

# Working with Text Functions and Creating Custom Formats

## Cleaning Data in a Spreadsheet

- [Chapter Introduction](#)
- A-1 [Opening and Saving Workbooks Created in Earlier Versions of Excel](#)
- A-2 [Using Text Functions](#)
  - A-2a [Using the LEN and LEFT Functions](#)
  - A-2b [Using the Paste Values Command](#)
  - A-2c [Using the PROPER Function and the CONCATENATE Function](#)
  - A-2d [Applying the Text to Columns Command](#)
  - A-2e [Using the UPPER Function to Convert Case](#)
  - A-2f [Using the SUBSTITUTE Function](#)
  - A-2g [Using Special Formats](#)
- A-3 [Creating Custom Formats](#)
  - A-3a [Creating a Custom Number Format](#)
  - A-3b [Creating a Custom Date Format](#)
- A-4 [Using the Compatibility Checker](#)
- A-5 [Chapter Review](#)
  - A-5a [Practice Review Assignments](#)
  - A-5b [Apply Case Problem 1](#)
  - A-5c [Apply Case Problem 2](#)

## Objectives

- Open a workbook in Compatibility Mode
- Use the LEN function
- Use the LEFT function
- Apply the Paste Values command
- Use the PROPER function
- Use the CONCATENATE function
- Apply the Text to Columns command
- Use the UPPER function
- Use the SUBSTITUTE function
- Apply a special format to phone numbers
- Create custom formats for numbers and dates
- Use the Compatibility Checker

## Sharp Blades Hockey Club

### Case

The town of Drumright, Oklahoma, started the Sharp Blades Hockey Club in 2010. The adult division of the club has members from the towns in the area, and the average age of the members is 42. They have elected officers for president, secretary, and treasurer. James Perez has been elected secretary, and part of his job is to keep the records for the club. The officers of the club would like to know more about the players and the prospects for the growth of the club.

The club has a spreadsheet containing data about the current players, but the data was compiled by volunteers and is not organized for any kind of analysis. Before James begins his analysis, he needs to “clean” the data, and he has asked for your help.

#### Starting Data Files



Microsoft product screenshots used with permission from Microsoft Corporation.

## A-1 Opening and Saving Workbooks Created in Earlier Versions of Excel

When you open a workbook that was created in Excel 2003 or earlier, it opens in Compatibility Mode. [Compatibility Mode](#) keeps the workbook in the older file format with the .xls file extension, making the workbook accessible for users who do not have the current version of Excel installed. The words “[Compatibility Mode]” appear in the title bar, indicating the file is not in the latest Excel format. You can work in Compatibility Mode. However, to have access to all the latest features and tools in Excel 2013, you must convert the workbook to the current file format, which has the .xlsx file extension. This is the file format you have used to save workbooks in the tutorials.

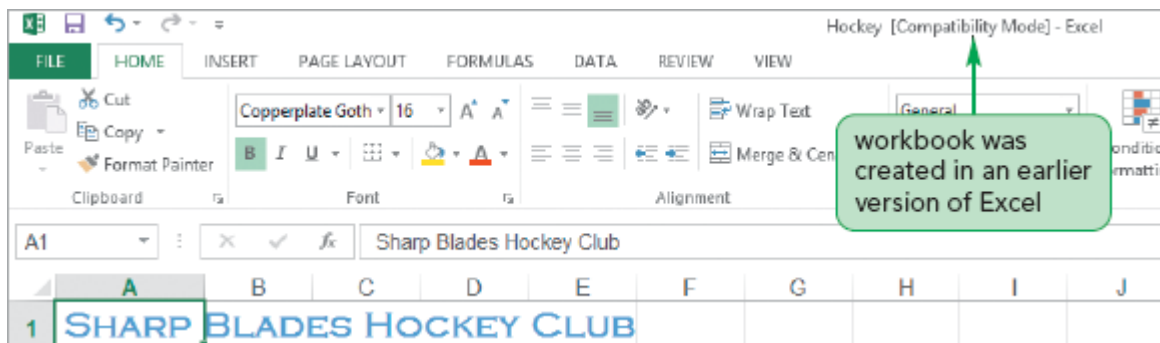
The workbook James received from the previous secretary was created in Excel 2003. James wants you to convert the workbook to the current format.

To save the workbook in the current Excel file format:

- 1.

Open the **Hockey** workbook located in the ExcelA ► Tutorial folder included with your Data Files. The workbook opens in Compatibility Mode because the workbook was created in an earlier version of Excel. See [Figure A-1](#).

Figure A-1 Workbook in Compatibility Mode



- 2.

On the ribbon, click the **FILE** tab to open Backstage view, and then click the **Save As** command in the navigation bar.

3. 3.

Click the **Browse** button to open the Save As dialog box.

4. 4.

In the File name box, type **Sharp Blades**. The Save as type box shows that the current file format is Excel 97-2003 Workbook, which is the earlier file format. You'll change this to the latest file format.

5. 5.

Click the **Save as type** button, and then click **Excel Workbook**. This is the file format for Excel 2007, 2010, and 2013.

6. 6.

Click the **Save** button. The workbook is saved with the new name and file type.

As you can see from the title bar, the workbook remains in Compatibility Mode. You can continue to work in Compatibility Mode, or you can close the workbook and then reopen it in the new file format. You will open the workbook in the current file format.

To open the Sharp Blades workbook in the current file format:

1. 1.

Close the Sharp Blades workbook.

2. 2.

Open the **Sharp Blades** workbook. The text “[Compatibility Mode]” no longer appears in the title bar, indicating that the workbook is in the current version file format of Excel.

3. 3.

In the Documentation worksheet, enter your name and the date.

The Players worksheet contains data about the club members. Before working with this data, James wants you to convert it to an Excel table.

To create an Excel table from the list of player information:

1. 1.

Go to the **Players** worksheet.

2. 2.

On the ribbon, click the **INSERT** tab.

3. 3.

In the Tables group, click the **Table** button. The Create Table dialog box opens with the range \$A\$1:\$G\$45 selected, and the My table has headers box is checked.

4. 4.

Click the **OK** button to create the Excel table. Note that filter arrows appear in the column heading cells.

5. 5.

On the TABLE TOOLS DESIGN tab, in the Properties group, enter **Player** in the Table Name box to rename the table.

6. 6.

On the ribbon, click the **DATA** tab.

7. 7.

Select any cell in the Excel table.

