# Chapter 16

Using Picture Tools

There is a new set of picture tools in Excel 2007. Use the Picture icon on the Insert ribbon to add a picture to your worksheet.

When the picture is selected, you can access the Picture Tools Format ribbon.

With today's digital cameras, it is likely that your picture will appear too large. Use the Size group to resize your image. To cut out unnecessary background, click the Crop button. Eight crop handles will appear on the edge of the picture. Drag any handle inwards to crop out portions of the photo.
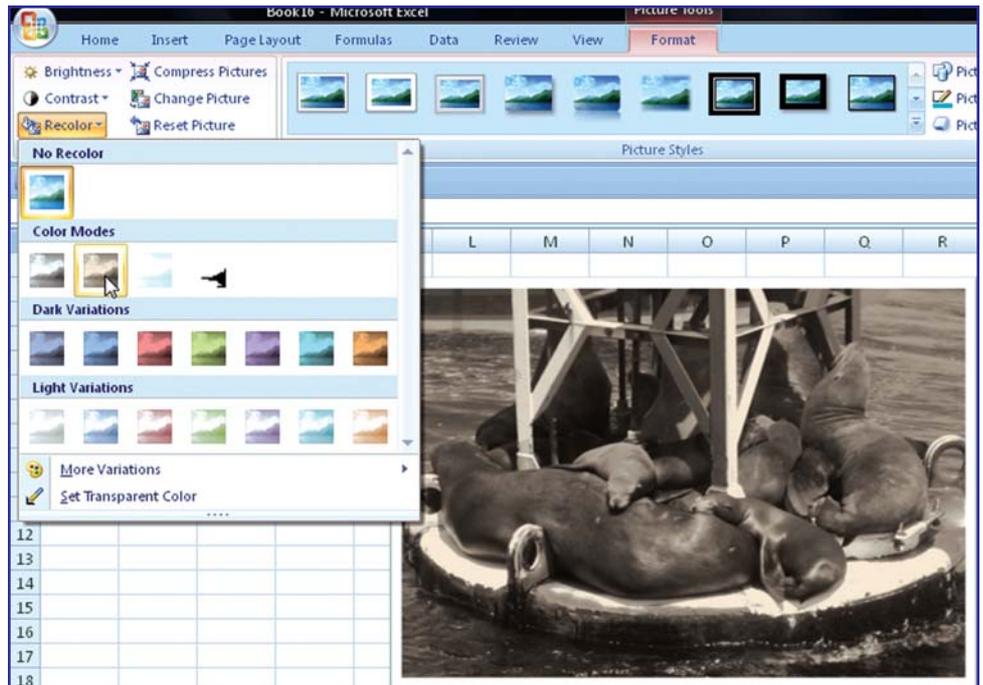
Figure 16.1
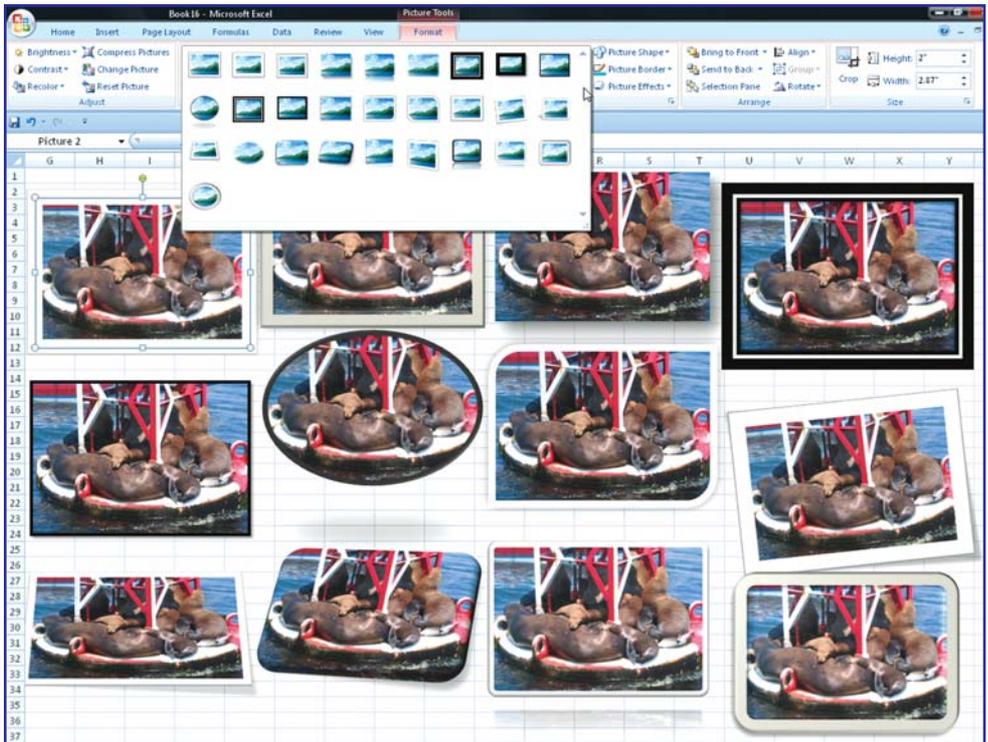Use the Crop icon and then drag the handles inward to crop.
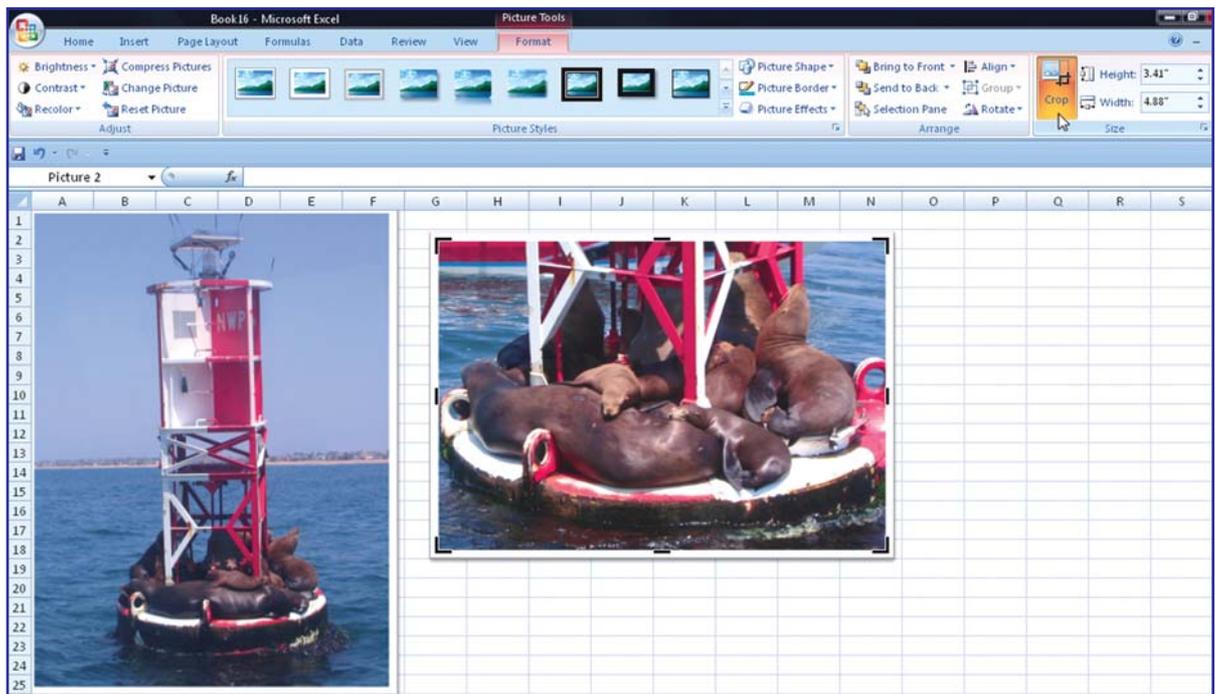
The Adjust group offers settings for Brightness, Contrast, and the ability to Recolor the picture.

