Lesson 9: Working with Data & Macros

## Step-by-Step 1 – Open a Non-Native File Directly in Excel

**GET READY. Before you begin these steps, LAUNCH Microsoft Excel.**

**1.** If the active workbook is not a new, blank workbook, then click the **FILE** tab. In

Backstage, click **New**, and then click the thumbnail marked **Blank workbook**.

**2.** On the DATA tab, in the Get External Data group, click **From Text**.

**3.** In the Import Text File dialog box, locate and click ***09 NA-EST2012-01.csv***. Click **Import**.

**4.** In Step 1 of the Text Import Wizard, notice the preview at the bottom. This is Excel’s best guess, for the moment, as to how the data should be formatted. There are population figures rendered in “quotation marks” with commas between each figure. Here, each comma acts as the delimiter, and it’s difficult to judge whether each figure between the commas will be the same length. Under Choose the file type that best describes your data, choose **Delimited**, and select **My data has headers**.

**5.** The preview shows the headers starting on row 3. Thus, for the Set import at row option, choose **3**. Click **Next**.

**6.** In Step 2 of the wizard, shown in Figure 9-3, uncheck **Tab** because the preview does not indicate long spaces between the figures. Check **Comma**. Set Text qualifier to **“** (quotation mark). Scroll down the **Data preview** pane, and notice now that Excel has found the column separations between figures. Click **Next**.

**7.** Step 3 of the wizard, shown in Figure 9-4, lets you establish the data type for each discovered column. Click the first column in the **Data preview** pane. Then, under Column data format, click **Date**. Click **Finish**.

**8.** In the Import Data dialog box that appears next (see Figure 9-5), leave Where do you want to put the data? set to **Existing worksheet**. Click **OK**.

**9.** Shorten the width of column A to **16**.

**10.** The worksheet that Excel has generated, shown in Figure 9-6 in the MOAC text, shows United States population estimates for each month from April 2010 to December 2012. Excel could not make sense of the dates in column A, so it left the data type set to General for most of the cells. However, it did make an error in attempting to convert the year in cell A25. To correct it, begin by deleting rows **2**, **12**, and **25**.

**11.** Click cell **A2**, type **April 2010**, and press **Enter**.

**12.** Drag the fill handle from cell **A2** down to cell **A34** and release. Excel changes the entries in column A to proper months.

**13.** Delete rows **35** through **40**.

**14.** SAVE the workbook in the Lesson 9 folder as ***09 Monthly Census Data Solution***.

**CLOSE the workbook and leave Excel open for the next exercise.**

## Step-by-Step 2 – Get External Data

**GET READY. LAUNCH Excel if it is not already running.**

**1.** If the active workbook is not a new, blank workbook, then click the **FILE** tab. In Backstage, click **New**, and then click the thumbnail marked **Blank workbook**.

**2.** On the DATA tab, in the Get External Data group, click **From Access**.

**3.** In the Select Data Source dialog box, locate the ***09 GMcC Customer contacts.accdb*** database file. Select it and click **Open**.

**4.** In the Select Table dialog box shown in Figure 9-7, click **Customers** (the table we want to import), and then click **OK**.

**5.** In the Import Data dialog box (refer to Figure 9-5), click **Table**. Under Where do you want to put the data, click **Existing Worksheet** and ensure the text box reads **=!$A$1**.

**6.** Click **OK**. Excel takes a moment to query the database. Soon, it displays a fully formatted table (see Figure 9-8 in the MOAC text), complete with AutoFilter buttons in the headers, which you learn more about later in this lesson in “Using AutoFilter.”

**7.** SAVE the workbook in the Lesson 9 folder as ***09 2005 Customers Solution***.

**CLOSE the workbook and leave Excel open for the next exercise.**

## Step-by-Step 3 – Append Data to a Worksheet

**GET READY. OPEN the *09 Owners.xls* workbook for this lesson.**

**1.** Click cell **A21**.

**2.** On the DATA tab, in the Get External Data group, click **From Other Sources**, and then click **From XML Data Import**.

**3.** In the Select Data Source dialog box, locate and select the ***09 2010\_Owners.xml*** data file. Click **Open**.

**4.** In the Import Data dialog box, click **Existing worksheet**, and then click **OK**. Although a list of customers is appended to the end of the worksheet, the columns don’t line up, as Figure 9-9 in the MOAC text clearly indicates. This is typical of appended data. A dialog marked Error in XML might appear at this point. If so, click OK to dismiss the dialog box and proceed.

*In the course of history, the folders where old data files used to reside may cease to exist. This is indeed the case with the original XML file from which you imported data into the worksheet. Some versions of the Microsoft XML parser will see this as an “error,” and others will not. Any number of factors may contribute to which XML parser your PC actually has. In either case, it isn’t really an error, and you don’t need to worry about it.*

**5.** To correct the problem, begin by moving the first names from cell range **E23:E75** to **B23:B75**. Overwrite the existing contents in column B.

**6.** Move the last names from cell range **H23:H75** to **A23:A75**. Overwrite the existing contents in column A.

**7.** Repeat the process for the states in column **J** that should be in column **E**, the ZIP codes in column **K** that should be in column **F**, and the phone numbers in column **I** that should be in column **G**.

**8.** Delete columns **H** through **L**.

**9.** Delete rows **21** and **22**.

**10.** Replace all 11 instances of **Dell City** in column D with **Del City**.

SAVE the workbook in the Lesson 9 folder as ***09 Car Owners Solution.xlsx***.

**CLOSE the workbook and leave Excel open for the next exercise.**

## Step-by-Step 4 – Restrict Cell Entries to Certain Data Types

**GET READY. OPEN the *09 Vet Clinic Patients* workbook for this lesson.**

**1.** Click the **FILE** tab and select **Save As**. SAVE the workbook in the Lesson 9 folder as   
***09 Vet Clinic Patients (Active) Solution***.