## A-2 Using Text Functions

If you receive a workbook from a coworker or obtain data from other software packages, you often have to edit (sometimes referred to as *clean* or *scrub*) and manipulate the data before it is ready to use. To help users edit and correct the text values in their workbooks, Excel provides Text functions. Text, also referred to as a *text string* or *string*, contains one or more characters and can include spaces, symbols, and numbers as well as uppercase and lowercase letters. You can use Text functions to return the number of characters in a string, remove extra spaces, and change the case of text strings. [Figure A-2](#) reviews some of the common Text functions available in Excel.

Figure A-2Text functions

Function	Syntax	Description	Example
LEFT	=LEFT(text, nbr chars)	Returns a specified number of characters at the left of the string	=LEFT("Michael",3) returns Mic
RIGHT	=RIGHT(text, nbr chars)	Returns a specified number of characters at the right of the string	=RIGHT("Michael",3) returns ael
MID	=MID(text, start nbr, nbr chars)	Returns a specified number of characters from a string, starting at a position you specify	=MID("Net Income",5,3) returns Inc
UPPER	=UPPER(text)	Converts all lowercase characters in a string to uppercase	=UPPER("kim") returns KIM
LOWER	=LOWER(text)	Converts all uppercase characters in a string to lowercase	=LOWER("KIM") returns kim
PROPER	=PROPER(text)	Capitalizes the first letter of each word in a string	=PROPER("JASON BAKER") returns Jason Baker
LEN	=LEN(text)	Returns the number of characters in a string	=LEN("Judith Tinker") returns 13
SEARCH	=SEARCH(find_text, within_text, start_nbr)	Returns the number of the character at which the find_text is first found reading from left to right	=SEARCH("Main", "1234 Main St.", 1) returns 6
TEXT	=TEXT(value, format_text_code)	Formats numbers within text using a specific number format	=TEXT(SUM(D5:D75), "\$#,0.00") returns \$1,052.00
TRIM	=TRIM(text)	Removes all spaces from a string except for single spaces between words	=TRIM(" Mariah Ells") returns Mariah Ells

© 2014 Cengage Learning



© 2014 Cengage Learning

## A-2a Using the LEN and LEFT Functions

The Zip column in the Players worksheet includes zip codes in both five-digit and 10-digit formats. James wants only the five-digit component of the zip code. You can use the LEN and LEFT functions nested in an IF function to convert all of the zip codes to the shorter form. The IF function uses the LEN function to test whether the zip code has 10 digits. If true (the zip code is 10 digits), the LEFT function displays the first five digits in the cell. If false (the code is not 10 digits), all the digits in the cell are displayed.

The [LEN function](#) returns the number of characters (length) of the specified string. Cell C6 stores the text “Cushing, ok” so the formula =LEN(C6) returns 11, which is the number of characters, including spaces, in “Cushing, ok.” You will use the LEN function to determine how many characters are in each cell of the Zip column.

The [LEFT function](#) returns a specified number of characters from the beginning of the string. To extract the five-digit zip code from the zip code 74079-1236 stored in cell D3, you use the formula =LEFT(D3,5) to return 74079.

The following formula shows the LEN and LEFT functions nested in an IF function to display a five-digit zip code—=IF(LEN([Zip])=10,LEFT([Zip],5),[Zip]).

Before you enter the IF function to extract the five-digit zip code, you need to prepare the worksheet. First, you need to insert a new column to the left of the Phone # column. Then, you will copy the zip code data into the

new column, pasting the data as values so you can use the data in a formula. The results of the formula will appear in the new column as well.

To extract the five-digit zip code from the Zip column:

1. 1.

Select cell **E2**. You'll insert the table column to the left of this column.

2. 2.

On the ribbon, click the **HOME** tab.

3. 3.

In the Cells group, click the **Insert button arrow**, and then click **Insert Table Columns to the Left**. A new column named Column1 is inserted with the Text number format, which is the same format as the Zip column (column D). The columns in the worksheet automatically adjust as you add new columns. For example, the phone number in cell F2 changed to 9.186E+09. You will adjust column widths later, so you don't need to be concerned about these automatic adjustments.

4. 4.

Select the range **E2:E45**. Because the range is formatted as Text, you cannot enter a formula in a cell. You need to change the formatting of the selected range.


5. 5.

On the HOME tab, in the Number group, click the **Dialog Box Launcher**. The Format Cells dialog box opens with the Number tab displayed.

6. 6.

In the Category box, click **General**, then click the **OK** button. Now, you can enter the formula in cell E2.

7. 7.

Select cell **E2**, and then click the **Insert Function** button  next to the formula bar. The Insert Function dialog box opens.

8. 8.

Click **Logical** in the Or select a category list, click **IF** in the Select a function box, and then click the **OK** button. The Function Arguments dialog box opens.

9. 9.

In the Logical\_test box, type **LEN([Zip])=10**. The logical test tests whether the number of characters in the current cell of the Zip column equals 10.

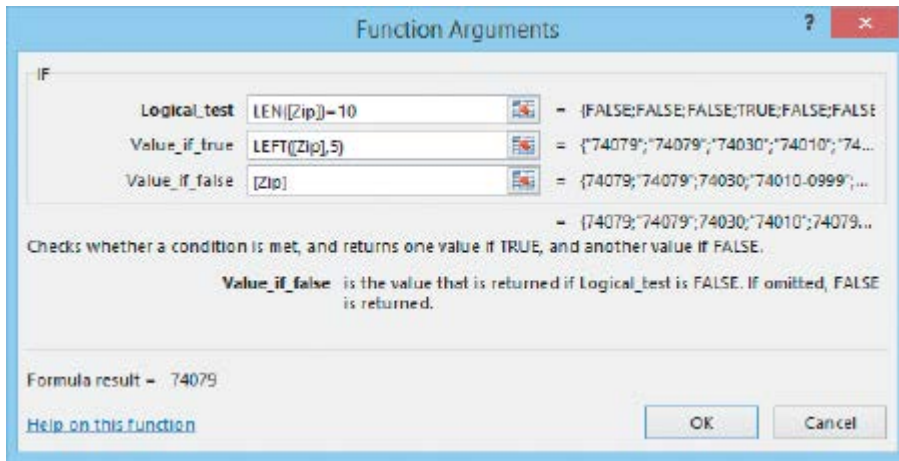
10. 10.

In the Value\_if\_true box, type **LEFT([Zip],5)**. This argument specifies that if the condition is true, the first five characters from the cell are displayed.

11. 11.

In the Value\_if\_false box, type **[Zip]**. This argument specifies that if the condition is false, all the characters from the cell are displayed. See [Figure A-3](#).