Figure 16.2
Easily apply sepia
or other formatting.

The Picture Styles gallery offers 30 different built-in style effects for your picture.
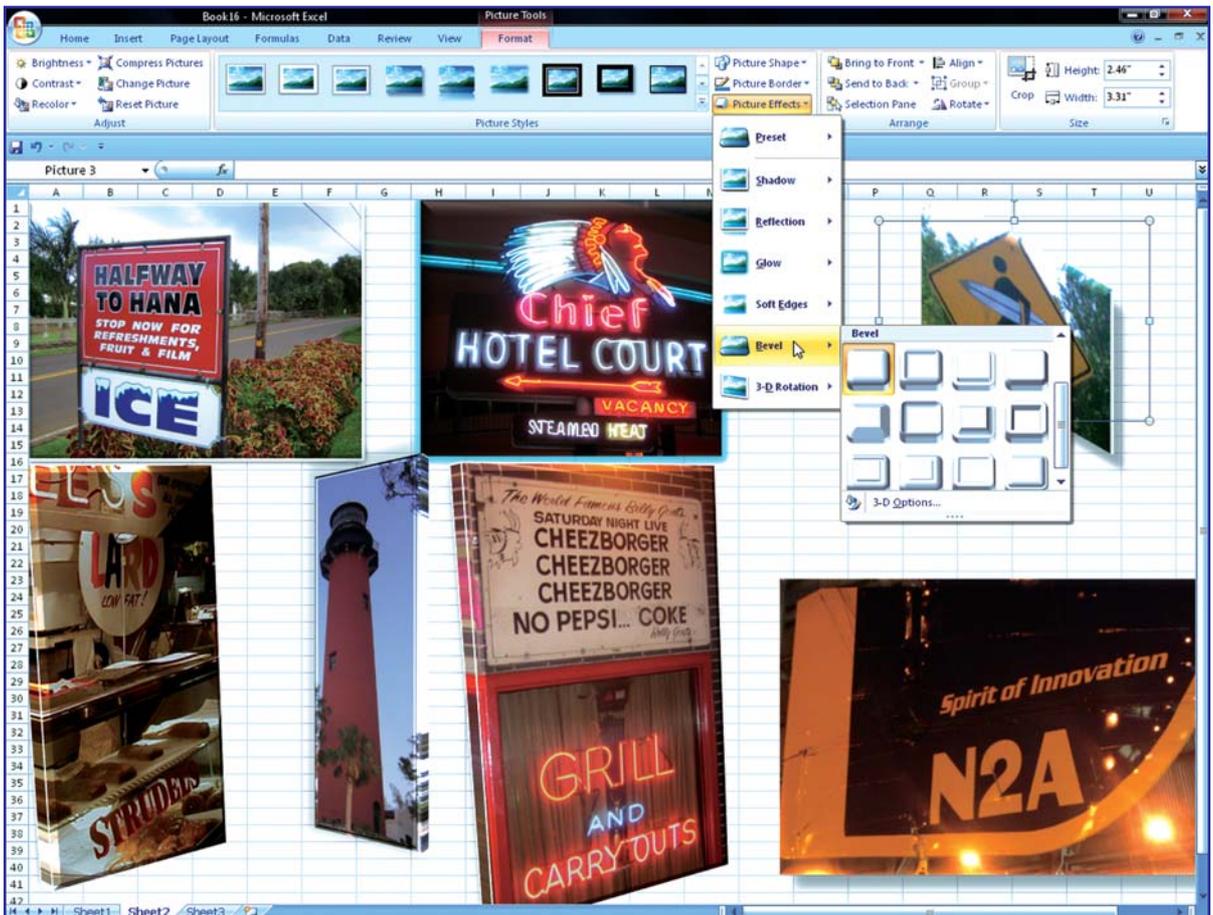
Figure 16.3
The built-in styles
change the frame,
bevel, tilt, etc.

