Learning Objectives:
• Get more practice with variables
• Learn how to use a "Memory Worksheet" to track variable values
• Learn the basics of how to "debug" a program
• Install Firebug and learn how to use the Script tab
Tracking Memory

As a program runs, it keeps track of the values of various variables in its memory. To follow what the program is doing, and to diagnose errors, it is important to be able to duplicate this process manually.

The best way to do this is to create a "_________ ____________" on which each variable and its current value is listed. Whenever a new variable is created (this is called _______________ the variable), you create a new entry in this worksheet. Whenever its value changes, you cross out the old value (if necessary) and write in the new value. This is actually exactly what JavaScript itself is doing as it executes your program.
Sources of error

There are two main classes of errors that programmers inadvertently make in their programs:

1. ______________ errors: malformed places where you didn't conform to the requirements of the language. (e.g., leaving out a banana, or misspelling "alert")

2. _____________ errors: mistakes in the algorithm itself. (e.g., subtracting two numbers when you meant to add them)

You will make both types of errors many times in this course. This does not mean you are a bad person. It means you are a person.
**Firebug**

Firebug is a very useful plugin to Firefox that we will be using extensively in this course. To get it, go to:

https://getfirebug.com

Click on the red "Install Firebug" button, then click the top "Download" link (underneath the first item in the list, representing the most recent version of Firebug), then click "Download Now". Once the program downloads, press the "Install" button on the popup box to add it to Firefox.

You can tell Firebug is installed via the little bug icon in the upper-right corner. Click on the black-and-white bug to change him to color: this activates him.

Firebug gets its name from the fact that a defect in a computer program is called a "______". The process of identifying and removing defects is called "__________________" a program.

Firebug can help you find syntax errors by highlighting in red places where it noticed a problem. This nearly always help you pinpoint the line your error is on. It *sometimes* also tells you exactly what the error is.

Firebug can help you diagnose logic errors because you can _____ through your program, line by line, viewing JavaScript's Memory Worksheet as you go. You do this by setting a ____________, which tells JavaScript to pause executing its code at a certain line. Stepping through the code one line at a time, and examining the Memory Worksheet in the right-hand pane, can be of vital help in locating a logic error.