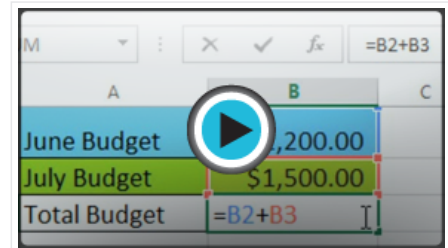


Introduction

One of the most powerful features in Excel is the ability to **calculate** numerical information using **formulas**. Just like a calculator, Excel can add, subtract, multiply, and divide. In this lesson, we'll show you how to use **cell references** to create simple formulas.

Video: Simple Formulas



Optional: Download our [practice workbook](#).

Mathematical operators

Excel uses standard operators for formulas, such as a **plus sign** for addition (+), a **minus sign** for subtraction (-), an **asterisk** for multiplication (*), a **forward slash** for division (/), and a **caret** (^) for exponents.

Addition	+
Subtraction	-
Multiplication	*
Division	/
Exponents	^

All formulas in Excel must begin with an **equals sign** (=). This is because the cell contains, or is equal to, the formula and the value it calculates.

Understanding cell references

While you can create simple formulas in Excel manually (for example, =2+2 or =5*5), most of the time you will use **cell addresses** to create a formula. This is known as making a **cell reference**. Using cell references will ensure that your formulas are always accurate because you can change the value of referenced cells without having to rewrite the formula.

The formula in cell A3 refers to the value in cell A1 plus the value in cell A2

The formula calculates and displays the answer to the equation A1 plus A2

The formula automatically recalculates when the value of a referenced cell is changed

By combining a mathematical operator with cell references, you can create a variety of simple formulas in Excel. Formulas can also include a combination of cell references and numbers, as in the examples below:

=A1+A2	Adds cells A1 and A2
=C4-3	Subtracts 3 from cell C4
=E7/J4	Divides cell E7 by J4
=N10*1.05	Multiplies cell N10 by 1.05
=R5^2	Finds the square of cell R5

To create a formula:

In our example below, we'll use a simple formula and cell references to calculate a budget.

1. Select the **cell** that will contain the formula. In our example, we'll select cell **B3**.

	A	B	C
1	June Budget	\$1,200.00	
2	July Budget	\$1,500.00	
3	Total Budget	+	
4			
5			

2. Type the **equals sign (=)**. Notice how it appears in both the **cell** and the **formula bar**.

	A	B	C	D
1	June Budget	\$1,200.00		
2	July Budget	\$1,800.00		
3	Total Budget	=		
4				
5				
6				
7				
8				

3. Type the **cell address** of the cell you want to reference first in the formula: cell **B1** in our example. A **blue border** will appear around the referenced cell.

	A	B	C
1	June Budget	\$1,200.00	
2	July Budget	\$1,500.00	
3	Total Budget	=B1	
4			
5			

4. Type the **mathematical operator** you want to use. In our example, we'll type the **addition sign (+)**.

5. Type the **cell address** of the cell you want to reference second in the formula: cell **B2** in our example. A **red border** will appear around the referenced cell.

	A	B	C
1	June Budget	\$1,200.00	
2	July Budget	\$1,500.00	
3	Total Budget	=B1+B2	
4			
5			

6. Press **Enter** on your keyboard. The formula will be **calculated**, and the **value** will be displayed in the cell.

	A	B	C
1	June Budget	\$1,200.00	
2	July Budget	\$1,500.00	
3	Total Budget	\$2,700.00	
4			
5			

If the result of a formula is too large to be displayed in a cell, it may appear as **pound signs (#####)** instead of a value. This means the column is not wide enough to display the cell content. Simply **increase the column width** to show the cell content.

Modifying values with cell references

The true advantage of cell references is that they allow you to **update data** in your worksheet without having to rewrite formulas. In the example below, we've modified the value of cell B1 from \$1,200 to \$1,800. The formula in B3 will automatically recalculate and display the new value in cell B3.

	A	B	C	D	E
1	June Budget	\$1,800.00			
2	July Budget	\$1,500.00			
3	Total Budget	\$3,300.00			
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					

Excel **will not always tell you** if your formula contains an error, so it's up to you to check all of your formulas. To learn how to do this, you can read the [Double-Check Your Formulas](#) lesson from our [Excel Formulas](#) tutorial.

To create a formula using the point-and-click method:

Rather than typing cell addresses manually, you can **point and click** on the cells you want to include in your formula. This method can save a lot of time and effort when creating formulas. In our example below, we'll create a formula to calculate the cost of ordering several boxes of plastic silverware.

