

The IF function

An Excel Quick-Lesson

By T. Ralph

Why use it?

The IF function is a tool to help analyze a situation and then act on it within set parameters

The IF function has three arguments (argument is the proper term for the numbers or “pieces” of a function). **They are:**

- Test
- True
- False

When to use it?

The IF function is best used when there are 2 possible outcomes. There is the possibility of nesting if there are more. Yes/No. Up/Down. True/False.

Additionally use the function because you don't want to have to analyze each line yourself. Excel will do the work. Let's revisit the scenario of a student and his/her grades. This time it's a pass/fail class.

The Scenario

We have an Excel sheet in which we have calculated the grades for students. Based on the average the student receives a pass or fail. Instead of reading a multitude of numbers and determining *each time* which is pass and which is fail we will use the IF function and have Excel analyze the results and display a **P** for those who pass and an **F** for those who fail.

How to use it.

We will focus on one student and then copy / paste or fill the formula for other students.

The Function:

`=IF(Test,True,False)` This is what the function looks like. We need to determine what the arguments will be.

How to use it.

Test – Does the student's average pass the class?
Well what is pass? We will determine that
pass is an average of 80 or better. So, the

Test = Student average ≥ 80

(Is the student's average greater than or equal to 80?)

How to use it.

True – What should happen if it's true? If the student's average is greater than or equal to 80 then it is true so we will display a P for pass.

True= "P" **The quotation marks tell Excel to Display text**

(The test result was true so Excel will display the letter P)

How to use it.

False – What should happen if it's false? If the student's average is not greater than or equal to 80 then it is false so we will display an F for fail.

Fail= "F" **The quotation marks tell Excel to Display text**

(The test result was false so Excel will display the letter F)

Put it together

Let's put together the pieces. And replace the argument names with what we have determined they mean.

=IF(Test,True,False)

=IF(average>=80, "P", "F")

*Please note that in Excel we would not have spaces. They were necessary here. Also the word average would be replaced with the cell address of the cell that the average was calculated in.

The Basic Function

The IF function looked at the student average and tested to see if it was greater than or equal to an 80. If true it displayed a P because the student passed and if false it displayed an F because the student failed. If any of the averages change the formula will automatically recalculate.

A Nested If Function

(Take it Further)

Now let's consider what to do if there were more than two possible results to the test.

Perhaps there is **Pass**, **Fail**, and **Incomplete**.

For a nested IF, the false result is replaced with another IF. This continues a process of elimination until the last false is also the last choice.

A Nested IF Function

There are 3 possible outcomes. We will again look at the grade and see what the condition or test should distinguish.

If the grade is 0-49 it is an F for Fail, if the grade is 50 – 80 it is an I for Incomplete, otherwise it is a P for Pass.

```
=IF(grade>=80, "P",IF(grade>=50, "I", "F"))
```

grade would be a cell address and remember that for each open parenthesis there must be a close.