**2.** Freeze rows **1** through **5** in both worksheets in the workbook.

**3.** In the Client list worksheet, select column **L** (Area Code).

**4.** On the DATA tab, in the Data Tools group, click **Data Validation**. The Data Validation dialog box opens.

**5.** Click the **Settings** tab.

**6.** In the Allow list box, choose **Text length**. This is the first step in the creation of a rule governing how many characters each new entry should contain. The dialog box should now appear as depicted in Figure 9-10 in the MOAC text.

**7.** In the Data list box, choose **equal to**.

**8.** Click the **Length** box and type **3**.

**9.** Click the **Input Message** tab. This tab displays a ScreenTip whenever you select a cell in this specially validated area.

**10.** Click the **Title** box and type **Rule:**

**11.** Click the **Input message** box and type **Three-digit area codes only, please.** The Data Validation dialog box should now appear as shown in Figure 9-11 in the MOAC text.

**12.** Click the **Error Alert** tab. Excel notifies a user who missed your ScreenTip that the data he has entered is invalid.

**13.** Click the **Title** box and type **Data Entry Error**.

**14.** Click the **Error message** box and type **Only three-digit area codes are recognized.** This message is displayed in a dialog box whenever an invalid entry is made in column L. The dialog box should now appear as shown in Figure 9-12.

**15.** Click **OK**.

**16.** To test the new validation rule, click cell **L58**. You should see the notification message you typed into the Input Message tab.

**17.** Type **40** and press **Enter**. Excel displays an alert dialog box with the message you created.

**18.** Click **Cancel**. The partial entry in cell L58 is erased.

**PAUSE. SAVE the workbook and leave it open to use in the next exercise.**

*Excel’s validation rules pertain to only new data as you enter it into the workbook, not to data that existed in the workbook prior to creating the rules. Don’t rely on validation rules to correct errors that might already exist, but to catch any new errors that might arise.*

## Step-by-Step 5 – Allow Only Specific Values to Be Entered in Cells

**GET READY. USE the workbook from the previous exercise.**

**1.** Click the **FILE** tab and select **Save As**. SAVE the workbook in the Lesson 9 folder as

***09 Vet Clinic Patients (Active) Solution 2***.

**2.** Click the **Patient list** tab.

**3.** Select column **D**.

**4.** On the DATA tab, in the Data Tools group, click **Data Validation**.

**5.** In the Data Validation dialog box, click the **Settings** tab.

**6.** In the Allow list box, choose **List**. The Source box appears at the bottom of the dialog box.

**7.** Click the **Source** box. Type **M,F,N** being careful to include the commas.

**8.** Uncheck the **Ignore blank** box.

**9.** Click the **Input Message** tab. Click the **Input message** box and type **Male, Female, or Neutered**.

**10.** Click **OK**. Now anyone entering a new patient into the database must specify the animal’s gender.

**11.** Select column **E** (Owner #).

**12.** In the Data Tools group, click **Data Validation**.

**13.** Click the **Settings** tab. In the Allow list box, click **List**.

**14.** On the right side of the Source box, click the **Collapse Dialog** button.

**15.** With the Data Validation dialog box collapsed, click the **Client list** worksheet tab.

**16.** Select column **A** (Client #).

**17.** At the end of the Source box, click the **Expand Dialog** button. The full dialog box returns, and the Source box should now read *=’Client list’!$A:$A.*

**18.** Unselect the **Ignore blank** and **In-cell dropdown** boxes.

**19.** Click the **Error Alert** tab. Choose **Warning** from the Style box.

**20.** In the Error message box, type **Owner must be the number for a pre-existing client.**

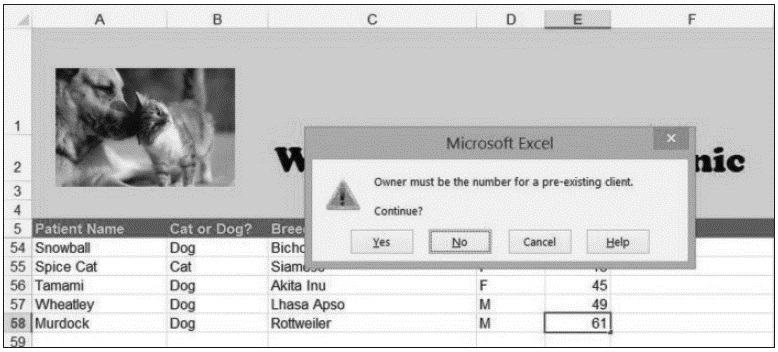
**21.** Click **OK**. Now the Owner # column may contain only numbers for clients who appear in the Client # column of the Client list worksheet.

**22.** To make sure your new validation rules are working, in the Patient list worksheet, at the bottom of the list, click cell **A58** and attempt to type the following data:

**Murdock Dog Rottweiler B 61**

**23.** After you attempt to enter **B** into column D, respond to the error dialog box by clicking **Retry** and by typing **M**.

**24.** After you attempt to enter **61** into column E, respond to the error dialog box shown below by clicking **No** and typing **31**.



**PAUSE. SAVE the workbook and leave it open to use in the next exercise.**

## Step-by-Step 6 – Remove Duplicate Rows from a Worksheet

**GET READY. USE the workbook from the previous exercise.**

**1.** SAVE the current workbook as ***09 Vet Clinic Patients (Active) Solution 3***.

**2.** Click the **Client list** worksheet tab.

**3.** Click cell **A58** and in row 58, type the following data in the appropriate columns:

**Mrs. Mary Jane Brink 704 Fairway Drive Cincinnati OH 255-1655**

**4.** Select the cell range **A5:N58**.

**5.** On the DATA tab, in the Data Tools group, click **Remove Duplicates**. The Remove

Duplicates dialog box appears (see Figure 9-15 in the MOAC text).

**6.** In the Columns list, remove the check beside **Client #**. If duplicate names and addresses appear in the list, it’s likely their client index numbers were not duplicated.

**7.** Leave the **My data has headers** box checked. This way, Excel won’t treat row 5 as though it contains data.

**8.** Click **OK**. Excel responds with a dialog box stating one duplicate value set (the one you just entered) was removed.