1. Select the **cell** that will contain the formula. In our example, we'll select cell **D3**.

	A	B	C	D	E
1	Paper Supply Inventory Orders				
2	Item	Quantity	Price Per Unit	Total Cost	
3	Plastic Silverware (box of 100)	9	\$8.75		
4	Napkins (box of 250)	12	\$2.59		
5	Plates (box of 50)	6	\$14.25		
6	Cups (box of 75)	10	\$11.99		
7	Total				
8					

2. Type the **equals sign (=)**.
3. Select the **cell** you want to reference first in the formula: cell **B3** in our example. The **cell address** will appear in the formula, and a **dashed blue line** will appear around the referenced cell.

Paper Supply Inventory Orders				
Item	Quantity	Price Per Unit	Total Cost	
Plastic Silverware (box of 100)	9	\$8.75	=B3	
Napkins (box of 250)	12	\$2.59		
Plates (box of 50)	6	\$14.25		
Cups (box of 75)	10	\$11.99		
Total				

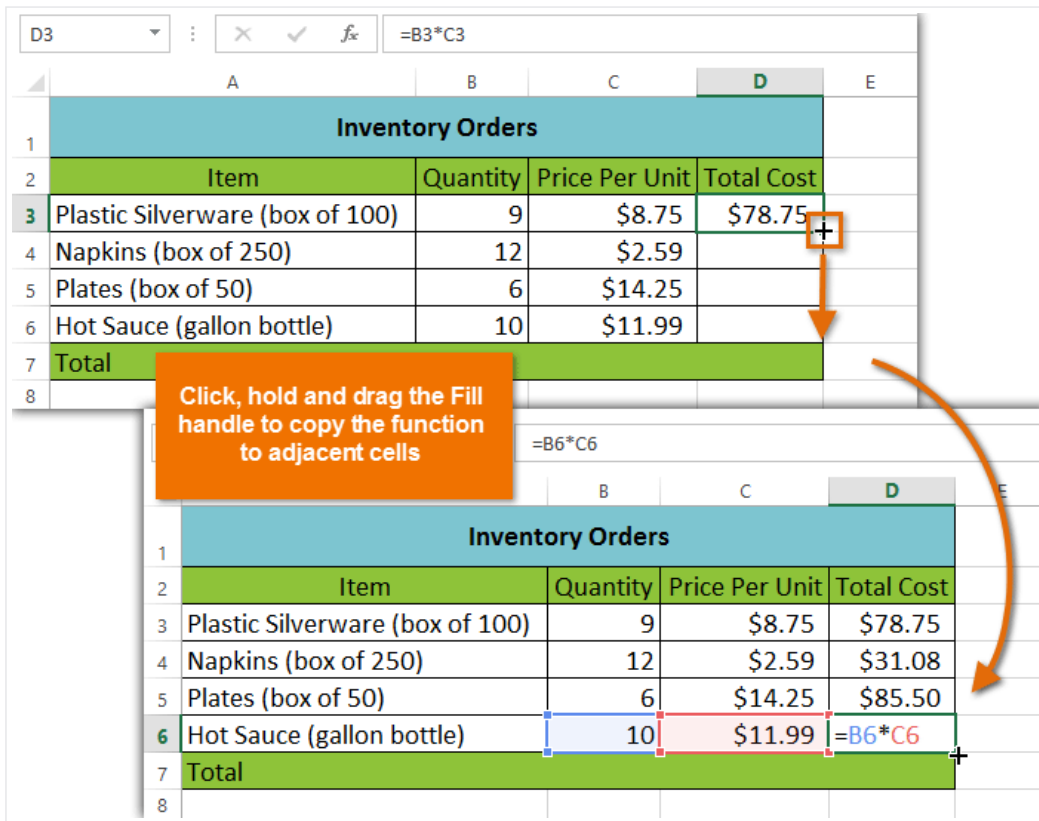
- Type the **mathematical operator** you want to use. In our example, we'll type the **multiplication sign (*)**.
- Select the **cell** you want to reference second in the formula: cell **C3** in our example. The **cell address** will appear in the formula, and a **dashed red line** will appear around the referenced cell.

Paper Supply Inventory Orders				
Item	Quantity	Price Per Unit	Total Cost	
Plastic Silverware (box of 100)	9	\$8.75	=B3*C3	
Napkins (box of 250)	12	\$2.59		
Plates (box of 50)	6	\$14.25		
Cups (box of 75)	10	\$11.99		
Total				

- Press **Enter** on your keyboard. The formula will be **calculated**, and the **value** will be displayed in the cell.

