CHAPTER 8
INFOCUS

DATA CONSOLIDATION

Data Consolidation refers to the process of combining the data from separate worksheets into one. Excel recognises that this is the sort of process that could be performed frequently, and so provides a feature that will create the consolidation for you.

You can combine the data in a variety of ways, including calculating the total, average, maximum, or minimum figures.

In this session you will:

- ✓ gain an understanding of the data consolidation process in ***Excel***
- ✓ learn how to consolidate data from workbooks with identical layouts
- ✓ learn how to create an outlined consolidation
- ✓ learn how to consolidate data from workbooks with different layouts.

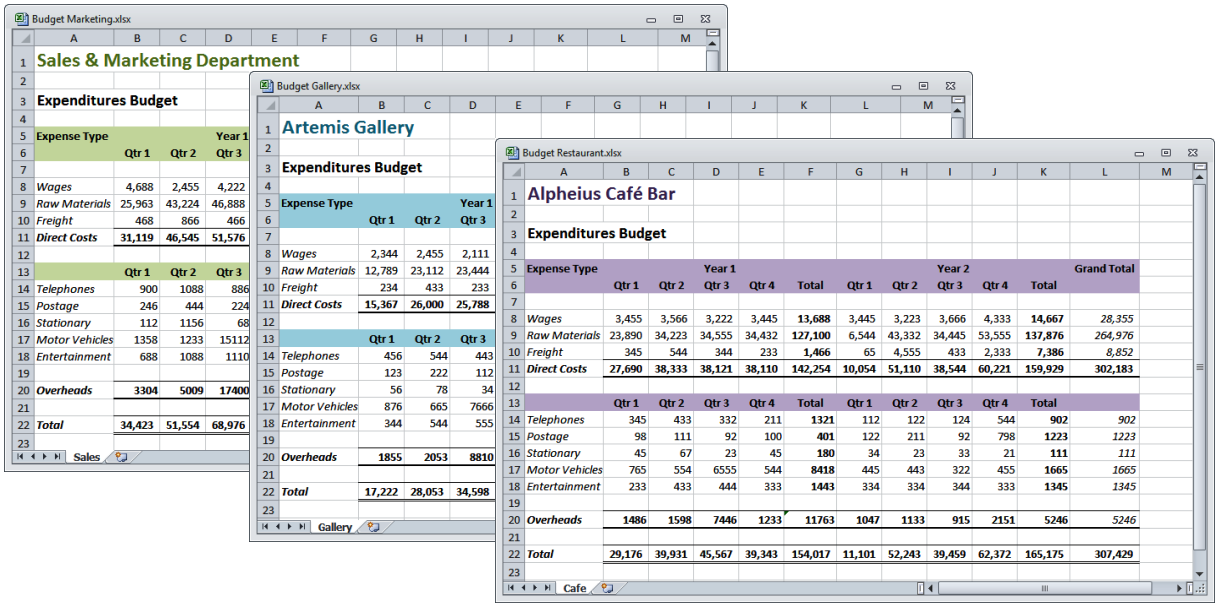
UNDERSTANDING DATA CONSOLIDATION

Excel is quite often used for ***consolidating data***. For example, in a budgeting scenario, Excel may be used to collect budget data for several departments and then consolidate the data into one overall group or company budget. ***Data consolidation*** is a tool within Excel that allows you to gather data from other workbooks and to consolidate them into one workbook.

Consolidating Data from Many Workbooks into One Workbook

The data consolidation tool in Excel is used to consolidate data from many, usually smaller workbooks (known as ***source*** workbooks) into one workbook (known as the ***destination*** workbook).

Consider a budget example, where three departments are each given a standard budget workbook to fill in with data.



Budget Marketing.xlsx

Sales & Marketing Department			
Expenditures Budget			
Expense Type			Year 1
	Qtr 1	Qtr 2	Qtr 3
Wages	4,688	2,455	4,222
Raw Materials	25,963	43,224	46,888
Freight	468	866	466
Direct Costs	**31,119**	**46,545**	**51,576**
	Qtr 1	Qtr 2	Qtr 3
Telephones	900	1088	886
Postage	246	444	224
Stationary	112	1156	68
Motor Vehicles	1358	1233	15112
Entertainment	688	1088	1110
Overheads	**3304**	**5009**	**17400**
Total	**34,423**	**51,554**	**68,976**