If you don't like the built-in styles, use the Picture Shape, Picture Border, or Picture Effects dropdowns to apply a wide variety of effects to your pictures.
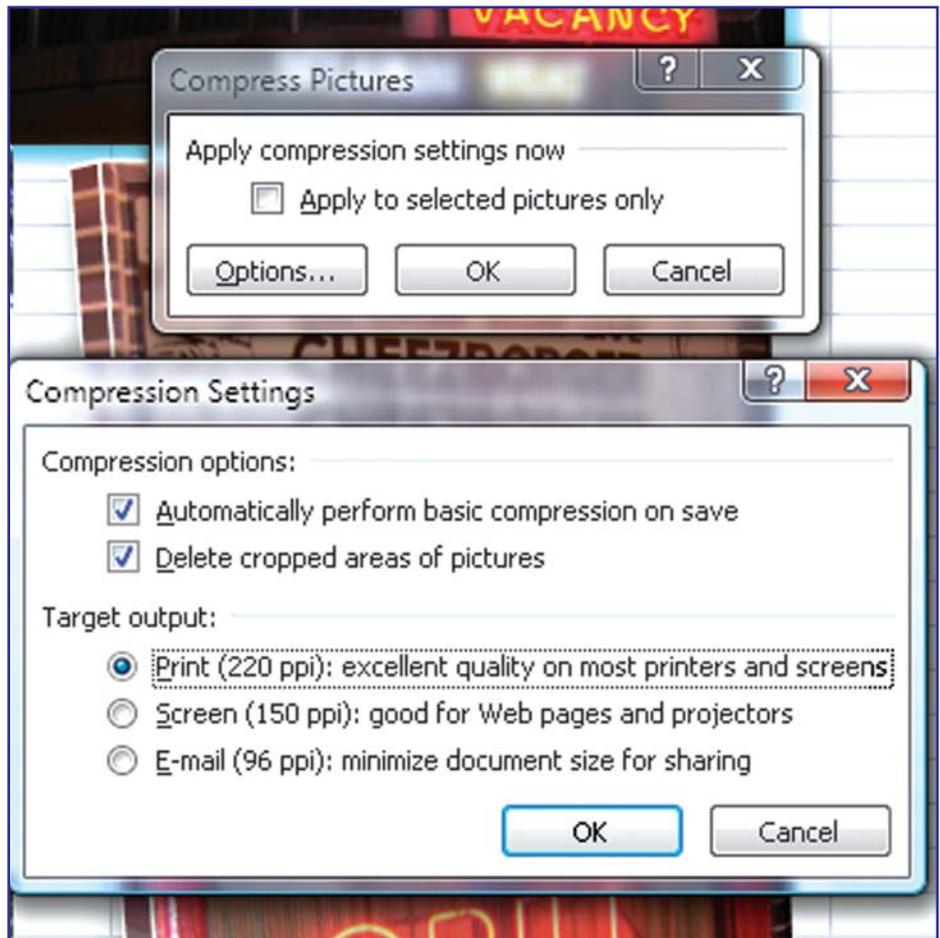
Figure 16.4
Apply a variety of effects using the flyout menus under the Picture Effects dropdown.

Compressing Pictures

If you are not planning on printing the spreadsheet in a glossy magazine, you can save file size by using the Compress Pictures icon. After pressing Compress Pictures, choose the Options button to access the Compression Settings. You can choose if the pictures should be compressed for Print, Display, or E-mail quality.
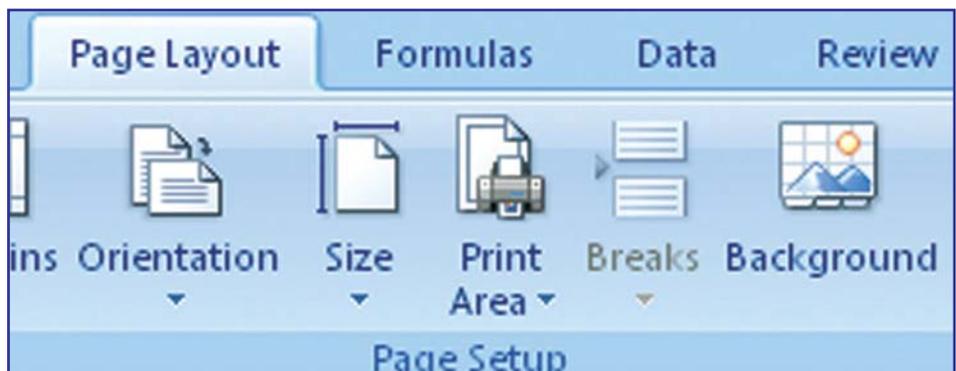
Figure 16.5
Important compression options are hiding behind the Options button.

Adding a Background for Display

Excel can display a picture behind your spreadsheet. Choose Background from the Page Layout ribbon. Browse and select any picture.

Figure 16.6
The background icon is on the Page Layout ribbon.

Excel will tile that picture behind your spreadsheet cells. Be sure to choose a contrasting color for the text in the spreadsheet.

Figure 16.7
Excel will tile the picture behind your spreadsheet.


Adding a Picture Background for Printing

Unfortunately, the background as described above does not print! To create a printable picture background, follow these steps.

