

## How to build an IF Function by Cindy O'Hora

### IF function - converting text to numbers in a spreadsheet grade book

I wanted to make a formula to average a student's writing grades for the year. Numeric grades are no problem. Just use the Average function, right! But for those who give letter grades, there is a challenge. You cannot put letters in the Average function. It requires numbers. You could change the grade by hand as you worked in a grade book spreadsheet. Enter an "A" in a cell. In another, cell enter a number like 4 to give the "A" a predetermined numeric value. This seems like a lot of work to me. I made the computer do it using the IF function. I planned to type the letter grades in the B column and have the numeric conversion in cell C1.

Here is the formula I made in C1.

```
=IF(B1="A",4,IF(B1="B",3,IF(B1="C",2,IF(B1="D",1,IF(B1="E",0,IF(B1="F",0,"nope"))))))
```

I started with this basic piece: =IF(B1="A",4 It says that if I type a letter A in cell B1 put a 4 in this cell I'm making the formula in.

Next - I need to make the false-value. The false value is a statement of what to enter if I type a letter B, then a C, and so on.

Whoa, Nellie! Are you lost? I sure was, until I did it this way:

In a **word processing document**: write all the true values

```
IF(B1="B",3
```

```
IF(B1="C",2
```

```
IF(B1="D",1
```

```
IF(B1="E",0
```

```
IF(B1="F",0
```

**Now put them together.** Copy each true value and paste it into the formula. Be sure to put a comma after the number like 3, or 2,.

(Notice that I put quotes around the text grade characters. This must be done when you want letters or words to be recognized in a formula.)

After all my pasting, I have:

```
=IF(B1="A",4,IF(B1="B",3,IF(B1="C",2,IF(B1="D",1,IF(B1="E",0,IF(B1="F",0
```

**Next, the false value.** I finished the formula with , "nope")))))). If I don't enter an A or B or C or D or E or F the computer will enter the word nope in the cell. This notifies me to look at what I entered in cell B1. I could have written "oops" or "I do not think so" - any feedback which would let the user know that something is not correct.

**Finally the big finish.** You must be sure you close every parenthesis you opened in the formula. I started by trying to find each subset and then going to the end of the formula, I typed one more ). Fortunately, my husband saw this and wisely said, "Count all the open parenthesis and put that many closing ones at the end." Having learned before, that he is on occasion actually right, I did what he directed. I counted six opens...I made sure I had six closing parenthesis )))))).

**The big moment.** I held my breath and clicked the check mark in the entry bar. Magically, the word nope appeared in B2. I selected B1 and entered an A. C1 changed to a 4. I highlighted column C from C1 down and went Calculate...Fill down to get the formula to be pasted into all those cells with all the addresses corrected like magic. It is moments like that when I really love my Mac!

I finished my project with a flourish by using the AVERAGE function to average the converted numbers and then using the IF function to convert the final result back to a letter grade again. I urge you to put that calculator away and take the time to write a formula for yourself.

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