**9.** Click **OK** to dismiss the dialog box. Note the second (lowermost) instance of the duplicate entry was removed, from row 58.

**PAUSE. SAVE the workbook and leave it open to use in the next exercise.**

## Step-by-Step 7a – Sort Data on a Single Criterion

GET READY. USE the workbook from the previous exercise.

**1.** SAVE the current workbook as ***09 Vet Clinic Patients (Active) Solution 4***.

**2.** In the **Patient list** worksheet, click cell **E6**. Note this is the top row of the Owner # column and its entries are all numerical.

**3.** Hold the **Shift** key down while clicking cell **A58**. This selects the entire range you wish to sort.

**4.** On the DATA tab, in the Sort & Filter group, click the **Sort Smallest to Largest** button (with A on top of Z, and an arrow pointing down). The list is now sorted in ascending numerical order (despite the presence of the alphabet on the button) by Order #, which was the first column you clicked in when selecting the range.

**5.** Click cell **A6**.

**6.** Hold the **Shift** key down while clicking cell **E58**.

**7.** Click the sorting button again, whose ScreenTip is now the **Sort A to Z** button (because you’re sorting alphanumeric text). This time, the list is sorted by Patient Name, and again, the first column you clicked in when selecting the range. Murdock the Rottweiler, which you previously added to row 58, now appears on row 45.

**PAUSE. SAVE the workbook and leave it open to use in the next exercise.**

## Step-by-Step 7b – Sort Data on Multiple Criteria

**GET READY. USE the workbook from the previous exercise.**

**1.** Click the **Client list** tab.

**2.** Select the range **A5:N57**.

**3.** Name the range **Clients**.

**4.** On the DATA tab, in the Sort & Filter group, click **Sort**. The Sort dialog box appears.

**5.** In the Sort by list box, under Column, choose **Surname**.

**6.** Click **Add Level**.

**7.** In the Then by list box that appears, choose **Given Name**.

**8.** Click **Add Level**.

**9.** In the next Then by list box, choose **MI** (middle initial).

**10.** Click **Add Level** again.

**11.** In the next Then by list box, choose **Suffix**. The dialog box should now appear as depicted in Figure 9-16 in the MOAC text.

**12.** Leave **My data has headers** checked, so that Excel won’t treat the headers row as a data entry.

**13.** Click **OK**. The clients list is now sorted alphabetically, with people sharing the same surname sorted alphabetically by first name. Although the client numbers appear all out of sort, the data is unchanged and the database itself retains its full integrity.

**PAUSE. SAVE the workbook and leave it open to use in the next exercise.**

## Step-by-Step 8 – Sort Data Using Cell Attributes

**GET READY. USE the workbook from the previous exercise.**

**1.** On the Patient list worksheet, select column **E**.

**2.** Right-click the column, and then click **Insert** in the shortcut menu.

**3.** With column **E** selected, on the DATA tab, in the Data Tools group, click **Data**

**Validation**.

**4.** In the Data Validation dialog box, click **Clear All**. Click **OK**.

*When creating a new column to the right of one governed by a data validation rule, the new column acquires that same rule even if it’s intended for a different purpose. To clear this rule, select the new column, bring up the Data Validation dialog box, and click Clear All as demonstrated previously.*

**5.** Click cell **E5** and type **Spayed/Neutered**.

**6.** In column E, type **S** for the following row numbers: 7, 22, 23, 26, 35, 38, 47, and 51.

**7.** In column E, type **N** for the following row numbers: 6, 8, 9, 10, 11, 13, 14, 16, 17, 18, 20, 21, 25, 28, 30, 31, 32, 33, 36, 37, 39, 42, 43, 44, 46, 48, 49, 50, 53, 55, 56, 57, and 58.

**8.** Select column **E**.

**9.** On the DATA tab, in the Data Tools group, click **Data Validation**.

**10.** In the Data Validation dialog box, click the **Settings** tab. Under Allow, choose **List**.

**11.** In the Source box, type **N,S**.

**12.** Click the **Input Message** tab. In the Input message box, type **S = Spayed, N = Neutered**. Click **OK**.

**13.** Select the range **E6:E100**. On the HOME tab, in the Styles group, click **Conditional Formatting**. Click **New Rule**.

**14.** In the New Formatting Rule dialog box, choose **Format only cells that contain** in the Select a Rule Type list.

**15.** In the list box, under Format only cells with, choose **No Blanks.**

**16.** Click **Format**.

**17.** In the Format Cells dialog box, click the **Fill** tab. Choose the sixth color swatch from the left in the third row. Click **OK**.

**18.** Click **OK**. Now both spayed and neutered animals should appear shaded.

**19.** Select the range **A5:F58**. Name the range **Patients**.

**20.** On the DATA tab, in the Sort & Filter group, click **Sort**.

**21.** In the Sort dialog box, in the Sort by list, choose **Spayed/Neutered**.

**22.** In the Sort On list, choose **Cell Color**.

**23.** Click the down arrow next to **No Cell Color**. As Figure 9-17 shows, the list box that appears shows only those colors that are actually in use for conditional formatting—in this case, only one swatch. Click the color swatch.

**24.** Click **OK**. The sorted worksheet should now appear as shown in Figure 9-18 in the MOAC text. All the “N” and “S” animals are grouped together at the top, with the two types mingling among each other. All the non-operated-on animals are bunched toward the bottom.

**PAUSE. SAVE the workbook and leave it open to use in the next exercise.**

*Any table you intend for Excel to sort must not contain merged cells (see Lesson 6). For Excel to be able to exchange cell contents between positions evenly, each row must have an identical number of cells. Each of the cells in a column may be formatted differently, though their widths may not vary.*

## Step-by-Step 9 – Use AutoFilter

**GET READY. USE the workbook from the previous exercise.**

**1.** SAVE the current workbook as ***09 Vet Clinic Patients (Active) Solution 5***.

**2.** Click the **Client list** worksheet tab. In the Name box, type **Clients** and press **Enter**. Excel highlights the data range for the Clients table.

