references*. Example: ***A2:C2***

- When the sources and destination are on **different worksheets**, use *sheet and cell references*. Example: ***Sheet1:$A$2:$C$2***
  - The worksheet tab name, ***Sheet1***, is followed by a colon (**:**), followed by *absolute* cell references (**$A$2:$C$2**).

- When the sources and destination are in **different workbooks**, use **book, sheet, and cell references**. Example: ***[Expenses.xlsx]Annual!C10:C25***.
  - The workbook name, ***Expenses.xlsx***, appears in square brackets (**[ ]**), followed by the worksheet name, an exclamation point (**!**), and the cell reference (i.e., C10:C25).

  Note: If the name of the other worksheet or workbook contains nonalphabetical characters, you must enclose the name (or the path) within single quotation marks.

- When the sources and destination are in **different workbooks** in **different locations** (i.e., different computer drives), use the **full path, book, sheet, and cell references**. You can also type the complete path, workbook name, and sheet name for the source area. Type an exclamation point following the sheet name, and then type the cell reference or name of the source area. Example: ***=SUM('C:\Reports\[Expenses.xlsx]Annual'!C10:C25)*** Note:

References

Microsoft. 2017. "How to Consolidate Multiple Worksheets to a Single Sheet in Excel." https://support.microsoft.com/en-us/help/214270/how-to-consolidate-multiple-worksheets-to-a-single-sheet-in-excel (accessed July 12, 2017).

Handout created by Marsha Ann Tate, Ph.D., Tate Research & Training Services, 2017; last updated 15 April 2020.

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