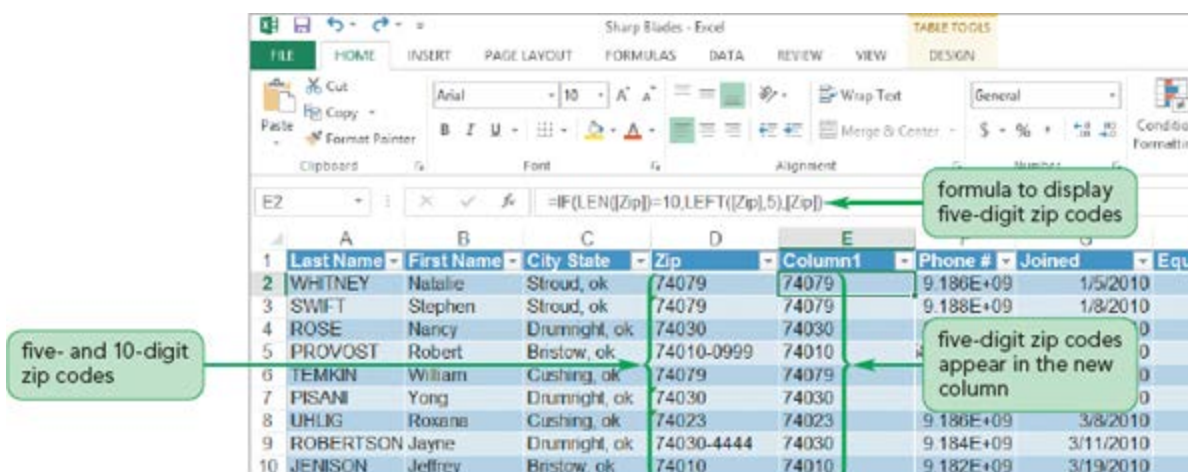
Figure A-3IF function with LEN and LEFT functions



12. 12.

Click the **OK** button. The formula `=IF(LEN([Zip])=10,LEFT([Zip],5),[Zip])` appears in the formula bar, and the value 74079 appears in cell E2 because the condition is false. The results are automatically copied to all rows in column E of the table. Each cell in column E displays the five-digit zip code. See [Figure A-4](#).

Figure A-4Table column with five-digit zip codes



13. 13.

If necessary, left-align the data in the new zip column.

[Add Bookmark to this Page](#)

## A-2b Using the Paste Values Command

You now have two columns with zip codes (columns D and E). You need to keep only the column that displays the five-digit zip code. However, the data in column E is dependent on column D. If you delete column D, column E will display the #REF! error value. Therefore, before you delete column D, you need to convert the data in column E, which is based on a formula, to values. The easiest way to do that is to copy and paste the formula results, but not the actual formula, in the same column using the Paste Values command. Then, you can delete column D.

To convert the five-digit zip code formula results to values:


1. 1.

Select the range **E2:E45**, which contains the formula results you want to convert to values.

2. 2.

On the HOME tab, in the Clipboard group, click the **Copy** button , and then select cell **E2**.

3. 3.

In the Clipboard group, click the **Paste button arrow**, and then click the **Values** button . The values are pasted over the original formulas, replacing them.

4. 4.

Select the range **E2:E45**. You need to format these values as text, in case any zip codes start with zeros.

5. 5.

In the Number group, click the **Number Format box arrow**, and then click **Text**.

6. 6.

Select column **D**, right-click the selected column, and then click **Delete** on the shortcut menu. The column is removed.

7. 7.

In cell **D1**, enter **Zip**. Column D, which stores the five-digit zip code values, now has a descriptive column header.

8. 8.

Autofit the Zip column to fit the five-digit zip codes.

[Add Bookmark to this Page](#)



## A-2c Using the PROPER Function and the CONCATENATE Function

The [PROPER function](#) converts the first letter of each word to uppercase, capitalizes any letter that does not follow another letter, and changes all other letters to lowercase. The formula =PROPER(“WHITNEY”) changes the word “WHITNEY” to “Whitney.” You will first use the PROPER function to convert the last name so that the first letter is capitalized.

The [CONCATENATE function](#) joins, or concatenates, two or more text values. The syntax of the CONCATENATE function is

- =CONCATENATE(*text1*,*text2*,...)

where *text1*, *text2*, etc., are constants or cells storing text or numbers. The CONCATENATE function joins these values to produce a single string. For example, if the last name “WHITNEY” is in cell A2 and the first name “Natalie” is in cell B2, you can use the formula =CONCATENATE(A2,B2) to join the contents of the two cells (last name and first name) to display the full name in cell C2. However, this formula returns “WHITNEYNatalie” in cell C2. To include a comma and a space between the two names, you must change the formula to =CONCATENATE(PROPER(A2),“, ”,B2), which uses a function, two values, and a string constant (a comma and a space enclosed in quotation marks) to display “Whitney, Natalie” in the cell.

James wants to combine the Last Name and First Name columns into one column and use standard capitalization for the names. You will use a formula that includes the PROPER function and the CONCATENATION function to do this.

To combine the names in one column with standard capitalization:

1. 1.

Select cell **C2**, and then insert a table column to the left. A new column named Column1 is inserted to the left of the City State column.

2. 2.

In cell **C2**, type =CONCATENATE(PROPER([Last Name]),“, ”,[First Name]) and then press the **Enter** key. The formula is entered for every record in column C, and displays the player's last name and first name with standard capitalization separated by a comma.

3. 3.

AutoFit column C to accommodate the longest entry. Each cell in column C displays the player's name in the form *Last name, First name* with the first letter of each name capitalized. Notice that the Joined column is no longer wide enough to display some of the entries; you will resize the column later. See [Figure A-5](#).

Figure A-5 Player's name displayed in one column

CONCATENATE function joins two or more text values

PROPER function converts the first letter of each word to uppercase

full names listed Last name, First name in one column

	A	B	C	D	E	F	G	H
1	Last Name	First Name	Column1	City State	Zip	Phone #	Joined	Equip
2	WHITNEY	Natalie	Whitney, Natalie	Stroud, ok	74079	9185809520	1/5/2010	
3	SWIFT	Stephen	Swift, Stephen	Stroud, ok	74079	9187838810	1/8/2010	
4	ROSE	Nancy	Rose, Nancy	Drumright, ok	74030	9184863933	#####	
5	PROVOST	Robert	Provost, Robert	Bristow, ok	74010	1-5802675615	#####	
6	TEMKIN	William	Temkin, William	Cushing, ok	74079	9187323349	#####	
7	PISANI	Yong	Pisani, Yong	Drumright, ok	74030	9183648833	#####	
8	UHLIG	Roxanne	Uhlig, Roxanne	Cushing, ok	74023	9185809520	3/8/2010	
9	ROBERTSON	Jayne	Robertson, Jayne	Drumright, ok	74030	9183648832	#####	
10	JENISON	Jeffrey	Jenison, Jeffrey	Bristow, ok	74010	9181835703	#####	
11	COULAHAN	Linda	Coulahan, Linda	Drumright, ok	74030	4054834659	#####	
12	DIMOND	Pamela	Dimond, Pamela	Bristow, ok	74010	9185241612	#####	

Now that the players' name data is stored in column C, you no longer need the data in column A (Last Name) and column B (First Name). Because the results in column C are based on a formula, you need to convert the formula in column C to values before you delete the other columns.