**3.** On the DATA tab, in the Sort & Filter group, click **Filter**. Excel adds down arrow buttons to the field names in all of the columns in the list.

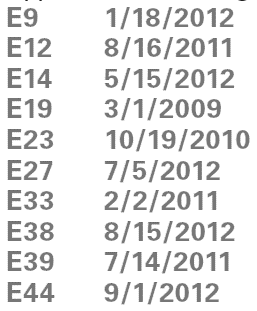
**4.** Click the down arrow beside the **Client #** heading in column **A**. Excel displays the AutoFilter menu shown in Figure 9-19 in the MOAC text.

**5.** To sort the table by client number, click **Sort Smallest to Largest**. This gives you a shortcut for sorting that bypasses the menu.

**6.** To show just the clients with addresses in Ohio, click the down arrow beside **State**. In the AutoFilter menu that appears (shown in Figure 9-20), uncheck the **(Select All)** box to clear all check boxes, and then check **OH** and click **OK**.

**PAUSE. SAVE the workbook and leave it open to use in the next exercise.**

## Step-by-Step 10 – Create a Custom AutoFilter

**GET READY. USE the workbook from the previous exercise.**

**1.** Insert a new column into the Patient list worksheet, between the existing columns **D** and **E**.

**2.** Clear the validation rules from the new column **E**.

**3.** Add the title **Hepatitis inoculation** to row **5**.

**4.** Type the following dates into the cells shown in the picture to the right.

**5.** Select the **Patients** data range. The range should have automatically stretched to include the new column.

**6.** On the DATA tab, in the Sort & Filter group, click **Filter**.

**7.** Click the down arrow beside **Hepatitis inoculation**. In the menu, click **Date Filters**, and then click **Custom Filter**. The Custom AutoFilter dialog box opens.

**8.** In the first list box just below Hepatitis inoculation, choose **is before**. In the box to the right, type **1/1/2012**.

**9.** Click the **Or** button between the two rows of list boxes.

**10.** In the second list box below Or, choose **equals**. Leave the list box blank (literally meaning “blank” or “nothing”). The dialog box should now appear as depicted in Figure 9-22.

**11.** Click **OK**. After the dialog box disappears, Excel filters out all entries in the patient list where the patient is known to have had a hepatitis inoculation in 2012 or later. What remains are both the animals known to have been inoculated in 2011 or earlier, or whose inoculation dates are not known.

**12.** Click the filter button beside Hepatitis inoculation again. In the menu, click **Date Filters**, and then click **Custom Filter**.

**13.** In the second list box that currently reads equals, choose the blank entry at the top of the list. The box should now be empty.

**14.** Click **OK**. The list should now show only the five animals known to have been inoculated in 2011 or earlier (see Figure 9-23).

**15.** Click the filter button beside **Hepatitis inoculation** again. In the menu, choose **Clear**

**Filter from “Hepatitis inoculation”**.

**PAUSE. SAVE the workbook and leave it open to use in the next exercise.**

## Step-by-Step 11 – Filter Data Using Cell Attributes

**GET READY. USE the workbook from the previous exercise.**

**1.** In the Patient list worksheet, click the **Spayed/Neutered** button down arrow.

**2.** In the menu, click **Filter by Color**.

**3.** In the popup menu, choose the **pink swatch**. Excel now shows only those animals that have been spayed or neutered.

**PAUSE. SAVE the workbook and leave it open for the next exercise.**

## Step-by-Step 12 – Group and Ungroup Data

**GET READY. USE the workbook from the previous exercise.**

**1.** SAVE the current workbook as ***09 Vet Clinic Patients 130114 Solution***. Grouping data is best reserved for final reports and not for active databases where new data might be entered later.

*Enrolling a set of records into a group changes the behavior of AutoFilters that might incorporate that group. For example, when you try to sort a column, only the records that are not members of a group are sorted. Once records are grouped, their order is fixed and their usefulness as parts of an active database is reduced, especially if you add subtotal rows to the middle. For this reason, you should reserve grouping and outlining for workbooks that are presented as final (unchanging) reports for a particular point in time.*

**2.** With the Patient list worksheet active, on the DATA tab, in the Sort & Filter group, click **Clear**.

**3.** Next to Cat or Dog?, click the **down arrow button**. In the menu, click **Sort A to Z**. Now, all the cats are clustered together at the top, and dogs at the bottom.

**4.** Right-click the heading for row **30**, the row where the first dog appears. Click **Insert** in the shortcut menu.

**5.** Select cell **H30**. Type **Number of cats**.

**6.** Select cell **G30**. On the HOME tab, in the Font group, click the **Bold** button. This makes this particular number stand out.

**7.** On the HOME tab, in the Editing group, click the **AutoSum** down arrow. In the menu, click **Count Numbers**, and then press **Enter**. Excel inserts a function into the cell that counts the number of contiguous cells in the column just above it that contains numbers—in this case, the owner numbers for clients.

**8.** Add a similar function for counting the number of dogs to row **60**. (Bypass the validation rule by clicking **Yes** in the dialog box.)

**9.** Select rows **6** through **29** (all the cats).

**10.** On the DATA tab, in the Outline group, click the **Group** button. A group indicator line is added to the left of the row markers and an outline symbol on the row just below the end of the group (see Figure 9-24).

**11.** Repeat the process in Steps 9 and 10 for the dogs in rows **31** through **59**. Format cell **G60** as **Bold**. In cell **H60,** type **Number of dogs**.

**12.** To collapse the cats group, click the minus box (shown in Figure 9-24) beside row **30**, which contains the cats count. The control becomes a plus box, indicating that when you click on it, it expands to show hidden rows.

**13.** Collapse the dogs group with the minus box in row **60**. The worksheet now appears fully collapsed (see Figure 9-25).

**14.** Click the **Select All** button. On the DATA tab, in the Outline group, click **Show Detail**.

**15.** Select columns **B** through **F**.

**16.** In the Outline group, click the **Group** button. A new column group is created.

**17.** Click the minus box over column **G** to collapse the column group. Click the plus box that takes its place to expand it.

