

## **PCKEYS' COMMANDMENTS OF EXCEL USAGE™**

At PCKeys, we like to have a little fun to lighten up what could sometimes otherwise be dry topics related to computer use. We also know that by having fun and relating technical things to everyday things, it makes it easier for people to understand and remember. Because of that, we are always looking to find ways to enhance traditional computer concepts with unique and memorable analogies. Over the years, we have devised what we think is a fun and relatable way to remember “best practices” for using Excel. We also try to be cognizant of the fact that some people take some topics very seriously. Our intention is never to offend, diminish or challenge personal beliefs so we always have to begin this discussion with a little disclaimer...

A common definition of “commandment” is that it is a “strong directive.” Some will define it as a divine directive. While we would be the last to ever claim divinity, we chose this verbiage for a specific reason. For this discussion, we are using it as a light-hearted analogy for what we have derived as our recommendations for best practices in Excel. We’ve been using it for over a decade and our students seem to love it for all the reasons we stated above. We just want to reiterate, that it is in no way meant to offend anyone, so please do not take our use of this word as being anything other than what it is intended to be, a light-hearted way of simplifying and remembering our “best practice” recommendations for Excel. Now, if we may, let us play on this word in order to drive our point home, and again, remember it is just for fun!

The most well-known Commandments would be the Ten Commandments. Without getting into a religious debate, let it be recognized for our purposes that, simply put, if you are a believer you are not required to follow the Commandments, they are a “strong directive”. Basically though, if you choose to adhere to them, “good things” will happen. If you don’t...well, things other than the best things will happen. Regardless of your personal beliefs, I think we can agree this is the basic premise.

The same is true for PCKeys Commandments of Excel Usage™. You don’t have to follow them but based on our experience, if you do, “good things” will happen related to your experiences with Excel. If you don’t, “bad” things may not happen if you’re lucky but at the least we know your work will be less efficient and at the most you are likely to have errors in your data. Neither are optimal. Because we like to keep things as simple as possible, we’ve distilled our Excel best practices down into our commandments. We also make it simpler by only having five! Here they are:

- 1. THOU SHALT NEVER HARD CODE ANYTHING**
- 2. THOU SHALT HAVE ONE POINT OF DATA ENTRY**
- 3. THOU SHALT SPOT CHECK CALCULATIONS**
- 4. THOU SHALT REMEMBER THE ORDER OF OPERATIONS**
- 5. THOU SHALT USE ABSOLUTE REFERENCING (WHEN APPROPRIATE)**

Now, a little more about what they mean and why we need to remember them!

- 🔔 When working with formulas and functions, never manually type in a cell's value. Instead, refer to the cell. That way, if the value of the cell changes, whether you have used it once or a hundred times, all of the references to that value will automatically update. It also allows people to better understand where a number comes from. Instead of seeing "10" in a calculation, they may see "B12" which is labeled "Tax rate" so they can now understand that "10" is the tax rate. The value is also visible whether viewing the worksheet on-screen or in hard copy. People can't see the actual calculation if they are looking at a printout, so they will not be able to see what values were used to derive the answer. You also do not have to try to go into every place you used that number and manually change it if the value needs to be adjusted. Saves time. Prevents errors.
- 🔔 No matter how many times you need to use a value in a workbook, only enter that value once then have all other cells refer back to that one cell. By creating and labeling a cell, everyone can see what that value actually represents. If that value needs to change, you only have to change it in one place and all references to it will automatically adjust as well. This Commandment is closely related to the first. Saves time. Prevents errors.
- 🔔 Just because you get an answer, doesn't mean it is the right answer. Don't blame Excel! Excel does not make math errors but we sometimes don't tell Excel how to do the math correctly for the question we are asking. If you are new to calculations, spot check the answer by using the AutoCalculate feature in the status bar or asking someone who is familiar with the data if your calculation results look correct. Be sure to use parentheses and absolute referencing when necessary to ensure calculation integrity. (See the next few Commandments.) If you use the fill handle or otherwise copy the calculation and check the first one, all of them should be correct so you don't have to check each one. Prevents errors.
- 🔔 If your calculation uses more than one mathematical operation you need to consider whether using parentheses to force calculation order is necessary. Sometimes it doesn't matter. Often it does. Excel will always give you an answer, whether you have executed the calculation in the correct order or not. Excel also doesn't make math errors...it does what you tell it to do. (See Commandment 2.) Remember, the order of operations is: multiplication, division, addition then subtraction from left to right, unless there are parentheses. Parentheses always execute first and if there is more than one set of parentheses, those calculations occur from the inside out. Excel will color code your calculations if there is more

than one set of parentheses to help you follow which parts are being addressed in which order. The first and last parentheses are always black. For multiple sets, the color coding sequence is: black, dark green, purple, brown, green, orange, violet, blue and then it repeats, if necessary. Prevents errors.

- 🔗 Absolute referencing ensures that if a calculation refers to a cell and you copy or move that calculation to a new location, it will continue to refer to the correct cell. If you don't ever need this, you are probably breaking at least two of the other Commandments (1 and 2, hard coding values and/or entering the same value more than one time). Most of the time, relative references (the default) will be just fine because we do want our references to adjust. When we follow Commandment 2 (having only one point of data entry), you need to "lock" a calculation's reference to that specific cell and not have it adjust if the calculation is copied or moved. If the reference is not fixed (not made absolute), Excel will make the calculation using whatever value is in the new cell referenced so you will get an answer but it will be a wrong answer (see Commandment 3). Prevents errors.

Can you see how all of the Commandments are really interrelated? You are never "required" to follow any of these but if you do, then you are more likely to work efficiently and with fewer errors as well as having your worksheets more easily understood by yourself and others. All of those are generally desirable. When we distill it all down, the five best practices recommended to achieve those goals are simple, regardless of your specific application in Excel. We hope we've made them easier for you to both understand and remember!