




Creating Subtotals

The Excel Subtotals feature provides a quick, easy way to group and summarize a range of data. Usually, you create subtotals with the SUM function, but you can also summarize data groups with functions such as COUNT, AVERAGE, MAX, and MIN. Subtotals cannot be used in a table structure. Before you can add subtotals to a table, you must first convert the data to a range and sort it. **OBJECTIVE** Kate wants you to group data by tours, with subtotals for the number of seats available and the number of seats reserved. You begin by converting the table to a range.

STEPS

1. **Click the Subtotals sheet tab, click any cell inside the table, click the Table Tools Design tab, click the Convert to Range button in the Tools group, then click Yes**
Before you can add the subtotals, you must first sort the data. You decide to sort it in ascending order, first by tour and then by departure date.
2. **Click the Data tab, click the Sort button in the Sort & Filter group, in the Sort dialog box click the Sort by list arrow, click Tour, then click the Add Level button, click the Then by list arrow, click Depart Date, verify that the order is Oldest to Newest, then click OK**
You have sorted the range in ascending order, first by tour, then by departure date.
3. **Click any cell in the data range, then click the Subtotal button in the Outline group**
The Subtotal dialog box opens. Here you specify the items you want subtotaled, the function you want to apply to the values, and the fields you want to summarize.
4. **Click the At each change in list arrow, click Tour, click the Use function list arrow, click Sum; in the Add subtotal to list, click the Seats Reserved and Seats Available check boxes to select them, if necessary, then click the Meals Included check box to deselect it**
5. **If necessary, click the Replace current subtotals and Summary below data check boxes to select them**
Your completed Subtotal dialog box should match Figure H-17.
6. **Click OK, then scroll down so row 90 is visible**
The subtotaled data appears, showing the calculated subtotals and grand total in columns G and H, as shown in Figure H-18. Notice that Excel displays an outline to the left of the worksheet, with outline buttons to control the level of detail that appears. The button number corresponds to the detail level that is displayed. You want to show the second level of detail, the subtotals and the grand total.
7. **Click the outline symbol **
The subtotals and the grand totals appear.
8. **Add your name to the center section of the footer, scale the worksheet width to print on one page, save, preview the worksheet, then print it**
9. **Close the workbook and exit Excel**

QUICK TIP

You can click the  button to hide or the  button to show a group of records in the subtotaled structure.

QUICK TIP

You can remove subtotals in a worksheet by clicking the Subtotal button and clicking Remove All. The subtotals no longer appear, and the Outline feature is turned off automatically.

▼ SKILLS REVIEW (CONTINUED)

5. Summarize table data.

- You want to enter a database function to average the annual salaries by branch, using the NY branch as the initial criterion. In cell E17, use the DAVERAGE function and click the top left corner of cell A1 twice to select the table and its header row as the Database, select cell G1 for the Field and select the range D16:D17 for the Criteria.
- Test the function further by entering the text **Philadelphia** in cell D17. When the criterion is entered, cell E17 should display 91480.
- Format cell E17 in Accounting format with no decimal places and the \$ symbol.
- Save the workbook.

6. Validation table data.

- Select the data in column E of the table and set a validation criterion specifying that you want to allow a list of valid options.
- Enter a list of valid options that restricts the entries to **NY, Boston, and Philadelphia**. Remember to use a comma between each item in the list.
- Indicate that you want the options to appear in an in-cell dropdown list, then close the dialog box.
- Add a row to the table. Go to cell E12, then select Boston in the dropdown list.
- Select column F in the table and indicate that you want to restrict the data entered to only whole numbers. In the Minimum text box, enter **1000**; in the Maximum text box, enter **20000**. Close the dialog box.
- Click cell F12, enter **25000**, then press [Enter]. You should get an error message.
- Click Cancel, then enter **17000**.
- Complete the new record by adding an Employee Number of 1112, a First Name of Caroline, a Last Name of Dow, a Hire Date of 2/1/2010, and an Annual Bonus of \$1000. Format the range F12:J12 as Accounting with no decimal places and using the \$ symbol. Compare your screen to Figure H-21.
- Add your name to the center section of the footer, save, preview the worksheet and fit it to one page if necessary, then print it.