**18.** Select columns **B** through **G**.

**19.** In the Outline group, click the **Ungroup** button. The columnar group disappears.

**SAVE and CLOSE the workbook. Leave Excel open for use in the next exercise.**

## Step-by-Step 13 – Auto-Outline Data

**GET READY. OPEN the *09 Critical Care Expenses* workbook for this lesson.**

**1.** SAVE the workbook in the Lesson 9 folder as ***09 Critical Care Expenses 0315 Solution***.

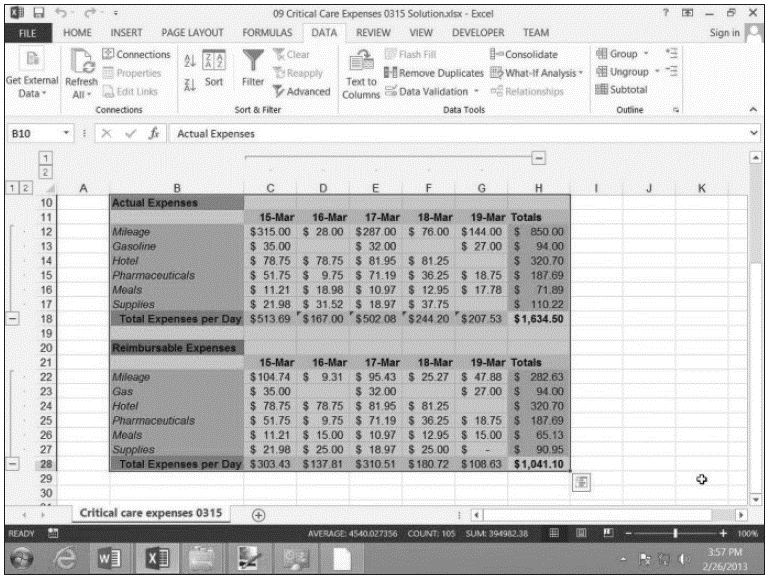
**2.** Select cell **H18**. On the HOME tab, in the Font group, click the **Bold** button. Then, in the Editing group, click the **AutoSum** button and press **Enter**. The grand total appears as bold in the cell.

**3.** Repeat the grand total process for cell **H28** and apply **Bold** to the cell.

**4.** Select the cell range **B10:H28**, covering both groups of expenses in their entirety.

**5.** On the DATA tab, in the Outline group, click the down arrow next to **Group**. In the menu, click **Auto Outline**. As the figure below shows, Excel automatically groups rows 12 through 17 and rows 22 through 27, having spotted the Total Expenses row along the bottom of each cluster. Excel also groups together the columns for March 15 through 19, having spotted the weekly totals columns along the right.

**SAVE the workbook and LEAVE Excel open for the next exercise.**



## Step-by-Step 14 – Collapse Groups of Data in an Outline

**GET READY. USE the workbook from the previous exercise.**

**1.** Click all three minus boxes to collapse their respective groups. The worksheet should now appear shrunken to just the grand totals cells you created with the appropriate labels (see Figure 9-27 in the MOAC).

**2.** Click any of the plus boxes (which replaced the minus boxes) to expand the group to which it’s attached.

**3.** To remove the outline entirely, on the DATA tab, in the Outline group, click the **Ungroup** button arrow. In the menu, click **Clear Outline**.

**SAVE and CLOSE the workbook. Leave Excel open for the next exercise.**

## Step-by-Step 15 – Subtotal Data in Outlines

**GET READY. OPEN the *09 Server Usage Stats* workbook for this lesson.**

**1.** SAVE the workbook in the Lesson 9 folder as ***09 Server Usage Stats 130831 Solution***.

**2.** Select the range **A5:G140**.

**3.** On the DATA tab, in the Sort & Filter group, click **Sort**.

**4.** In the Sort dialog box, in the Sort by line, choose **Date, Oldest to Newest**. Click **OK**.

**5.** On the DATA tab, in the Outline group, click **Subtotal**. The Subtotal dialog box appears.

**6.** In the At each change in list box, click **Department**.

**7.** If necessary, in the Use function list box, choose **Sum.**

**8.** In the list of columns marked Add subtotal to, select the boxes for **Avg. Bandwidth**, **Data In**, **Data Out**, and **Transactions**.

**9.** Check the **Summary below data** and **Replace current subtotals** check boxes, if necessary. The dialog box should now appear as depicted in Figure 9-28.

**10.** Click **OK**. Excel inserts subtotal rows for each company division, grouping together data consumption values for all three corporate regions. It places each of these division row clusters into groups. It then creates a broader group for the entire range and adds a grand total row at the bottom. The result is a subtotal-endowed worksheet with a three-tier outline (see   
Figure 9-29).

**SAVE and CLOSE the workbook. Leave Excel open for the next exercise.**

## Step-by-Step 16 – Format a Table with a Quick Style

**GET READY. OPEN the *09 Pet Pharma Sales* workbook for this lesson.**

**1.** SAVE the workbook in the Lesson 9 folder as ***09 Pet Pharma Sales August Solution***.

**2.** In the August Sales worksheet, select the data range **A6:K93**.

**3.** On the HOME tab, in the Styles group, click **Format as Table**. Excel brings up a colorful menu full of sample layouts.

**4.** Click the sample in row 4, column 7 (**Table Style Medium 7**). The Format As Table dialog box appears (see Figure 9-31).

*You can change the format of a table at any time using the Format as Table command. You only see the Format As Table dialog box the first time you format a table, which effectively changes a standard range to a table. Afterwards, you only need to select a cell inside the table to tell Excel which table you want to reformat.*

**5.** Because the cell reference under Where is the data for your table? is accurate, don’t make any changes and click **OK**. Excel converts the data range into a formal table and applies the style you chose, which includes automatically banded rows that maintain their banding even when rows become sorted. AutoFilter controls are also added to the field names row.