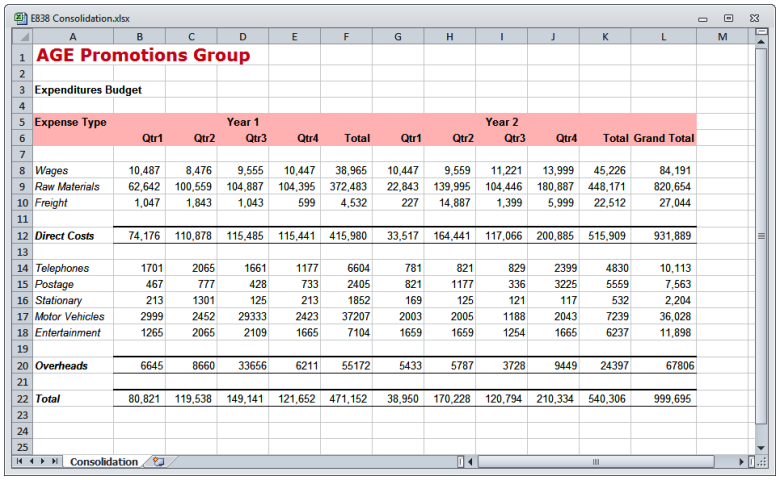
Budget Gallery.xlsx

Artemis Gallery			
Expenditures Budget			
Expense Type			Year 1
	Qtr 1	Qtr 2	Qtr 3
Wages	2,344	2,455	2,111
Raw Materials	12,789	23,112	23,444
Freight	234	433	233
Direct Costs	**15,367**	**26,000**	**25,788**
	Qtr 1	Qtr 2	Qtr 3
Telephones	456	544	443
Postage	123	222	112
Stationary	56	78	34
Motor Vehicles	876	665	7666
Entertainment	344	544	555
Overheads	**1855**	**2053**	**8810**
Total	**17,222**	**28,053**	**34,598**

Budget Restaurant.xlsx

Alpheius Café Bar											
Expenditures Budget											
Expense Type	Year 1					Year 2					Grand Total
	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Total	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Total	
Wages	3,455	3,566	3,222	3,445	**13,688**	3,445	3,223	3,666	4,333	**14,667**	*28,355*
Raw Materials	23,890	34,223	34,555	34,432	**127,100**	6,544	43,332	34,445	53,555	**137,876**	*264,976*
Freight	345	544	344	233	**1,466**	65	4,555	433	2,333	**7,386**	*8,852*
Direct Costs	**27,690**	**38,333**	**38,121**	**38,110**	**142,254**	**10,054**	**51,110**	**38,544**	**60,221**	**159,929**	**302,183**
	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Total	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Total	
Telephones	345	433	332	211	**1321**	112	122	124	544	**902**	*902*
Postage	98	111	92	100	**401**	122	211	92	798	**1223**	*1223*
Stationary	45	67	23	45	**180**	34	23	33	21	**111**	*111*
Motor Vehicles	765	554	6555	544	**8418**	445	443	322	455	**1665**	*1665*
Entertainment	233	433	444	333	**1443**	334	334	344	333	**1345**	*1345*
Overheads	**1486**	**1598**	**7446**	**1233**	**11763**	**1047**	**1133**	**915**	**2151**	**5246**	*5246*
Total	**29,176**	**39,931**	**45,567**	**39,343**	**154,017**	**11,101**	**52,243**	**39,459**	**62,372**	**165,175**	**307,429**

The common feature in all of these is a consistent layout. With this consistent layout it is possible to input the data from the three workbooks into a new, destination workbook, one at a time. Each time the data from a workbook is inputted it is added to data that is already there. As a result this type of consolidation exercise will yield a destination workbook where the data is in exactly the same layout as the source workbooks except that it has been summed as now acts as the grand total of the three departments.