To paste the formula results as values and delete the original data:

1. 1.

Select the range **C2:C45**, and then copy the range to the Clipboard.

2. 2.

Select cell **C2**, and then paste the values from the Clipboard to column C.

3. 3.

Press the **Esc** key, and then AutoFit column C so you can see the players' full names.

4. 4.

In cell **C1**, enter **Player** as the column header.

5. 5.

Delete columns **A** and **B**. The Player column remains in the Excel table.

## A-2d Applying the Text to Columns Command

When multiple pieces of data are stored in one cell, you can separate each piece of data into a different column by using the Text to Columns command. This command starts the Convert Text to Column Wizard. You specify how to split the data based on how the data is stored. You can select what [delimits](#), or separates, the data, such as a tab, a semicolon, a comma, or a space. For fixed-width data, you specify break locations. For example, you might need to specify a break location in a string where the first character identifies the warehouse location,

characters 2 through 4 identify the aisle, and characters 5 through 8 identify the actual location on the shelf. Each entry in a fixed-width field is the same length no matter how many characters are entered in the field.

The Players worksheet has the city and state separated by a comma delimiter. James wants you to split the city and state data into different columns.

To split the city and state data into separate columns:

1. 1.

Select cell **C2**, and then insert a table column to the left. A new column named Column1 is inserted to the left of the Zip column.

2. 2.

Select the range **B2:B45**. These cells contain the values you want to split.

3. 3.

On the ribbon, click the **DATA** tab.

4. 4.

In the Data Tools group, click the **Text to Columns** button. The Convert Text to Columns Wizard - Step 1 of 3 dialog box opens. You select how the data is organized in this step—delimited or a fixed width.

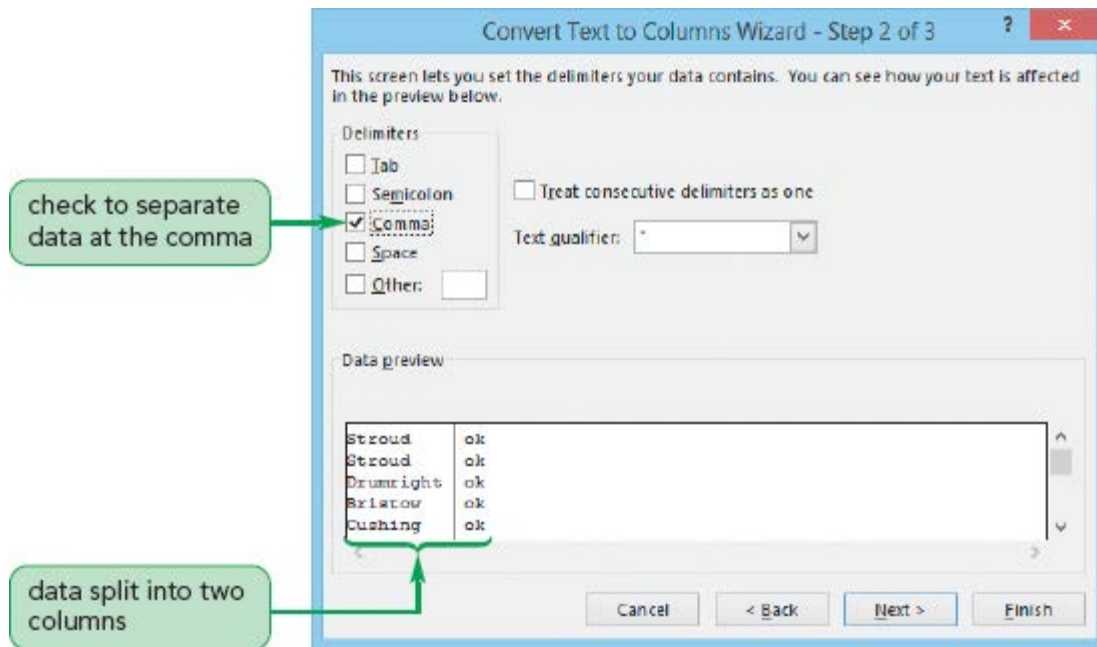
5. 5.

In the Original data type area, verify that the **Delimited** option button is selected, and then click the **Next** button. The Convert Text to Columns Wizard - Step 2 of 3 dialog box opens. You select the delimiter character in this step. The data in the City State column is separated by a comma.

6. 6.

Click any check box with a checkmark in the Delimiters section to remove the checkmark, and then click the **Comma** check box to insert a checkmark. The Data preview box shows the City and State data in separate columns. See [Figure A-6](#).

Figure A-6 Convert Text to Columns Wizard - Step 2 of 3 dialog box



7. 7.

Click the **Next** button. The Convert Text to Columns Wizard - Step 3 of 3 dialog box opens so you can set the data format for each column. The Data preview box shows that each column is set to the General number format, which is what you want.

8. 8.

Click the **Finish** button. Cities remain in column B; states move to column C.