**6.** To automatically boldface the rightmost column in the table (Total Sales), click any cell inside the table. On the DESIGN tab, in the Table Style Options group, click **Last Column**.

*The Table Style Options group also contains an option for banding columns instead of rows. Uncheck Banded Rows from this group, and then check Banded Columns.*

**SAVE the workbook and LEAVE it open for the next exercise.**

*When you scroll down a data table so that the field names row disappears, as long as the active cell stays within the table area, the usual column headings (A, B, C, and so on) are replaced with the complete field names, as Figure 9-32 depicts. The AutoFilter buttons also move to the headings row. This way, you don’t need to freeze the field names row in place to keep the names themselves visible. When you move the active cell outside the table area, the standard column headings reappear.*

## Step-by-Step 17 – Remove Styles from a Table

**GET READY. USE the workbook from the previous exercise.**

**1.** SAVE the workbook in the Lesson 9 folder as ***09 Pet Pharma Sales August Solution 2***.

**2.** In the August Sales worksheet, click anywhere inside the table.

**3.** On the DESIGN tab, in the Table Styles group, click the **More** down arrow button. (Or if

you see only the **Quick Styles** button, click that instead.)

**4.** In the menu, as indicated in Figure 9-33, click **Clear**. The automatic formatting is removed.

*There are two places to find the table styles menu in Excel. One is under the Format as Table button on the HOME tab. The other is in the Table Styles group of the DESIGN menu tab. At first, both menus look the same. But only the one on the DESIGN tab has the Clear button to remove styles from a table.*

**5.** To change the table style to something that contrasts against the others in this series, bring up the Quick Styles menu again, and this time, choose **Table Style Light 6** (upper right corner).

**6.** To automatically apply boldface to the rightmost column, in the Table Style Options group, ensure **Last Column** is checked. To do the same for the leftmost column, check **First Column**.

**SAVE the workbook and LEAVE it open for the next exercise.**

## Step-by-Step 18 – Define a Title for a Table

**GET READY. USE the workbook from the previous exercise.**

**1.** SAVE the workbook in the Lesson 9 folder as ***09 Pet Pharma Sales August Solution 3.***

**2.** In the August Sales worksheet, click anywhere inside the table.

**3.** On the DESIGN tab, in the Properties group, click the text box under Table Name.

**4.** Type **DrugSales** (all one word) and press **Enter**. You have given a name to the table. Now you can replace the strange-looking formulas at the bottom of the August Sales worksheet with formulas that are easier to read, yet yield the same results.

**5.** Select cell **D97** (Total Sales).

**6.** Type **=sum(Dr**

**7.** When DrugSales appears in the list, press **Tab**.

**8.** Type **[** (left square bracket).

**9.** Use the arrow keys to select **Total Sales** from the list, and then press **Tab**.

**10.** Type **]** (right square bracket), followed by **)** (right parenthesis) and **Enter**. If you enter the formula properly, the result should be identical to what was there before.

**11.** Replace the formula in cell **D98** with the following:   
**=SUMIF(DrugSales[To treat],”Dog”,DrugSales[Total Sales])**

**12.** Replace the formula in cell **D99** with one based on the formula in **D98**, but searching for **Cat** instead of **Dog**.

**SAVE the workbook and leave it open for the next exercise.**

Step-by-Step 19 – Use the Total Row Command in a Table

GET READY. USE the workbook from the previous exercise.

**1.** Select any cell in the table. Excel adds the DESIGN tab to the ribbon.

**2.** With the August Sales worksheet active, on the DESIGN tab, in the Table Style Options group, select the **Total Row** box. Excel adds a total row to the bottom, as shown in Figure 9-35 in the MOAC text, with a label in the leftmost column and the grand total in the rightmost column.

**3.** To add other subtotals or formulas to the Total Row, you can choose one from a dropdown menu. Click the cell in the total row at the bottom of the Item Price column.

**4.** Click the down arrow that appears to the right of the blank cell. In the popup menu (see Figure 9-36), click **Average**. Excel calculates the average price per sales item.

**5.** Repeat the process to find the maximum number of items sold in one order by choosing the **Max** function for the **No. Sold** column.

**SAVE the workbook and leave it open for the next exercise.**

# Step-by-Step 19 – Add and Remove Rows & Columns in a Table

**GET READY. USE the workbook from the previous exercise.**

**1.** SAVE the workbook in the Lesson 9 folder as ***09 Pet Pharma Sales August Solution 4***.

**2.** In the August Sales worksheet, select cell **A88** (in the Drug column).

**3.** On the HOME tab, in the Cells group, click the **Insert** down arrow. In the menu, click **Insert Table Rows Above**.

**4.** Type the following values into cells **A88:F88**:

**Soloxine Hyperthyroidism Dog or Cat 7 20 2**

**5.** Note that the value in the Items on Hand column is automatically updated, because Excel copied the formula into the new row.

**6.** Select cell **H88** (in the Items Remaining column) and type the value **41**. Cell I88 is updated.

**7.** Select cell **J88** (in the Item Price column) and type the value **25.95**. Cell K88 is updated.

**8.** Select any cell in row **32**.

**9.** On the HOME tab, in the Cells group, click the **Delete** down arrow. In the menu, click **Delete Table Rows**. Row 32 is deleted, and the table shrinks to fit.

**10.** Select any cell in column **I** (No. Sold).

**11.** On the HOME tab, in the Cells group, click the **Delete** down arrow, and then click **Delete Table Columns**. Column I is removed, and for the time being, #REF! errors are generated throughout the Total Sales column, which contain formulas that referred to No. Sold.

**12.** With a cell in column **I** still selected, click the down arrow next to Insert in the Cells group, and in the menu, click **Insert Table Columns to the Left**.

**13.** Change the header in cell **I6** to read **No. Sold**.

**14.** Click cell **I7** and enter the formula **=[Items on Hand]-[Items Remaining]**. Use the “IntelliSense” menus when you type each left bracket [ to expedite your entry. Notice when you press **Enter** that Excel automatically copies the formula down the remainder of the column. You normally don’t have to do this manually for a table.