1. On the Insert ribbon, choose Shapes and then a rectangle shape.
2. Click and drag in your worksheet to draw a solid background of the proper size.
3. Right-click the shape and choose Format Shape.
4. On the Fill tab, choose Picture or Texture Fill.
5. Use Insert From File….
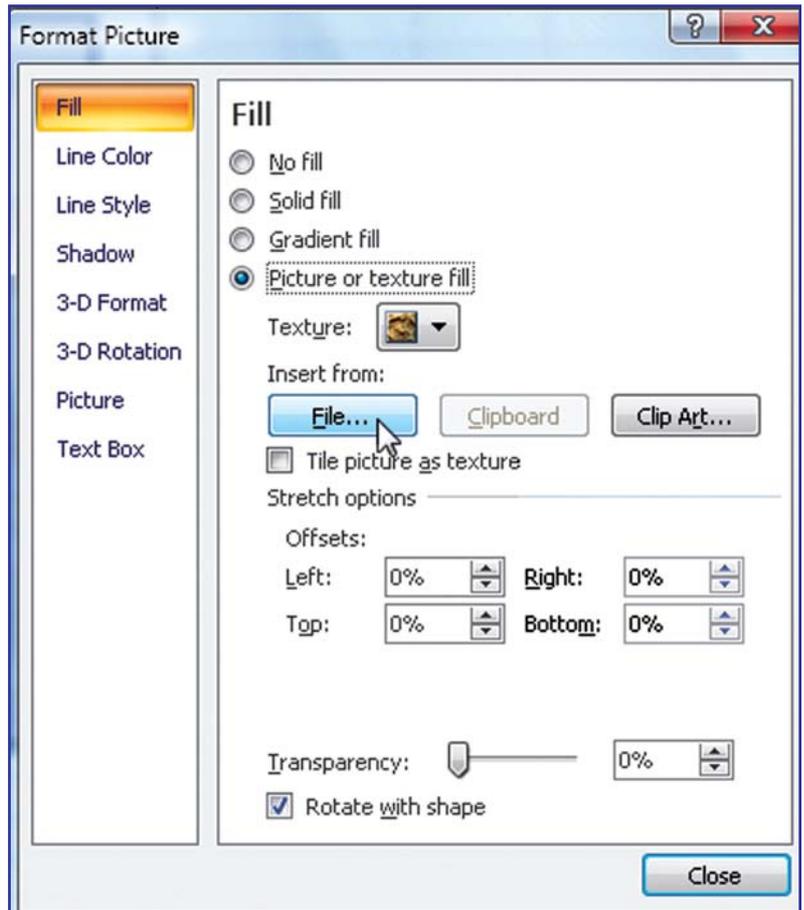
6. Use the Transparency slider at the bottom of the dialog. Move the transparency up to about 60%. This allows the text in the cells behind the shape to show through.

Figure 16.9
By adjusting the transparency, you
can see the cells behind the picture.
Unlike the background picture, this
one will print.

* * *

Handling Error Formulas Using IfError Function

Error values are occasionally returned in Excel spreadsheets. In Figure 17.1, a Divide by 0 error occurs in cell C4 and an N/A error occurs in the VLOOKUP formula in C12.

Figure 17.1
Error cells interrupt the flow of the worksheet.

In prior versions of Excel, people would write complicated formulas to prevent the error values. For example, to prevent a divide by 0 error, you could first check to see if the divisor was zero.

Figure 17.2
Use the IF function to prevent division by 0.

To prevent an error in the VLOOKUP formula, you had to enter an absolutely insane formula that actually performed the VLOOKUP twice. The IF function first tested to see if the result was #N/A and if so, it provided alternate text. If the original result was not #N/A, then Excel would calculate the VLOOKUP again, resulting in the function taking twice as long to calculate.

Figure 17.3
This painful formula prevented the #N/A error in VLOOKUPs.

Excel 2007 offers a new function to help handle errors. If you have a calculation that you think might generate an error, enter the calculation as the first argument in the =IFERROR() function. For the second argument, enter a value that should be used in case the first argument generates an error.

<u>=IfError(Value, Value If Error)</u>

The advantage of this function is that the original calculation is performed only once. The function in Figure 17.4 is simpler than the formula in Figure 17.3.

Figure 17.4
While still unwieldy, this is an improvement over the formula in Figure 17.3.

* * *

New Conditional Sum Functions

Excel has provided SUMIF and COUNTIF functions for a decade. These functions allow you to count or total records that meet one criterion.

Figure 18.1
The SUMIF function allows you to total records that meet one condition.

COUNTIF and SUMIF are "easy" functions to replace the complicated SUMPRODUCT or array formula solutions to performing conditional sums.

Once someone learns about SUMIF, they often wonder how to sum the records that meet two conditions. In Figure 18.1, you might want a function in F13 to find the units of ABC sold in the East. This was not possible with SUMIF.

In Excel 2007, Microsoft has added three plural "S" versions, specifically SUMIFS, COUNTIFS, and AVERAGEIFS. These functions allow you to enter up to 127 different criteria. The syntax is slightly reversed from SUMIF. You start with the range of numbers to be summed, and then enter pairs of arguments, such as Criteria Range, Criteria Value, etc.