Paper Supply Inventory Orders				
Item	Quantity	Price Per Unit	Total Cost	
Plastic Silverware (box of 100)	9	\$8.75	\$78.75	
Napkins (box of 250)	12	\$2.59		
Plates (box of 50)	6	\$14.25		
Cups (box of 75)	10	\$11.99		
Total				

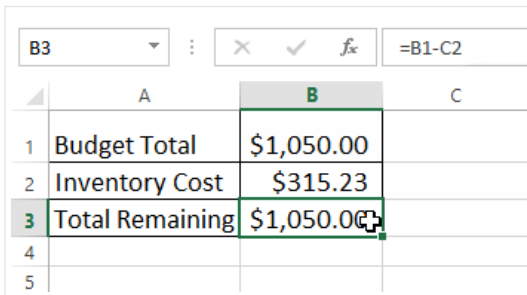
Formulas can also be **copied** to adjacent cells with the **fill handle**, which can save a lot of time and effort if you need to perform the **same calculation** multiple times in a worksheet. Review our lesson on [Relative and Absolute Cell References](#) to learn more.



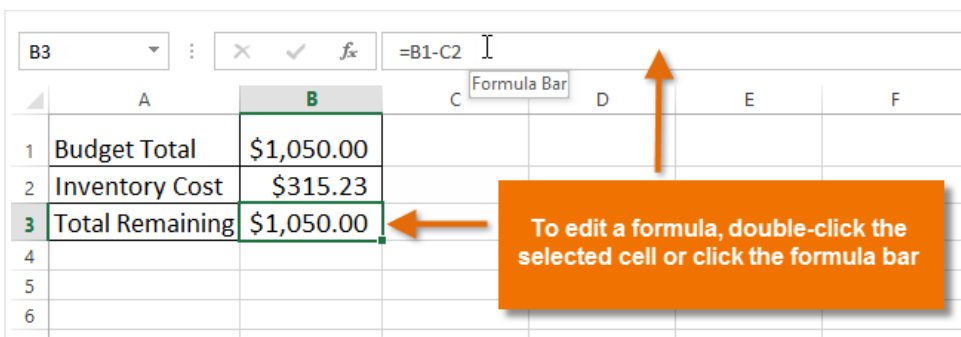
To edit a formula:

Sometimes you may want to modify an existing formula. In the example below, we've entered an incorrect cell address in our formula, so we'll need to correct it.

1. Select the **cell** containing the formula you want to edit. In our example, we'll select cell **B3**.



2. Click the **formula bar** to edit the formula. You can also **double-click** the cell to view and edit the formula directly within the cell.



3. A **border** will appear around any referenced cells. In our example, we'll change the second part of the formula to reference cell **B2** instead of cell **C2**.

	A	B	C	D
1	Budget Total	\$1,050.00		
2	Inventory Cost	\$315.23		
3	Total Remaining	=B1-C2		
4				
5				

4. When you're finished, press **Enter** on your keyboard or select the **Enter** command ✓ in the formula bar.

	A	B	C
1	Budget Total	\$1,050.00	
2	Inventory Cost	\$315.23	
3	Total Remaining	=B1-B2	
4			
5			

5. The formula will be **updated**, and the **new value** will be displayed in the cell.

	A	B	C
1	Budget Total	\$1,050.00	
2	Inventory Cost	\$315.23	
3	Total Remaining	\$734.77	
4			
5			

If you change your mind, you can press the **Esc** key on your keyboard or click the **Cancel** command ✕ in the formula bar to avoid accidentally making changes to your formula.

To show all of the formulas in a spreadsheet, you can hold the **Ctrl** key and press ` (grave accent). The grave accent key is usually located in the top-left corner of the keyboard. You can press **Ctrl+`** again to switch back to the normal view.

Challenge!

1. Open an existing Excel workbook. If you want, you can use our [practice workbook](#).
2. Create a simple addition formula using **cell references**. If you are using the example, create the formula in cell **B4** to calculate the total budget.
3. Try modifying the **value** of a cell referenced in a formula. If you are using the example, change the value of cell **B2** to \$2,000. Notice how the formula in cell B4 recalculates the total.
4. Try using the **point-and-click method** to create a formula. If you are using the example, create a formula in cell **G5** that multiplies the cost of **napkins** by the **quantity** needed to calculate the **total cost**.
5. **Edit** a formula using the formula bar. If you are using the example, edit the formula in cell **B9** to change the **division sign (/)** to a **minus sign (-)**.