**15.** Click cell **K7** and enter the formula **=[No. Sold]\*[Item Price]**. This time when you press **Enter**, Excel does *not* fill the formula down the column, because it will not autofill over nonblank cells.

**16.** Fill the new Total Sales formula down to row **93**, making sure to stop short of the total row. The grand total formula in cell K94 is now fixed.

**17.** Click cell **L7**, outside the table.

**18.** Enter the formula **=[Total Sales]/AVERAGE([Total Sales])**. Notice you don’t get the “IntelliSense” menus this time, because the active cell is not inside the table. After you press **Enter**, Excel not only creates the formula but extends the table one column to the right, and copies the formula down the entire column L. For now, Excel gives the new column the temporary name *Column1* (see Figure 9-37).

*Excel doesn’t apply its autofill IntelliSense feature for table field names while you enter data outside the table*.

**19.** Rename the new column **% of Avg.**

**20.** Select cell range **L7:L93** and give the range a percent style. Excel does not automatically copy custom cell styles down a column, so you must select the range manually first. Note how Excel has moved the last column’s boldfaced format from Total Sales to % of Avg.

**21.** Click any cell in **% of Avg.**, and then click the down arrow next to **Delete**. Click **Delete Table Columns**. As the appended column disappears, the boldfacing is returned to Total Sales.

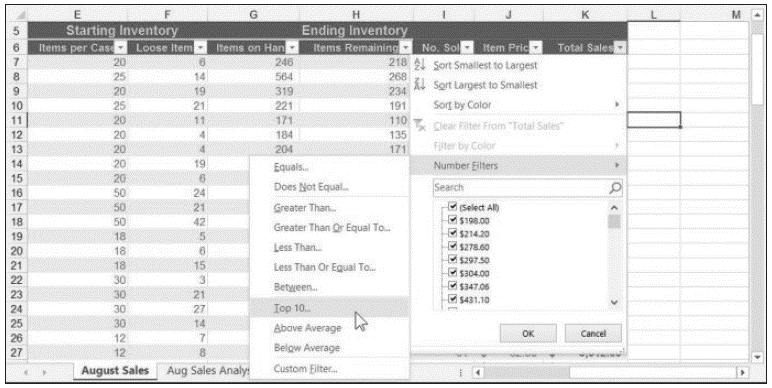
**SAVE the workbook and leave it open for the next exercise.**

## Step-by-Step 20 – Filter Records in a Table

**GET READY. USE the workbook from the previous exercise.**

**1.** In the August Sales worksheet, click the **Total Sales** down arrow.

**2.** In the menu (see Figure 9-38), click **Number Filters**, and then click **Top 10**. The Top 10 AutoFilter dialog box appears.



**3.** Leave the choices set at **Top 10 items**, and then click **OK**. The table is filtered down to the 10 items with the highest sales.

**SAVE and CLOSE the workbook and leave Excel open for the next exercise.**

## Step-by-Step 21 – Sort Data on Multiple Columns in a Table

**GET READY. RE-OPEN the *09 Car Owners Solution* workbook from earlier in this lesson.**

**1.** SAVE the workbook in the Lesson 9 folder as ***09 Car Owners Solution 2***.

**2.** Select the range **A1:G73**.

**3.** On the HOME tab, in the Styles group, click **Format as Table**. In the menu, click **Table Style Medium 14**.

**4.** In the Format As Table dialog box, click **OK**.

**5.** Because this range contains data appended from an outside source (see the “Appending Data to a Worksheet” section earlier in this lesson), the query data related to that outside source is still attached to the range. Click **Yes** in the dialog box to have Excel remove those connections.

**6.** Click the **Name** box and rename the table **Owners**.

**7.** Resize columns **B**, **E**, and **F** to more appropriately fit their contents.

**8.** Change the font for the entire table to **Cambria**, **11 pt**.

**9.** Left-justify column **G**.

**10.** With the Owners table selected, on the DATA tab, in the Sort & Filter group, click **Sort**.

The Sort dialog box appears (refer to Figure 9-16).

**11.** In the Sort by list box under Column, choose **Last Name**.

**12.** Click **Add Level**.

**13.** In the Then by list box that appears under Column, choose **First Name**. Click **OK**.

**SAVE the workbook and leave it open for the next exercise.**

## Step-by-Step 22 – Change Sort Order in a Table

**GET READY. USE the workbook from the previous exercise.**

**1.** With the active cell in the Owners table, on the DATA tab, in the Sort & Filter group, click **Sort**.

**2.** In the Sort dialog box, click **Delete Level**, and then click **Delete Level** again, to remove the existing sort order.

**3.** Click **Add Level**.

**4.** In the Sort by list box that appears, click **ZIP**. Click **OK**.

**SAVE the workbook and leave it open for the next exercise.**

## Step-by-Step 23 – Remove Duplicates in a Table

**GET READY. USE the workbook from the previous exercise.**

**1.** Click any cell inside the table.

**2.** On the DESIGN tab, in the Tools group, click **Remove Duplicates**.

**3.** The Remove Duplicates dialog box (refer to Figure 9-15) lets you determine how much of a record needs to be duplicated before it qualifies as a duplicate. For instance, two or more customers might have the same name, though they probably don’t share the same address or phone number. In the Columns list, uncheck **City**, **State**, and **ZIP**.

**4.** Click **OK**. Excel shows a dialog box reporting how many duplicate entries were removed. Click **OK** to dismiss.

**SAVE and CLOSE the workbook and leave Excel open for the next exercise.**

# Step-by-Step 24 – Use a Slicer to View Table Data

**GET READY. RE-OPEN the *09 Pet Pharma Sales August Solution 4* workbook for this lesson.**

**1.** SAVE the workbook in the Lesson 9 folder as ***09 Pet Pharma Sales August Solution 5***.

**2.** On the DATA tab, in the Sort & Filter group, click **Clear**. Click any cell inside the table.

**3.** On the DESIGN tab, in the Tools group, click the **Insert Slicer** button.

**4.** The Insert Slicers dialog box contains empty check boxes for each of the fields for which you can create buttons (see Figure 9-40). Click **For use on** and **To treat**.