FIGURE H-21

Employee Number	First Name	Last Name	Hire Date	Branch	Monthly Salary	Annual Salary	Annual Bonus	Benefits Dollars	Annual Compensation
1311	Mary	Lawson	2/12/2007	NY	\$ 4,500	\$ 54,000	\$ 1,200	\$ 12,420	\$ 67,620
4522	Louise	Wales	4/1/2008	Boston	\$ 5,800	\$ 69,600	\$ 1,400	\$ 16,008	\$ 91,008
4177	Donna	Dahar	5/6/2006	Philadelphia	\$ 7,500	\$ 90,000	\$ 16,000	\$ 20,700	\$ 126,700
2571	Mary	Marin	12/10/2007	Boston	\$ 8,000	\$ 96,000	\$ 18,000	\$ 22,080	\$ 136,080
2214	Fred	Gamoche	2/18/2009	Boston	\$ 2,900	\$ 34,800	\$ 570	\$ 8,004	\$ 43,374
6587	Peter	Enckson	3/25/2007	NY	\$ 2,775	\$ 33,300	\$ 770	\$ 7,659	\$ 41,729
2123	Erin	Mallo	6/23/2005	NY	\$ 3,990	\$ 47,880	\$ 2,500	\$ 11,012	\$ 61,392
4439	Mark	Merry	8/3/2009	Philadelphia	\$ 6,770	\$ 81,240	\$ 5,000	\$ 18,985	\$ 104,525
9807	Haley	Reed	9/29/2008	Philadelphia	\$ 8,600	\$ 103,200	\$ 14,000	\$ 23,736	\$ 140,936
3944	Joyce	Roy	5/12/2007	Boston	\$ 3,500	\$ 42,000	\$ 900	\$ 9,960	\$ 52,960
1112	Caroline	Dow	2/1/2010	Boston	\$ 17,000	\$ 204,000	\$ 1,000	\$ 46,920	\$ 251,920

Employee Number	Annual Compensation	Branch	Average Annual Salary
4177	\$ 126,700	Philadelphia	\$ 91,480

7. Create subtotals using grouping and outlines.

- Click the Subtotals sheet tab.
- Use the Department field list arrow to sort the table in ascending order by department.
- Convert the table to a range.
- Group and create subtotals by department, using the SUM function, then click the Annual Compensation checkbox if necessary in the Add Subtotal to list.
- Click the 2 outline button on the outline to display only the subtotals and the grand total. Compare your screen to Figure H-22.
- Enter your name in the worksheet footer, save the workbook, preview, then print the subtotals and grand total.
- Save the workbook, close the workbook, then exit Excel.

FIGURE H-22

Employee Number	First Name	Last Name	Hire Date	Department	Monthly Salary	Annual Salary	Annual Bonus	Benefits Dollars	Annual Compensation
				Boston Total					\$ 323,022
				NY Total					\$ 170,741
				Philadelphia Total					\$ 372,561
				Grand Total					\$ 866,324

▼ INDEPENDENT CHALLENGE 1

As the owner of Preserves, a gourmet food store located in Dublin, Ireland, you spend a lot of time managing your inventory. To help with this task, you have created an Excel table of your jam inventory. You want to filter the table and add subtotals and a grand total to the table. You also need to add data validation and summary information to the table.

▼ INDEPENDENT CHALLENGE 1 (CONTINUED)

- Start Excel, open the file EX H-3.xlsx from the drive and folder where you store your Data Files, then save it as **Jams**.
- Using the table data on the Inventory sheet, create a filter to generate a list of rhubarb jams. Enter your name in the worksheet footer, save the workbook, then preview and print the table. Clear the filter.
- Use a Custom Filter to generate a list of jams with a quantity greater than 20. Preview, then print the table. Clear the filter.
- Copy the labels in cells A1:F1 into A16:F16. Type **Gooseberry** in cell B17 and type **Small** in cell C17. Use the Advanced Filter with a criteria range of A16:F17 to extract a table of small gooseberry jams to the range of cells beginning in cell A20. Save the workbook, preview, then print the table with the extracted information.
- Click the Summary sheet tab, select the table data in column B. Open the Data Validation dialog box, then indicate you want to use a validation list with the acceptable entries of **Gooseberry, Blackberry, Rhubarb**. Make sure the In-cell dropdown check box is selected.
- Test the data validation by trying to change a cell in column B of the table to Strawberry.
- Using Figure H-23 as a guide, enter a function in cell G18 that calculates the total quantity of blackberry jam in your store. Enter your name in the worksheet footer, save the workbook, then preview and print the worksheet.
- Use the filter list arrow for the Type of Jam field to sort the table in ascending order by type of jam. Convert the table to a range. Insert subtotals by type of jam using the SUM function, then select Quantity in the Add Subtotal to table box. Use the appropriate button on the outline to display only the subtotals and grand total. (Note that the number of Blackberry Jams calculated in cell G22 is incorrect after subtotals are added because the subtotals are included in the database calculation.) Save the workbook, preview, then print the range containing the subtotals and grand total.