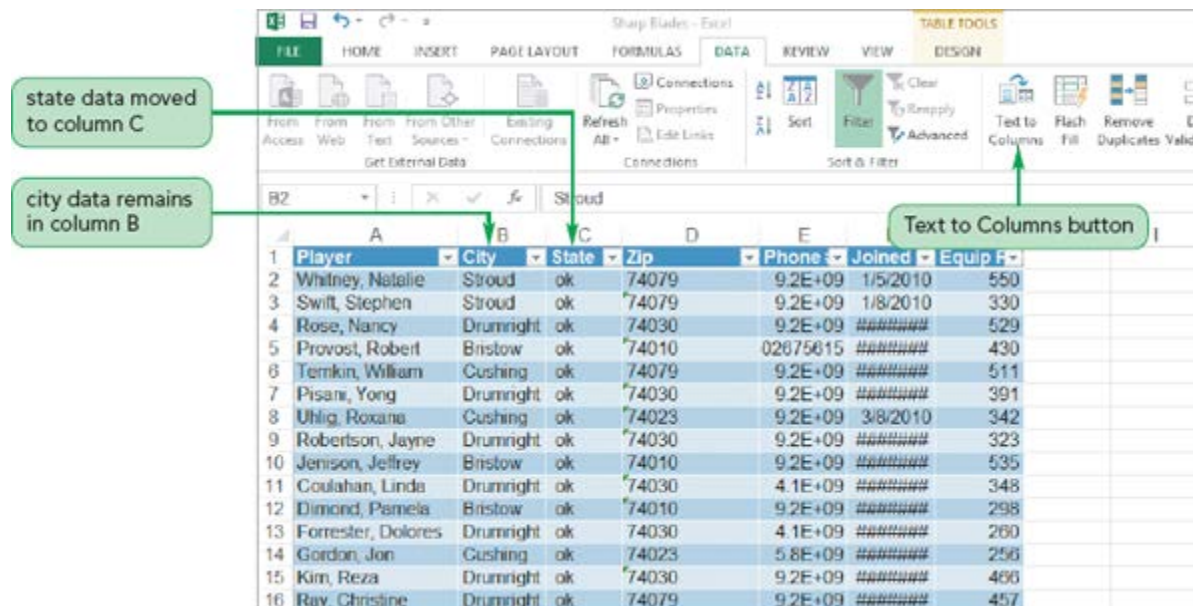
9. 9.

In cell **B1**, enter **City** and then in cell **C1**, enter **State**.

10. 10.

AutoFit the widths of columns B and C. See [Figure A-7](#).

Figure A-7 City and State displayed in separate columns



## A-2e Using the UPPER Function to Convert Case

The [UPPER function](#) converts all letters of each word in a text string to uppercase. For example, the formula =UPPER("ri") returns RI. James wants you to change state abbreviations in column D from lowercase to uppercase. You'll use the UPPER function to do this.

To use the UPPER function to capitalize the state abbreviations:

1. 1.

Select cell **D2**, and then insert a table column to the left. A new column named Column1 is inserted to the left of the Zip column.

2. 2.

In cell **D2**, type =U and then double-click the **UPPER** function in the list. The beginning of the formula =UPPER( is in the cell and the formula bar.

3. 3.

Type [ to begin the column specifier, double-click **State** in the list of column qualifiers, type ] to end the column specifier, and then type ). The formula =UPPER([State]) appears in the formula bar.

4. 4.

Press the **Enter** key. The state abbreviation appears in all uppercase letters in column E. See [Figure A-8](#).

Figure A-8UPPER function converted state abbreviations to uppercase

UPPER function formula converts cell contents to uppercase

state abbreviations are capitalized

	A	B	C	D	E	F	G	H	I
1	Player	City	State	Column1	Zip	Phone	Joined	Equip R	
2	Whitney, Natalie	Stroud	ok	OK	74079	9 2E+09	1/5/2010	550	
3	Swift, Stephen	Stroud	ok	OK	74079	9 2E+09	1/8/2010	330	
4	Rose, Nancy	Drumright	ok	OK	74030	9 2E+09	#####	529	
5	Provost, Robert	Bristow	ok	OK	74010	02075015	#####	430	
6	Temkin, William	Cushing	ok	OK	74079	9 2E+09	#####	511	
7	Pisani, Yong	Drumright	ok	OK	74030	9 2E+09	#####	391	
8	Uhlig, Roxana	Cushing	ok	OK	74023	9 2E+09	3/8/2010	342	
9	Robertson, Jayne	Drumright	ok	OK	74030	9 2E+09	#####	323	
10	Jenison, Jeffrey	Bristow	ok	OK	74010	9 2E+09	#####	535	
11	Coulahan, Linda	Drumright	ok	OK	74030	4 1E+09	#####	348	
12	Dimond, Pamela	Bristow	ok	OK	74010	9 2E+09	#####	298	
13	Forrester, Dolores	Drumright	ok	OK	74030	4 1E+09	#####	200	
14	Gordon, Jon	Cushing	ok	OK	74023	5 8E+09	#####	256	



You want to keep only the data in column D. Because the results of column D are based on a formula, you again will convert the formula in column D to values before you delete column C.

To paste the state abbreviations as values:

1. 1.

Select the range **D2:D45**, and then copy the range to the Clipboard.

2. 2.

Select cell **D2**, and then paste the values from the Clipboard. Verify that the formula bar displays a value and not a formula.

3. 3.

Press the **Esc** key.

4. 4.

Delete column **C**.

5. 5.

In cell **C1**, enter **State**. The column is renamed with a more descriptive header.

## A-2f Using the SUBSTITUTE Function

The [SUBSTITUTE function](#) replaces existing text with new text. The SUBSTITUTE function has the syntax

- `SUBSTITUTE(text,old_text,new_text,instance_num)`

where *text* is a string constant or reference to a cell containing text you want to replace, *old\_text* is the existing text you want to replace, *new\_text* is the text you want to replace *old\_text* with, and *instance\_num* specifies which occurrence of *old\_text* you want to replace. If you omit *instance\_num*, every instance of *old\_text* is replaced. The formula

- `=SUBSTITUTE("164-45-890","-","")`

returns 16445890.

The entries for the phone numbers in column E are inconsistent. Sometimes they are an eight-digit value, and other times they are preceded with 1- (which James wants you to remove from the Phone # column). You'll enter a formula with the SUBSTITUTE function to remove the preceding 1- from this data.

To remove the preceding 1- from the phone number data and paste the values:


1. 1.

Select cell **F2**, and then insert a table column to the left. A new column named Column 1 is inserted to the left of the Joined column.

2. 2.

AutoFit column E (Phone # column) so you can see that some phone numbers are preceded by 1-.

3. 3.

Click the **Insert Function** button  next to the formula bar. The Insert Function dialog box opens.

4. 4.

Click the **Or select a category** arrow, click **Text** to display the Text functions, and then scroll down to and double-click **SUBSTITUTE** in the Select a function box. The Function Arguments dialog box opens.

5. 5.

In the Text box, type **E2**. The text in cell E2 is displayed.

6. 6.

In the Old\_text box, type **"1-"**. The text you want to remove is enclosed in quotation marks.

7. 7.

In the New\_text box, type **""**. You want to replace the old text with nothing. You do not need to enter anything in the Instance\_num box because you want to replace every instance of 1-.

