

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

	A	B	C	D	E	F
1	Regular Expenses					
2	Expense	Monthly Spend	Percent of Total	Annual Spend	Last Year Spend	Percent Change
3	Utilities	\$ 250		=B3*12	\$ 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	

After entering the Formula (D3 total)

Clipboard Font Number Styles Layout

D3 =B3*12

The formula bar displays the formula for the active cell

	A	B	C	D	E	F
1	Regular Expenses					
2	Expense	Monthly Spend	Percent of Total	Annual Spend	Last Year Spend	Percent Change
3	Utilities	\$ 250		\$ 3,000	\$ 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	

The cell displays the result of the formula

Q.1.....

- 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?**