**5.** Click **OK**. As the dialog box disappears, the two slicer tools appear as graphic objects in the center of the worksheet. They’re not actually inside the table.

**6.** Relocate the **For use on** slicer by dragging its title bar toward the upper right of the worksheet. As you drag toward the edge of the window, the worksheet automatically scrolls to reveal space where you can drop the slicer. Drop the slicer when it’s to the right of the table, just beneath the headers row.

**7.** Repeat the process with the **To treat** slicer, dragging it below the For use on slicer. The worksheet should look similar to Figure 9-41.

**8.** To see just the treatments that apply to dogs only, click **Dog** on the To treat slicer. Note that the AutoFilter button for the To treat column shows a filter has been applied.

**9.** To show just the treatments that apply to the endocrine system, click **Endocrine** on the For use on slicer. Note that the filters from both slicers apply simultaneously, so you should see endocrine system treatments for dogs only. The slicer highlights only the criterion in use for the current filter.

**10.** To clear the filters using the slicers, click the **Clear Filter** button in the upper right corner of each slicer.

**SAVE and CLOSE the workbook and leave Excel open for the next exercise.**

## Step-by-Step 25 – Convert a Table to a Range

**GET READY. RE-OPEN the *09 2005 Customers Solution* workbook for this lesson.**

**1.** Near the top of the Excel window, respond to the security warning by clicking **Enable Content**.

**2.** SAVE the workbook in the Lesson 9 folder as ***09 2005 Customers Solution 2***.

**3.** Click any cell inside the table.

**4.** On the DESIGN tab, in the Tools group, click **Convert to Range**.

**5.** Excel opens a dialog box to verify this conversion is what you want. Click **OK**. The AutoFilter buttons are removed from the header row and entries are left sorted as they were. Subtotals and total rows remain (if applicable), and formatting is left as it was. The DESIGN tab is no longer displayed.

**SAVE and CLOSE the workbook and leave Excel open for the next exercise.**

## Step-by-Step 26 – Record a Basic Macro

**GET READY. OPEN the *09 4Strong Tour Revenues* workbook for this lesson.**

**1.** Click the **FILE** tab, and then click **Options**.

**2.** In the Excel Options dialog box, click **Customize Ribbon**.

**3.** In the Main Tabs list on the right, check the **Developer** box if it is not already checked. This adds the DEVELOPER tab to Excel, enabling you to record macros. Click **OK**.

**4.** The macro that you record creates a custom subtotal row at the place you define, rather than at some place Excel determines. The rule you follow is that the user (you) must select the cell where you want the subtotal to appear, and then run the macro. So to prepare for recording, click cell **D21**.

**5.** On the DEVELOPER tab, in the Code group, find **Use Relative References**. If it is not highlighted, click to select it. You want relative references for this macro.

**6.** In the Code group, click **Record Macro**.

**7.** In the Record Macro dialog box, click the **Macro name** box and type **CustomSubtotals**.

**8.** In the Shortcut key box beside Ctrl +, type the capital **S**. This changes the shortcut key to   
**Ctrl + Shift + S**. Leave Store macro in set to This Workbook. The dialog box should now appear as depicted in Figure 9-42 in the MOAC text.

**9.** Click **OK**. You are now recording a macro.

*If you mess up a step during the macro recording, don’t worry. Click Stop Recording in the Code group of the Developer tab. Then start again from Step 6. Use the same name, and when Excel asks whether you want to overwrite the existing macro with the same name, respond with Yes.*

**10.** Press **Shift + Down Arrow**.

**11.** On the HOME tab, in the Cells group, click the **Insert arrow**. In the menu, click **Insert Sheet Rows**.

**12.** Press **Shift + Up Arrow**.

**13.** In the Editing group, click **AutoSum**. Do not press Enter yet.

**14.** In the Clipboard, click **Copy**.

**15.** Press **Tab**.

**16.** Type the partial formula **=max(**.

**17.** In the Clipboard group, click **Paste**.

**18.** Type **)** (end parenthesis) and press **Tab**.

**19.** Press **Left Arrow**.

**20.** Click **$** (Accounting Number Format) in the Number group.

**21.** On the DEVELOPER tab, in the Code group, click **Stop Recording**.

**22.** Now that you’re not recording, adjust the width of column **E** to fit its contents. As   
Figure 9-43 shows, the macro generates a total for the bottom of the arbitrary cluster of records, and also tabulates the highest value in that cluster in the cell adjacent to the subtotal.

**23.** Click the **FILE** tab, and then click **Save As**.

**24.** In Backstage, locate the Lesson 9 folder.

**25.** In the Save As dialog box, under Save as type, choose **Excel Macro-Enabled Workbook (\*.xlsm)**.

SAVE the workbook as ***09 4Strong Tour Revenues Solution.xlsm*** and leave it open for the next exercise.

## Step-by-Step 27 – Run a Macro

**GET READY. USE the workbook from the previous exercise.**

**1.** Click cell **D39**.

**2.** On the DEVELOPER tab, in the Code group, click **Macros**.

**3.** In the Macro dialog box, click **CustomSubtotals**. Click **Run**. The custom subtotals row is added immediately, with a one-row gap between the clusters.

**4.** Click cell **D57**.

**5.** Press **Ctrl + Shift + S**. The custom subtotals row appears here immediately.

**SAVE the workbook and leave it open for the next exercise.**

## Step-by-Step 28 – Manage Macro Security

**GET READY. USE the workbook from the previous exercise.**

**1.** On the DEVELOPER tab, in the Code group, click **Macro Security**.

**2.** In the Trust Center dialog box (see Figure 9-45), click **Disable all macros with notification** to have Excel warn you whenever an opened workbook contains macros, enabling you to turn those macros on or off based on your decision.

**3.** Click **OK**.

**CLOSE the workbook. CLOSE Excel.**