Using Calculation files (*.cal) in ArcMap

These instructions describe how to use *.cal files to calculate field values in a dataset's attribute table. The *.cal files are calculation expressions stored separately. The calculation expressions usually hold VBA code.

1. Add a field to hold your new calculated values. You can skip this step if a field already exists.
    a. Open the feature attribute table
    b. Click on the Options button and choose "Add Field"
    c. Create a field, using the correct *Type* of field you need for your calculation. Field type of "Double" is standard for calculations such as area, perimeter, length, X coordinate and Y coordinate.
2. Start an edit session in ArcMap. Calculating a field is faster outside of an edit session, but you will not be able to undo the calculation.
3. Open the attribute table of the layer you want to edit (if not previously opened).
4. Right-click the field heading for the new field from step 1.
5. Click "Calculate Values"
6. Click on the "Load" button and navigate to the stored *.cal file needed.
    NOTE: Text will be added to box titled "Pre-logic VBA Script Code". In the following example, this code would be added for calculating a X-coordinate.

    > Dim dblXcoord as double
    > Dim pPoint as IPoint
    > Set pPoint = [shape]
    > dblXcoord = pPoint.X

    > Below the code there should be an additional text box with the name of your field above it (for example: "FieldName ="). This text box applies the results of the VBA code calculation to the new field. The *.cal file should automatically fill it. In this case it would have: dblXcoord
7. Click OK

Commom Questions:

Why do my numbers seem to come out incorrectly?
It could be that you defined the field to a different *Type* than the calculation requires. For instance, if you create a "Long" integer field to hold the X coordinate for the above example, the number will be incorrect or get an error. The user can find out what *Type* of field by reading the VBA code. Around the first line of VBA code, there is usually a declaration statement for the variable that will hold your calculated value. Say what??? Don't be scared off, I realize I might have just made a completely incomprehensible statement there…but all you need to look for is the line starting with "Dim" that holds the variable in the bottom text box. So in our above case, it states: Dim dblXcoord as double and the bottom text box reads dblXcoord, so what that means is the result needs to be of *Type* "Double". You'll get the hang of it real quickly.

Why aren't there enough numbers after the decimal place?
The field you are calculating your value in wasn't defined with the number of figures you need for your application. While creating the field in step 1, be conscious of the arguments at the bottom of the dialog box that allow you to set field's properties. These arguments change as you change the *Type* of field. In the case of the "Double" field, the user can set the precision (aka width) and scale (# of places to the right of the decimal). Yep…not too obvious, I had to look up the arguments in ArcGIS Desktop Help.

Isn't there an easier way to get these fields into my table?
Ohh yeah…plenty, but sometimes its good to do it the hard way first, so you understand the fundamentals. There are many free extensions that automatically add and calculate the values for common expressions. Try the NPS AlaskaPak or NPS FirePak extensions. Also, look at ESRI website for more.

Further Information about Calculation fields can be found in: ArcGIS Desktop Help → Contents tab → ArcMap/Working with Tables/Making field calculations