E838 Consolidation.xlsx

AGE Promotions Group											
Expenditures Budget											
Expense Type	Year 1					Year 2					
	Qtr1	Qtr2	Qtr3	Qtr4	Total	Qtr1	Qtr2	Qtr3	Qtr4	Total	Grand Total
Wages	10,487	8,476	9,555	10,447	38,965	10,447	9,559	11,221	13,999	45,226	84,191
Raw Materials	62,642	100,559	104,887	104,395	372,483	22,843	139,995	104,446	180,887	448,171	820,654
Freight	1,047	1,843	1,043	599	4,532	227	14,887	1,399	5,999	22,512	27,044
Direct Costs	74,176	110,878	115,485	115,441	415,980	33,517	164,441	117,066	200,885	515,909	931,889
Telephones	1701	2065	1661	1177	6604	781	821	829	2399	4830	10,113
Postage	467	777	428	733	2405	821	1177	336	3225	5559	7,563
Stationary	213	1301	125	213	1852	169	125	121	117	532	2,204
Motor Vehicles	2999	2452	29333	2423	37207	2003	2005	1188	2043	7239	36,028
Entertainment	1265	2065	2109	1665	7104	1659	1659	1254	1665	6237	11,898
Overheads	6645	8660	33656	6211	55172	5433	5787	3728	9449	24397	67806
Total	80,821	119,538	149,141	121,652	471,152	38,950	170,228	120,794	210,334	540,306	999,695

This is a fairly typical use of data consolidation in Excel. However, you can also input data from workbooks that don't have a similar layout.

CONSOLIDATING WITH IDENTICAL LAYOUTS

One way to ***consolidate*** data is to use worksheets with an ***identical layout*** and combine them to calculate the required figures. In this case the consolidation performs a layering operation, where the values in each worksheet are layered on top of each other until they can be totalled. You must specify the type of consolidation to be performed, such as sum or product.

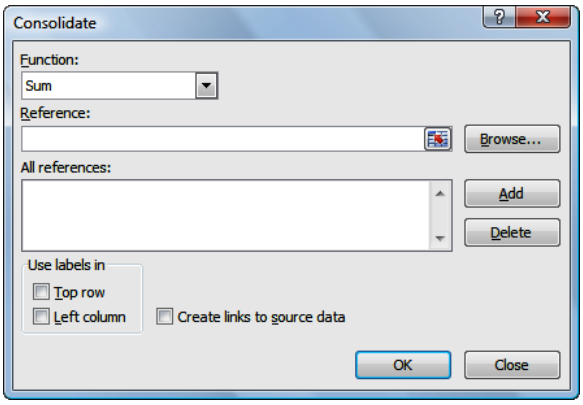
Try This Yourself:

Open File

Before starting this exercise you MUST open the file E838 Consolidation_1.xlsx...

1. Open the following *source* data workbooks (these have the data that will be consolidated – they all have an identical layout):
   Budget Admin.xlsx
   Budget Gallery.xlsx
   Budget Marketing.xlsx
   Budget Restaurant.xlsx
2. Return to ***E838 Consolidation_1.xlsx*** and click on cell ***B8*** (the top left corner of the consolidation area)
3. Click on the ***Data*** tab of the ***Ribbon*** and click on ***Consolidate*** in the ***Data Tools*** group, to display the ***Consolidate*** dialog box
4. Click in ***Reference***, click on the ***View*** tab on the ***Ribbon***, click on ***Switch Windows*** and select ***Budget Admin***
5. Select the range ***B8:L10*** and click on **[Add]** to add this reference to the list
6. Repeat steps ***4*** and ***5*** for ***Budget Marketing***, ***Budget Gallery*** and ***Budget Restaurant***
7. Click on **[OK]** to return to ***E838 Consolidation_1*** where the consolidation should have occurred

3



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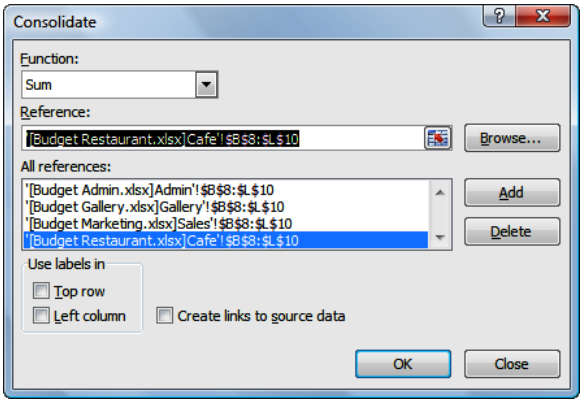

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	A	B	C	D	E	F	G
1	**AGE Promotions Group**						
2							
3	**Expenditures Budget**						
4							
5	**Expense Type**			**Year 1**			
6		**Qtr1**	**Qtr2**	**Qtr3**	**Qtr4**	**Total**	**Qtr1**
7							
8	*Wages*	12,742	11,488	11,555	12,892	48,677	12,935
9	*Raw Materials*	75,605	126,191	127,332	127,627	456,755	28,487
10	*Freight*	1,305	2,309	1,309	743	5,666	285
11							
12	***Direct Costs***						
13							
14							
15							

For Your Reference…

To ***perform*** a ***consolidation***:

1. Open the destination and the source workbooks
2. Click on ***Consolidate***
3. Set up references to the source workbooks and click on **[OK]**

Handy to Know…

- When consolidating from workbooks with an identical layout, you must position the cell pointer in the top left corner of the destination workbook where you want the data to be incorporated, prior to clicking on ***Consolidate***.