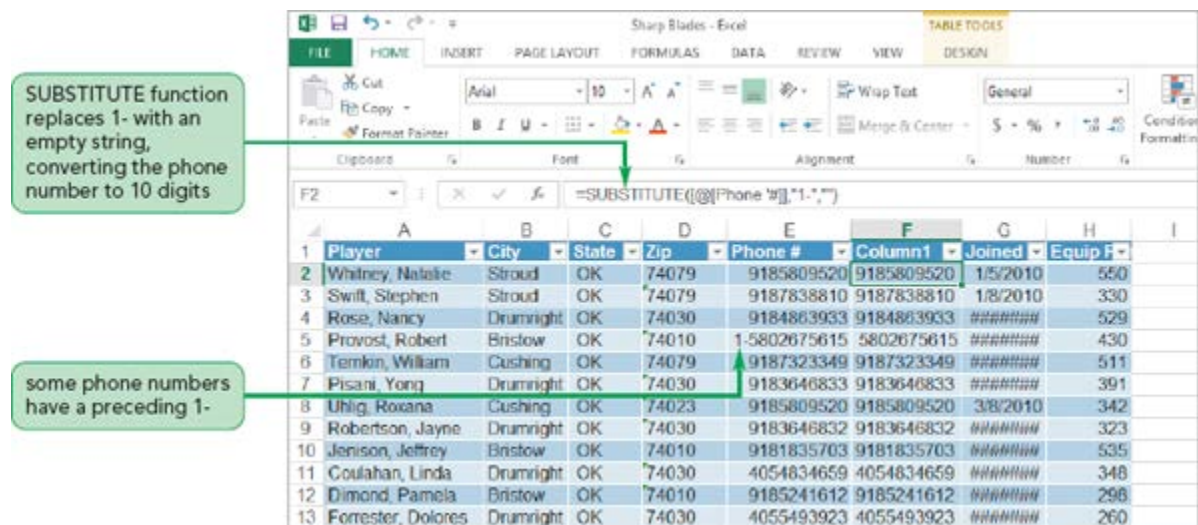
8. 8.

Click the **OK** button. All of the phone numbers are changed to 10-digit numbers, and wherever necessary, the preceding 1- is replaced with an empty string (a blank, or nothing).

9. 9.

AutoFit column F, and then select cell **F2**. See [Figure A-9](#).

Figure A-9SUBSTITUTE function removed 1- from the phone numbers



10. 10.

Select the range **F2:F45**, and then copy this range to the Clipboard.

11. 11.

Select cell **F2**, paste the values from the Clipboard, and then press the **Esc** key.

12. 12.

Delete column **E**.

13. 13.

In cell **E1**, enter **Phone #** to identify the data in the column.

14. 14.

AutoFit the columns as needed to display their entire contents.

## A-2g Using Special Formats

Four commonly used formats, referred to as special formats, are available—two zip code formats (five-digit and 10-digit), a phone number format (with the area code in parentheses and a hyphen between the prefix and the last four digits), and a Social Security number format (a nine-digit number with hyphens after the third and fifth digits). Using these special formats allows you to type a number without punctuation, yet still display that number in its common format.




James wants you to display the phone number using the common format of area code in parentheses and a hyphen between the prefix and the last four digits.

To format the phone numbers with the Phone Number format:

1. 1.

Select the range **E2:E45**. Notice the green triangle in the upper-left corner for the cells in this range.

2. 2.

Point to any triangle to display the Error Alert button, click the **Error Alert button arrow** , and then click **Convert to Number** in the list of options.

3. 3.

With the range E2:E45 still selected, on the HOME tab, in the Number group, click the **Dialog Box Launcher**. The Format Cells dialog box opens with the Number tab active.

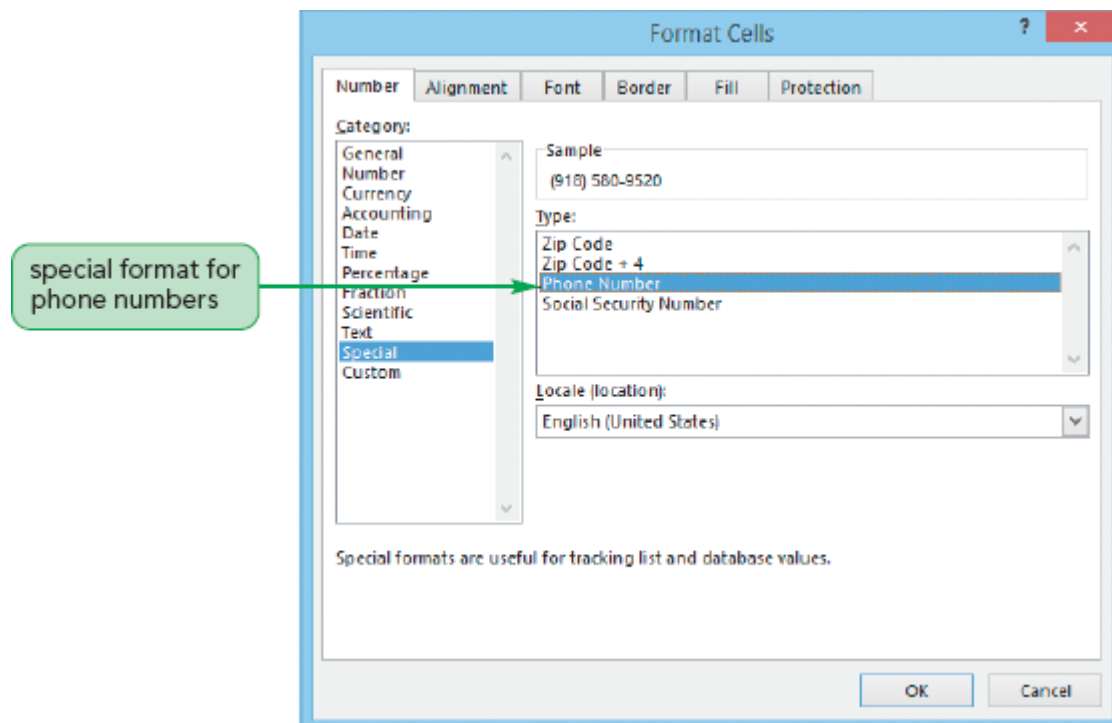
4. 4.

In the Category box, click **Special**. Four special formats appear in the Type list—Zip Code, Zip Code + 4, Phone Number, and Social Security Number.

5. 5.

In the Type box, click **Phone Number**. See [Figure A-10](#).

Figure A-10 Special category on the Number tab



Click the **OK** button. The phone numbers are formatted in a standard telephone format.