FIGURE H-23

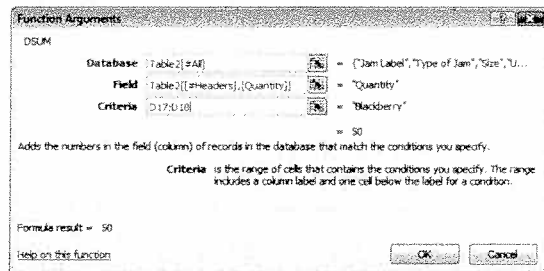
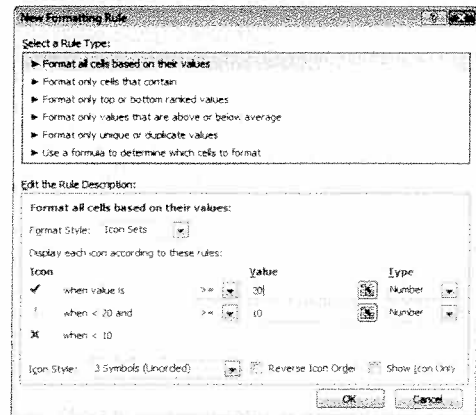


FIGURE H-24



Advanced Challenge Exercise

NO



- Clear the subtotals from the worksheet.
- Use conditional formatting to add icons to the quantity field using the following criteria: quantities greater than or equal to 20 are formatted with a green check mark, quantities greater than or equal to 10 but less than 20 are formatted with a yellow exclamation point, and quantities less than 10 are formatted with a red x. Use Figure H-24 as a guide to adding the formatting rule, then compare your Quantity values to Figure H-25. (Hint: You may need to click in the top Value text box for the correct value to display for the red x.)
- Save the workbook, preview then print the worksheet.

- Close the workbook, then exit Excel.

FIGURE H-25

	A	B	C	D	E	F
1	Jam Label	Type of Jam	Size	Unit Price	Quantity	Total
2	Tipperary Ranch	Blackberry	Medium	6.00	11	66.00
3	Galway Estate	Blackberry	Small	5.25	12	63.00
4	Wexford Hills	Blackberry	Medium	5.75	15	86.25
5	Kerry Lane	Blackberry	Small	6.55	12	78.60
6	Tipperary Ranch	Gooseberry	Small	5.75	6	34.50
7	Cork Estate	Gooseberry	Small	5.75	8	46.00
8	Wexford Hills	Gooseberry	Small	5.75	21	120.75
9	Kerry Lane	Gooseberry	Medium	7.25	18	130.50
10	Tipperary Ranch	Rhubarb	Small	6.50	5	32.50
11	Galway Estate	Rhubarb	Small	6.25	11	68.75
12	Wexford Hills	Rhubarb	Small	5.25	31	162.75
13	Kerry Lane	Rhubarb	Medium	7.55	24	181.20
14						

▼ INDEPENDENT CHALLENGE 2

You recently started a personalized pet tag business, called Paw Tags. The business sells engraved cat and dog tags. Customers order tags for their cat or dog and provide you with the name of the pet and whether they want engraving on one or both sides of the tag. You have put together an invoice table to track sales for the month of October. Now that you have this table, you would like to manipulate it in several ways. First, you want to filter the table to retrieve only tags retailing for more than a particular price and ordered during a particular part of the month. You also want to subtotal the unit price and total cost columns by tag and restrict entries in the Order Date column. Finally, you would like to add database and lookup functions to your worksheet to efficiently retrieve data from the table.

▼ INDEPENDENT CHALLENGE 2 (CONTINUED)

- a. Start Excel, open the file EX H-4.xlsx from the drive and folder where you store your Data Files, then save it as **Paw Tags**.
- b. Use the Advanced Filter to show tags with a price of \$12.99 ordered before 10/15/2010, using cells A27:B28 to enter your criteria and filtering the table in place. (*Hint*: You don't need to specify an entire row as the criteria range.) Enter your name in the worksheet footer, save the workbook, then print the filtered table. Clear the filter, then save your work again.
- c. Use the Data Validation dialog box to restrict entries to those with order dates on or after 10/1/2010 and before or on 10/31/2010. Test the data restrictions by attempting to enter an invalid date in cell D25.
- d. Enter **23721** in cell F28. Enter a VLOOKUP function in cell G28 to retrieve the total based on the invoice number entered in cell F28. Make sure you have an exact match with the invoice number. Test the function with the invoice number 23718.
- e. Enter the date **10/1/2010** in cell I28. Use the database function, DCOUNT, in cell J28 to count the number of invoices for the date in cell I28. Save the workbook.
- f. Sort the table in ascending order by Tag, then convert the table to a range. Create subtotals showing the number of cat and dog tags in the Invoice Number column. Save your subtotaled data, then preview and print the Invoice worksheet.

Advanced Challenge Exercise



- Clear the subtotals and create a table using the data in the range A1:J25. Change the font color of the column headers to white. If the font headers are not visible, change the font color to one that contrasts with the fill color of your headers.
- Use the filtering feature to display only the Cat tags, then add a total row to display the number of cat tags in cell E26. Change the font color in cells A26 and E26 to white. If the contents of cells A26 and E26 are not visible, change the font color to one that contrasts with the fill color for those cells. Delete the total in cell J26.
- Use conditional formatting to format the cells where the Total is greater than \$12.00 with light red fill and dark red text.
- Using the Total Filter arrow, sort the table by color to display the totals exceeding \$12.00 on top. Filter the table by color to display only the rows with totals greater than \$12.00.