CREATING AN OUTLINED CONSOLIDATION

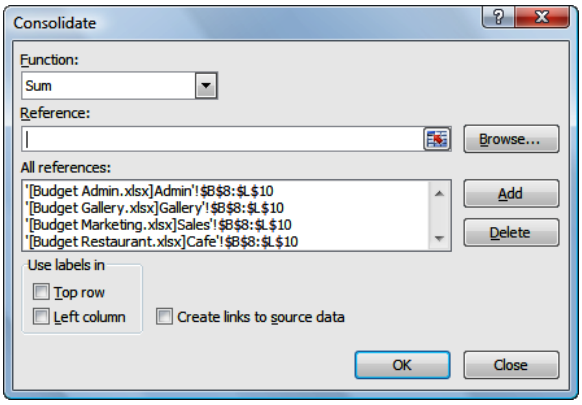
The ***Consolidate*** dialog box contains an option that allows you to ***create links to the source data***. With this operation *all* of the data from the source workbooks is brought into the destination file and an ***outlining*** effect is applied which gives the impression that the data has been layered. The outlines can be expanded or collapsed to show either the full data or just the summed totals.

Try This Yourself:

Open File *Before starting this exercise you MUST open the file E838 Consolidation_2.xlsx...*

1. Click on ***B8*** – the top left corner of the consolidation area
2. On the ***Data*** tab of the ***Ribbon***, click on ***Consolidate*** in the ***Data Tools*** group, to display the ***Consolidate*** dialog box – the ***References*** have already been completed in this example
3. Click on ***Create links to source data*** until it appears with a tick
4. Click on **[OK]** to perform the consolidation – an *outlined* consolidation will be created
5. Click on the three plus signs at the left of the worksheet to expand the rows and to see all of the data from the source workbooks

2



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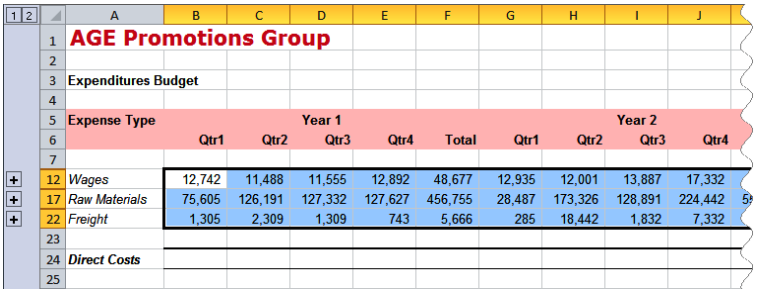

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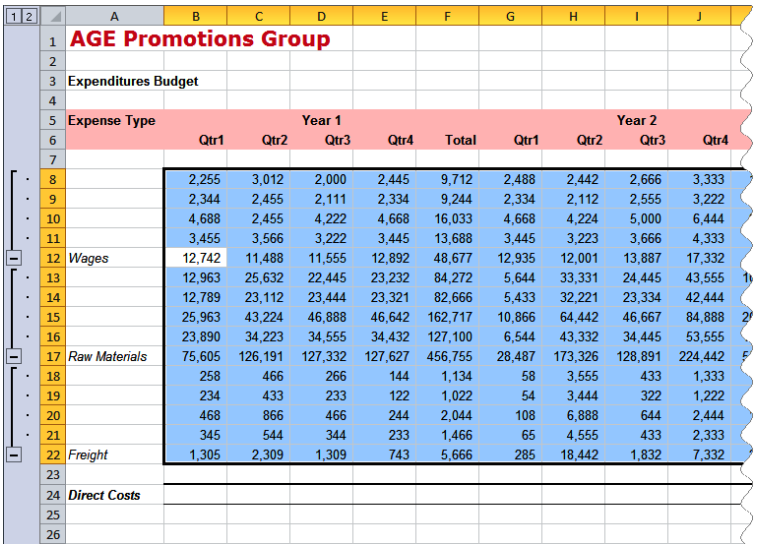


For Your Reference…

To ***create*** an ***outlined consolidation***:

1. Create the consolidation in the normal way
2. In the ***Consolidate*** dialog box, click on ***Create links to source data*** until it appears ticked
3. Click on **[OK]**

Handy to Know…

- Take care not to run the consolidation again. Each time you run it Excel will create an outline within an outline – it gets very, very messy!