## A-3 Creating Custom Formats

Excel supplies a generous collection of formats and styles to improve the appearance and readability of worksheets. However, sometimes you will need a format and style to accommodate a specific requirement. In these cases, you can create your own formats, called [custom formats](#). Custom formats use [format codes](#), a series of symbols, to describe exactly how Excel should display a number, date, time, or text string. You can use format codes to display text strings and spaces, and determine how many decimal places to display in a cell.

### A-3a Creating a Custom Number Format

Each number is composed of digits. In displaying these digits, Excel makes special note of [insignificant zeros](#), which are zeros whose omission from the number does not change the number's value. For example, the number 0.1 is displayed in the General number format, but changes to 0.10 when the cell is formatted as a number. To format a value, Excel uses the [placeholders](#) shown in [Figure A-11](#) to represent individual digits.

Figure A-11 Description of digit placeholders

Placeholder	Description
#	Displays only significant digits; insignificant zeros are omitted
0 (zero)	Displays significant digits as well as insignificant zeros
?	Replaces insignificant zeros with spaces on either side of the decimal point so that decimal points align when formatted with a fixed-width font, such as Courier

© 2014 Cengage Learning



© 2014 Cengage Learning

A custom format can use combinations of these placeholders. For example, the custom format #.00 displays the value 8.9 as 8.90. If a value has more digits than placeholders in the custom format, Excel rounds the value to match the number of placeholders. Thus, the value 8.938 formatted with the custom format ### is displayed as 8.94. [Figure A-12](#) shows how the same series of numbers appears with different custom number formats.

Figure A-12 Examples of digit placeholders

Cell Value	Custom Formats			
	###	0	?..?	#. #0
0.57	0.57	0.57	0.57	0.57
123.4	123.4	123.4	123.4	123.4
3.45	3.45	3.45	3.45	3.45

© 2014 Cengage Learning



© 2014 Cengage Learning

Number formats also include the decimal point separator (.), the thousands separator (,), and the fraction separator (/). You can use the thousands separator to separate a number in groups of 1,000 or to scale a number by a multiple of 1,000.

The fraction separator displays decimal values as fractions. The general syntax is *placeholder/placeholder*, where *placeholder* is one or more of the custom format placeholders. Excel displays the fraction that best approximates the decimal value. You can also specify the denominator for the fraction to convert the decimals to halves, quarters, and so forth. [Figure A-13](#) provides examples of the thousands and fraction separators.

Figure A-13 Examples of thousands and fraction separators

Value	Custom Format	Appearance
12000	#,###	12,000
12000	#,	12
12200000	0.0,,	12.2
5.4	# #/#	5 2/5

© 2014 Cengage Learning

© 2014 Cengage Learning

You can combine all of the numeric format codes in a single custom format. If you don't specify a numeric code for data values, Excel uses the General format code, which hides all insignificant zeros.

James wants equipment rentals displayed as a number with two decimal positions followed by the letter “p” to indicate paid. You'll create a custom format for the equipment rental.

To create a custom format for the equipment rentals:

1. 1.

Select the range **G2:G45**.

2. 2.

On the HOME tab, in the Number group, click the **Dialog Box Launcher**. The Format Cells dialog box opens with the Number tab displayed.

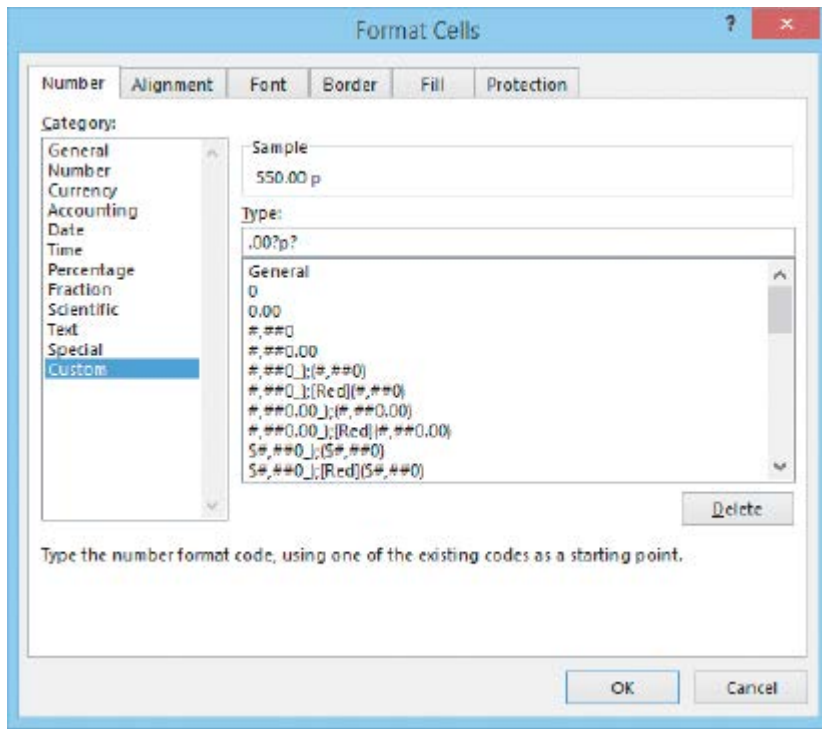
3. 3.

In the Category box, click **Custom**. You will enter a custom format to display the numbers to the nearest thousand.

4. 4.

In the Type box, double-click **General** to select it, and then type **.00?p?** as the custom format code. See [Figure A-14](#).

Figure A-14 Custom category on the Number tab



Trouble? If you return to the worksheet, you double-clicked General in the list of custom formats. Repeat Step 4, making sure you double-click General in the Type box.

5. 5.

Click the **OK** button. The equipment rentals are displayed as a number with two decimal positions followed by the letter “p” to indicate paid. Because you used the custom format, this text is treated as a number even though it has a letter character (the character is ignored).

### A-3b Creating a Custom Date Format

When you have dates, times, or both in a workbook, you can use a predefined date and time format to display this information in a readable format. Although the predefined time and date formats are usually fine, you can also create your own custom date formats. [Figure A-15](#) describes the format codes used for dates and times.

Figure A-15 Date and Time format codes

Code	Displays
m	Months as 1 through 12
mm	Months as 01 through 12
mmm	Months as Jan through Dec
mmmm	Months as January through December
d	Days as 1 through 31
dd	Days as 01 through 31
ddd	Days as Sun through Sat
dddd	Days as Sunday through Saturday
yy	Years as 00 through 99
yyyy	Years as 1900 through 9999
h	Hours as 1 through 24
mm	Minutes as 01 through 60 (when immediately following h, mm signifies minutes; otherwise, months)
ss	Seconds as 01 through 60

© 2014 Cengage Learning



© 2014 Cengage Learning

James wants the date values in the Joined column to show the name of the month followed by the year (for example, 7/22/2016 should be displayed as July 2016). You need to apply the custom format code *mmmm yyyy* to do this.

