

Creating a Basic Formula

When formulas and cell references are used Excel will automatically recalculate when data is changed.

Formulas are used to calculate a variety of mathematical outputs in Excel and can be used to create almost any custom calculation required for your objective. When constructing a formula in Excel, you use cell addresses that when added to a formula, become cell references. This means that Excel uses, or references, the number entered into a cell location when performing the calculation. As a result, when the numbers in the cells that are referenced are changed, Excel automatically recalculates the formulas and produces a new result. This is what gives Excel the ability to create a variety of what-if scenarios, which will be explained later in Part 3.

So let us begin and show how basic formulas are constructed. We will start working on the Budget Detail worksheet. To complete this worksheet, we will enter some data, and then create a few formulas and functions. 2

	A	B	C	D	E	F	G	H	
	Regular Expenses								
2	Expense	Monthly Spend	Percent of Total	Annual Spend	Last Year Spend	Percent Change			
3	Utilities	\$ 250			\$ 3,000				
4	Cell Phone	\$ 100			\$ 1,200				
5	Food	\$ 300			\$ 2,250				
6	Gas	\$ 125			\$ 1,200				
7	Clothes	\$ 100			\$ 1,000				
8	Insurance	\$ 127			\$ 1,500				
9	Entertainment	\$ 200			\$ 2,250				
10	Vacation	\$ 100			\$ 2,000				
11	Miscellaneous	\$ 125			\$ 1,558				
12	Totals								
13	Number of Expense Categories								
14	Average Spent								
15	Minimum Spent								
16	Maximum Spent								

Formulas and functions will be added to the highlighted cells to provide calculations that will be automatically updated as data changes.

In the table below there are categories listed in the range. **A3:A11**. When you construct a **Personal Budget** the *categories* are detailed on the basis of how you spend your money. *Every individual* has a different *budget*, therefore the *categories* will differ. It is important for you to know what each **Category** includes. **3**

Note: What is used are just an example for you to understand how Basic Formulas are constructed.

Category	Definition
Utilities	Electricity, heat, water, home phone, cable, Internet access
Cell Phone	Cell phone plan and equipment charges
Food	Groceries
Gas	Cost of gas for vehicle
Clothes	Clothes, shoes, and accessories
Insurance	Renter, homeowner, and/or car insurance
Entertainment	Activities like dining out, movie and theater tickets, parties, and so on
Vacation	Vacation expenses
Miscellaneous	Any other spending categories

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The amount of **money spent** each month for each *category* as well as the amount of money spent **last year**, is already *entered into* the *worksheet*. We will **write formulas** that will *calculate* the *annual* amount spent, the **percent** of the **total spent** each category represents, as well as the **percent** change from *last year's* spending to the **current year**. (Everything in yellow is where we will be working.)

This first formula will calculate the **Annual Spend** values. The formula will be worked so that it takes the values in the **Monthly Spend** column and then by **12** (*this being the total months of the year*). This will show how much money will be *spent per year* for each of the

categories listed in **Column A**. Since the first category is **Utilities**, we will start by *creating the formula to multiply the Monthly* spent amount in **B3 by 12**. This *formula* will be created in **D3**- the **Annual Spend** cell for the **Utilities** category. The *formula* will be written as this:- **=B3*12**.

Formulas always start with the equal sign. This signifies to Excel that the contents of the cell should be calculated, not just displayed as basic text or numbers.

Entering the Formula=**B3*12**

Regular Expenses					
Expense	Monthly Spend	Percent of Total	Annual Spend	Last Year Spend	Percent Change
Utilities	\$ 250		=B3*12	\$ 3,000	
Cell Phone	\$ 100			\$ 1,200	
Food	\$ 300			\$ 2,250	
Gas	\$ 125			\$ 1,200	
Clothes	\$ 100			\$ 1,000	
Insurance	\$ 127			\$ 1,500	
Entertainment	\$ 200			\$ 2,250	
Vacation	\$ 100			\$ 2,000	

The blue border indicates this cell is being used in the formula

The formula starts with an equal sign

B3 is a cell reference

After entering the Formula (D3 total)

Regular Expenses					
Expense	Monthly Spend	Percent of Total	Annual Spend	Last Year Spend	Percent Change
Utilities	\$ 250		\$ 3,000	\$ 3,000	
Cell Phone	\$ 100			\$ 1,200	
Food	\$ 300			\$ 2,250	
Gas	\$ 125			\$ 1,200	
Clothes	\$ 100			\$ 1,000	
Insurance	\$ 127			\$ 1,500	
Entertainment	\$ 200			\$ 2,250	
Vacation	\$ 100			\$ 2,000	

The formula bar displays the formula for the active cell

The cell displays the result of the formula

Q.L

- 1. Why is it necessary to use formulas?**

- 2. From your Definition list say what category each of the three will be listed in?**
 - a. Petrol**
 - b. House landline phone**
 - c. Sneakers**

- 3. Explain how you would write the formulas for : Insurance, clothing and food?**