- g. Save the workbook, print the Invoice worksheet, close the workbook, then exit Excel.

▼ INDEPENDENT CHALLENGE 3

You are the manager of Green Mountain, a gift shop in Burlington, Vermont. You have created an Excel table that contains your order data, along with the amounts for each item ordered and the date the order was placed. You would like to manipulate this table to display product categories and ordered items meeting specific criteria. You would also like to add subtotals to the table and add database functions to total orders. Finally, you want to restrict entries in the Category column.

- a. Start Excel, open the file EX H-5.xlsx from the drive and folder where you store your Data Files, then save it as **Gifts**.
- b. Using the table data, create an advanced filter that retrieves, to its current location, records with dates before 9/10/2010 and whose orders were greater than \$1000, using cells A37:E38 to enter your criteria for the filter. Clear the filter.
- c. Create an advanced filter that extracts records with the following criteria to cell A42: orders greater than \$1000 having dates either before 9/10/2010 or after 9/24/2010. (*Hint*: Recall that when you want records to meet one criterion or another, you need to place the criteria on separate lines.) Enter your name in the worksheet footer, then preview and print the worksheet.
- d. Use the DSUM function in cell H2 to let worksheet users find the total order amounts for the category entered in cell G2. Format the cell containing the total order using the Accounting format with the \$ symbol and no decimals. Test the DSUM function using the Food category name. (The sum for the Food category should be \$5,998.) Print the worksheet.
- e. Use data validation to create an in-cell drop-down that restricts category entries to Food, Clothing, Book, Personal. Use the Error Alert tab of the Data Validation dialog box to set the alert level to the Warning style with the message "Data is not valid." Test the validation in the table with valid and invalid entries.

▼ INDEPENDENT CHALLENGE 3 (CONTINUED)

- f. Sort the table by category in ascending order. Add Subtotals to the order amounts by category. The total order amount in cell H2 will be incorrect after adding subtotals because the subtotals will be included in the database calculation.
- g. Use the outline to display only category names with subtotals and the grand total.

Advanced Challenge Exercise



- Clear the subtotals from the worksheet.
 - Conditionally format the 1-Month Order data using Top/Bottom Rules to emphasize the cells containing the top 10 percent with yellow fill and dark yellow text.
 - Add another rule to format the bottom 10 percent in the 1-Month Order column with a light blue fill.
- h. Save the workbook, preview, then print the worksheet.
 - i. Close the workbook, then exit Excel.

▼ REAL LIFE INDEPENDENT CHALLENGE

You decide to organize your business and personal contacts using the Excel table format. You want to use the table to look up cell, home, and work phone numbers. You also want to include addresses and a field documenting whether the contact relationship is personal or business. You enter your contact information in an Excel worksheet that you will convert to a table so you can easily filter the data. You also use lookup functions to locate phone numbers when you provide a last name in your table. Finally, you restrict the entries in one of the fields to values in drop-down lists to simplify future data entry and reduce errors.

- a. Start Excel, open a new workbook, then save it as **Contacts** in the drive and folder where you store your Data Files.
- b. Use the structure of Table H-2 to enter at least six of your personal and business contacts into a worksheet. (*Hint:* You will need to format the Zip column using the Zip Code type of the Special category.) In the Relationship field, enter either Business or Personal. If you don't have phone numbers for all the phone fields, leave them blank.

TABLE H-2

Last name	First name	Cell phone	Home phone	Work phone	Street address	City	State	Zip	Relationship

- c. Use the worksheet information to create a table. Use the Name Manager dialog box to edit the table name to **Contacts**.
- d. Create a filter that retrieves records of personal contacts. Clear the filter.
- e. Create a filter that retrieves records of business contacts. Clear the filter.
- f. Restrict the Relationship field entries to Business or Personal. Provide an in-cell drop-down list allowing the selection of these two options. Add an input message of **Select from the dropdown list**. Add an Information level error message of **Choose Business or Personal**. Test the validation by adding a new record to your table.
- g. Below your table, create a phone lookup area with the following labels in adjacent cells: **Last name, Cell phone, Home phone, Work phone**.
- h. Enter one of the last names from your table under the label Last Name in your phone lookup area.
- i. In the phone lookup area, enter lookup functions to locate the cell phone, home phone, and work phone numbers for the contact last name that you entered in the previous step. Make sure you match the last name exactly.
- j. Enter your name in the center section of the worksheet footer, save the workbook, preview, then print the worksheet on one page.
- k. Close the workbook, then exit Excel.