CONSOLIDATING WITH DIFFERENT LAYOUTS

There will be occasions where the layout of each worksheet may vary a little from each of the others. Examples of this include different expense types or budget items, or variations in the type of products being sold. Excel can review the content of the ranges automatically to check the row and/or column headings, and then plot the layout and ***consolidate*** the data for you.

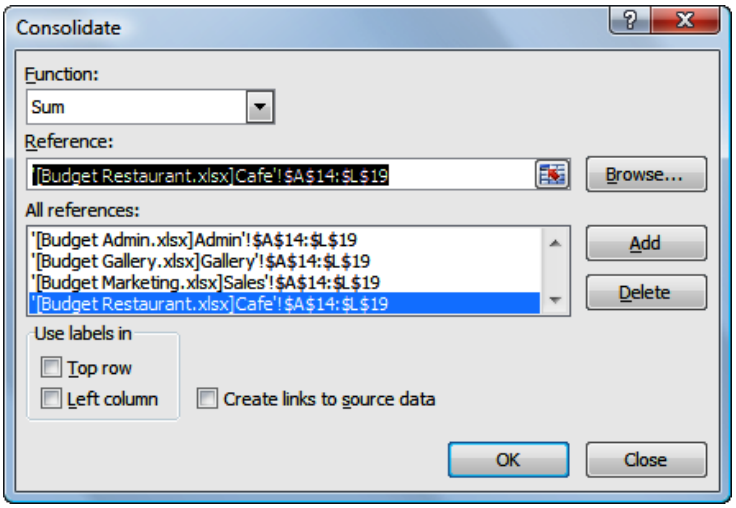
Try This Yourself:

Open File *Before starting this exercise you MUST open the file E838 Consolidation_3.xlsx...*

1. Open the following *source* data workbooks:
   Budget Admin.xlsx
   Budget Gallery.xlsx
   Budget Marketing.xlsx
   Budget Restaurant.xlsx
2. Return to ***E838 Consolidation_3.xlsx*** and click on ***A14***
3. On the ***Data*** tab of the ***Ribbon***, click on ***Consolidate*** in the ***Data Tools*** group
4. Add the ***References*** as shown – note that they all have the same range reference
5. Click on ***Left column*** in ***Use labels in*** until it appears with a tick

   Excel will examine the labels in the first column and adjust the layout of the consolidation if there are variations between the worksheets…
6. Click on **[OK]**

   A row for Council Rates appears in the consolidation although it only appears in Budget Admin.xls



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	A	B	C	D	E	F	G	H	I
1	**AGE Promotions Group**								
2									
3	**Expenditures Budget**								
4									
5	**Expense Type**			Year 1					Year 2
6		Qtr1	Qtr2	Qtr3	Qtr4	Total	Qtr1	Qtr2	Qtr3
7									
8	*Wages*								
9	*Raw Materials*								
10	*Freight*								
11									
12	***Direct Costs***								
13									
14	*Telephones*	2268	2720	2215	1610	8813	1115	1165	1174
15	*Postage*	701	1110	651	1055	3517	1165	1610	569
16	*Stationary*	280	1390	170	280	2120	225	170	176
17	*Council Rates*	1125	1125	1125	1125	4500	1275	1275	1275
18	*Motor Vehicles*	3986	3228	38110	3189	48513	2670	2670	1732
19	*Entertainment*	1720	2720	2775	2220	9435	2215	2215	1820
20	***Overheads***								
21									
22	***Total***								
23									

6

For Your Reference…

To ***consolidate*** workbooks with ***different layouts***:

1. Set up the destination workbook in the normal way and display the ***Consolidate*** dialog box
2. Click on ***Left column*** in ***Use labels in*** until it appears with a tick and click on **[OK]**

Handy to Know…

- Creating consolidations can be tricky. You should ensure that your destination workbook has ample room to accommodate the layout variations that may be inserted from the source workbooks.

NOTES: