



Exploring Data Types

An Excel workbook file can hold any number of worksheets, and each worksheet is made up of more than 17 billion cells. A cell can hold any of three basic types of data:

- A numeric value
- Text
- A formula

A worksheet can also hold charts, diagrams, pictures, buttons, and other objects. These objects aren't contained in cells. Instead, they reside on the worksheet's *draw layer*, which is an invisible layer on top of each worksheet.

Numeric values

Numeric values represent a quantity of some type: sales amounts, number of employees, atomic weights, test scores, and so on. Values also can be dates (Feb 26, 2015) or times (such as 3:24 a.m.).

Text entries

Most worksheets also include text in some of the cells. Text can serve as data (for example, a list of employee names), labels for values, headings for columns, or instructions about the worksheet. Text is often used to clarify what the values in a worksheet mean or where the numbers came from.

Text that begins with a number is still considered text. For example, if you type **12 Employees** into a cell, Excel considers the entry to be text rather than a numeric value. Consequently, you can't use this cell for numeric calculations. If you need to indicate that the number 12 refers to employees, enter **12** into a cell and then type **Employees** into the cell to the right.

Formulas

Formulas are what make a spreadsheet a spreadsheet. Excel enables you to enter flexible formulas that use the values (or even text) in cells to calculate a result. When you enter a formula into a cell, the formula's result appears in the cell. If you change any of the cells used by a formula, the formula recalculates and shows the new result. Formulas can be simple mathematical expressions, or they can use some of the powerful functions that are built into Excel. Figure 1. shows an Excel worksheet set up to calculate a monthly loan payment. The worksheet contains values, text, and formulas. The cells in column A contain text. Column B contains four values and



two formulas. The formulas are in cells B6 and B10. Column D, for reference, shows the actual contents of the cells in column B.

	A	B	C	D	E	F
1	Loan Payment Calculator					
2						
3				Column B Contents		
4	Purchase Amount:	\$475,000		475000		
5	Down Payment Pct:	20%		0.2		
6	Loan Amount:	\$380,000		=B4*(1-B5)		
7	Term (months):	360		360		
8	Interest Rate (APR):	6.25%		0.0625		
9						
10	Monthly Payment:	\$2,339.73		=PMT(B8/12,B7,-B6)		
11						
12						
13						
14						

Figure (1): Formulas in worksheet

Entering Dates and Times into Your Worksheets

1. Entering date values

Excel handles dates by using a serial number system. You can simply enter a date in a common date format, and Excel takes care of the details behind the scenes. For example, if you need to enter June 1, 2016, you can enter the date by typing **June 1, 2016** (or use any of several different date formats). Excel interprets your entry and stores the value 42522, which is the serial number for that date.

2. Entering time values

Excel works with times by using fractional days. For example, the date serial number for June 1, 2016, is 42522. Noon on June 1, 2016 (halfway through the day), is represented internally as 42522.5. you normally don't have to be concerned with these serial numbers or fractional serial numbers for times. Just enter the time into a cell in a recognized format. In this case, type **June 1, 2016 12:00**.

Using AutoFill to enter a series of values

The Excel AutoFill feature makes inserting a series of values or text items in a range of cells easy. It uses the AutoFill handle (the small box at the lower right of the active

cell). You can drag the AutoFill handle to copy the cell or automatically complete a series.

Figure 2. shows an example. I entered **1** into cell A1 and **3** into cell A2. Then I selected both cells and dragged down the fill handle to create a linear series of odd numbers. The figure also shows an icon that, when clicked, displays some additional AutoFill options.

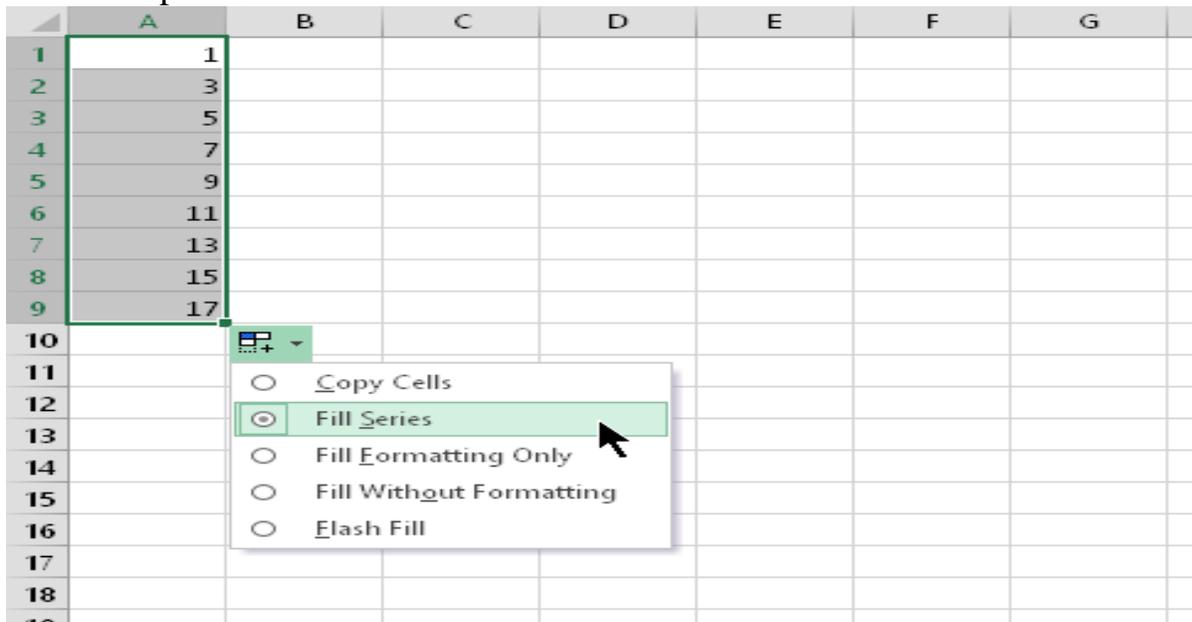


Figure (2): Series created by autofill

Using AutoComplete to automate data entry

The Excel AutoComplete feature makes entering the same text into multiple cells easy. With AutoComplete, you type the first few letters of a text entry into a cell, and Excel automatically completes the entry based on other entries that you already made in the column.

Entering numbers with fractions

Most of the time, you'll want non integer values to be displayed with decimal points. But Excel can also display values with fractions. To enter a fractional value into a cell, leave a space between the whole number and the fraction. For example, to enter $6 \frac{7}{8}$, enter **6 7/8** and then press Enter. When you select the cell, 6.875 appears in the Formula bar, and the cell entry appears as a fraction. If you have a fraction only (for example, $\frac{1}{8}$), you must enter a zero first, like this — **0 1/8** — or Excel will likely assume that you're entering a date. When you select the cell and look at the Formula bar, you see 0.125. In the cell, you see $\frac{1}{8}$.



Entering the current date or time into a cell

If you need to date-stamp or time-stamp your worksheet, Excel provides two shortcut keys that do this task for you:

- **Current date:** Ctrl+; (semicolon)
- **Current time:** Ctrl +Shift+; (semicolon)

The date and time are from the system time in your computer. If the date or time isn't correct in Excel, use the Windows Control Panel to make the adjustment.