To apply a custom date format to the Joined dates:

1. 1.

Select the range **F2:F45**.

2. 2.

On the HOME tab, in the Number group, click the **Dialog Box Launcher**. The Format Cells dialog box opens with the Number tab active.

3. 3.

In the Category box, click **Custom**.

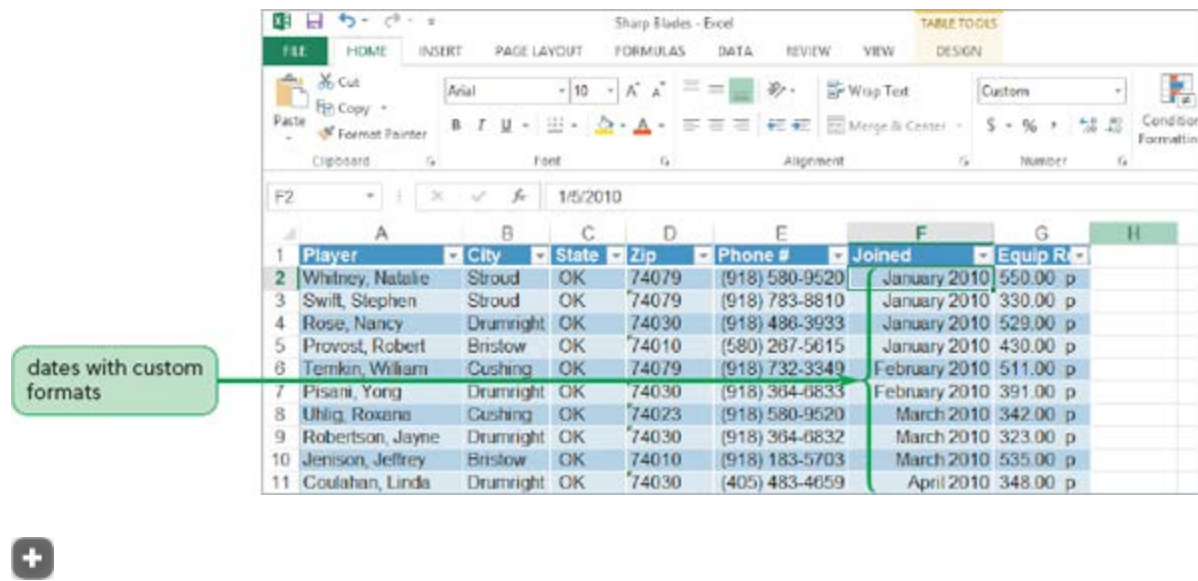
4. 4.

In the Type box, select the current format, and then type **mmmm yyyy**. The Sample box shows an example of the custom format you entered.

5. 5.

Click the **OK** button, and then click cell **A1** to deselect the range. See [Figure A-16](#).

Figure A-16 Final formatted workbook



6. 6.

Save the workbook.

## A-4 Using the Compatibility Checker

When you save an Excel 2007, 2010, or 2013 workbook in an earlier format, the [Compatibility Checker](#) alerts you to any features that are not supported by earlier versions of Excel. You can click the Cancel button and redo the worksheet using a different approach, or you can click the Continue button to save the workbook in the earlier format. If you save the workbook in an earlier format, unsupported features will be lost.

You'll save a copy of the workbook in the Excel 2003 format.

To convert the workbook to the Excel 2003 file format:

1. 1.

On the ribbon, click the **FILE** tab to open Backstage view, and then click **Save As** in the navigation bar. The Save As screen appears.

2. 2.

Click the **Browse** button to open the Save As dialog box, navigate to the location specified by your instructor, and then change the filename to **Sharp Blades 2003**.

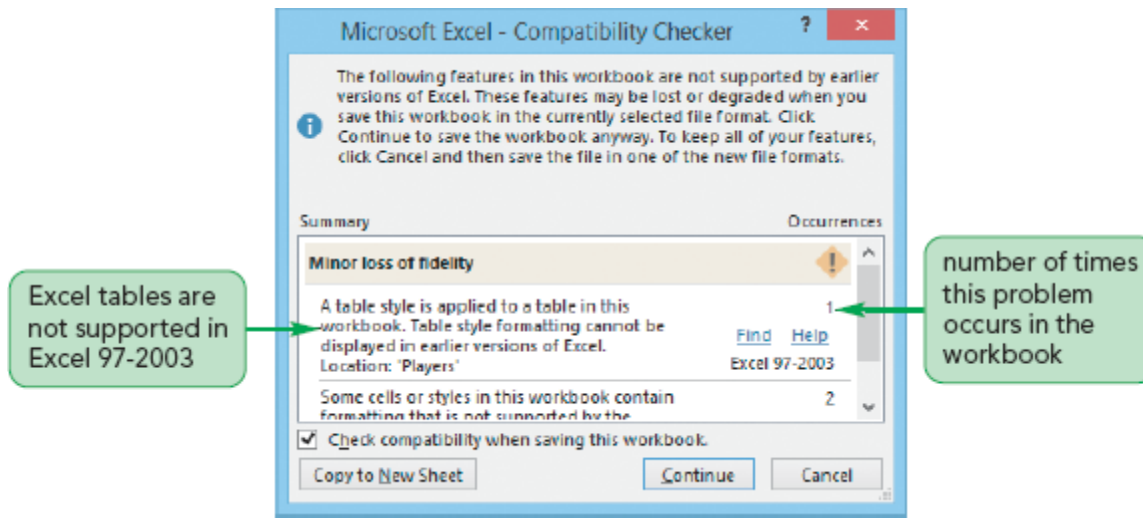
3. 3.

Click the **Save as type** button, and then click **Excel 97-2003 Workbook**. This is the earlier Excel file format you want to use.

4. 4.

Click the **Save** button. The Compatibility Checker dialog box opens, alerting you to features not supported by earlier versions of Excel. See [Figure A-17](#).

Figure A-17 Compatibility Checker with error message



5. 5.

Read the message, and then click the **Continue** button. The workbook is saved in the earlier file format with the .xls file extension. Close the workbook.

The workbook data is clean and the workbook is formatted as James requested. He'll be able to analyze this data for the club.