=SUMIFS(Sum Range, Criteria Range 1, Criteria 1, …)

For example, here is how to build the formula in F13:

1. You want to sum the quantity in C2:C20. Since you will later copy this formula, press the F4 key to make it $C$2:$C$20.
2. The first criteria range is comprised of the regions in $A$2:$A$20.
3. The first criteria value is the word East in E13. Since you need to be able to copy the formula to the rest of the table, type the F4 key three times to make the reference be $E13.
4. The second criteria range is comprised of the products in $B$2:$B$20.
5. The second criteria value is the word ABC in F12. Since you need to be able to copy the formula to the rest of the table, type the F4 key twice to make the reference be F$12.

If there were additional conditions, you could continue entering additional pairs of criteria range and criteria. However, in this case, the formula is:

=SUMIFS($C$2:$C$20,$A$2:$A$20,$E13,$B$2:$B$20,F$12)

6. Copy the formula to the rest of the table in order to find total sales by region and product.

Figure 18.2
The SUMIFS function makes it simpler to create a sum based on two conditions.

	A	B	C	D	E	F	G	H	I	J
						=SUMIFS($C$2:$C$20,$A$2:$A$20,$E13,$B$2:$B$20,F$12)				
1	Region	Product	Quantity							
2	East	XYZ	1000		Region					
3	Central	DEF	100		East	6000	=SUMIF($A$2:$A$20,E3,$C$2:$C$20)			
4	East	ABC	500		Central	3500				
5	Central	XYZ	500		West	1000				
6	Central	XYZ	400							
7	East	DEF	800		Product					
8	East	XYZ	400		ABC	2500	=SUMIF($B$2:$B$20,E8,$C$2:$C$20)			
9	Central	ABC	400		DEF	1900				
10	East	ABC	400		XYZ	6100				
11	East	DEF	1000							
12	West	XYZ	600			ABC	DEF	XYZ		
13	Central	ABC	800		East	900	1800	3300		
14	East	XYZ	900		Central	1600	100	1800		
15	Central	XYZ	900		West	0	0	1000		
16	East	XYZ	900							
17	Central	ABC	300							
18	West	XYZ	400							
19	Central	ABC	100							
20	East	XYZ	100							

COUNTIFS and AVERAGEIFS work in the same manner.

Using the new AVERAGEIF Function

While the addition of SUMIFS is a great thing, I am not quite as impressed with the new AVERAGEIF.

Excel has offered SUMIF and COUNTIF for a while. If you needed to calculate a conditional average, such as in Figure 18.3, you could either use =F3/F8 or =SUMIF()/COUNTIF().

Figure 18.3
In Excel 2003, it was simple enough to build a conditional average based on SUMIF / COUNTIF.

	A	B	C	D	E	F	G	H	I	J
1	Region	Product	Quantity							
2	East	XYZ	1000		Region	Sum				
3	Central	DEF	100		East	6000	=SUMIF($A$2:$A$20,E3,$C$2:$C$20)			
4	East	ABC	500		Central	3500				
5	Central	XYZ	500		West	1000				
6	Central	XYZ	400							
7	East	DEF	800		Region	Count				
8	East	XYZ	400		East	9	=COUNTIF($A$2:$A$20,E8)			
9	Central	ABC	400		Central	8				
10	East	ABC	400		West	2				
11	East	DEF	1000							
12	West	XYZ	600		Region	Average				
13	Central	ABC	800		East	666.6667	=F3/F8			
14	East	XYZ	900		Central	437.5				
15	Central	XYZ	900		West	500				
16	East	XYZ	900							
17	Central	ABC	300							
18	West	XYZ	400							
19	Central	ABC	100							
20	East	XYZ	100							

In Excel 2007, you can now use the new AVERAGEIF function to calculate the average directly

Figure 18.4
The AVERAGEIF function is a bit simpler to use than SUMIF/COUNTIF.

	A	B	C	D	E	F	G	H
						=AVERAGEIF($A$2:$A$20,E3,$C$2:$C$20)		
1	Region	Product	Quantity					
2	East	XYZ	1000		Region	Average		
3	Central	DEF	100		East	666.6667		
4	East	ABC	500		Central	437.5		
5	Central	XYZ	500		West	500		
6	Central	XYZ	400					

Tip: All of the new functions in this chapter are designed to make a difficult task simpler. Excel gurus will point out that the SUMPRODUCT function has been able to do the multiple conditional sums made possible by SUMIFS.

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