

## Problem Set – Introduction to Programming (Syntax)

1. Functions, represented in BioBIKE as boxes, produce both results and displays. Results may be used in subsequent calculations, while displays are for immediate consumption by the human. They are not accessible by the computer. What is the difference between the two?
  - a. Bring down the ADD function. Use it to add 1 and 1. Note that in BioBIKE the notion of adding 1 (to nothing) is legal – adding *to* something is and *option*, not a requirement.
  - b. Clear both entry boxes – the argument to ADD and the entry box for the TO option.
  - c. In turn. Select each empty box and insert the PREVIOUS-RESULT function (found on the Other Functions menu)
  - d. Execute the function again. Why did you get the result you did?
  - e. Execute the function a third time. Now why did you get the result you did?
  - f. Bring down the DISPLAY function. Cut the ADD function you already made (with the two PREVIOUS-RESULT functions inside of it) and paste it into the argument hole of DISPLAY.
  - g. Execute the ADD function again, using it's Action menu, not the Action menu of DISPLAY. What result do you get and why?
  - h. Now execute the entire DISPLAY function. What do you get and why?
  - i. Execute the ADD function again. What result do you get and why?
2. Symbols are characters, such as a word, that taken together can name a region of computer memory. That region can hold the value of a variable. For example:
  - a. Bring down a data box (use the EDIT menu), select the argument hole, and type in the word fruit (of course end by clicking Enter or Tab).
  - b. Execute the data box. What result do you get and why?
  - c. Bring down the DEFINE function (from the Definition menu). Select the variable hole and enter the word fruit. Select the value hole and enter the name of your favorite fruit (if in doubt, use one low in the alphabet). Execute the DEFINE function. If you get an undefined variable error, put the name of your favorite fruit in quotes ("...").
  - d. How has the appearance of the data box made in 2a changed? Why?
3. A symbol represents a value – the name is less important than the value it represents -- while a string IS a value. To illustrate this:
  - a. Bring down a data box and enter your name (first and last), using quotes.
  - b. Do the same thing, this time not using quotes.
4. Which of the following are legal objects? Check your answers by entering each one into a data box and executing the box.
  - a. Fruit
  - b. "lemon"
  - c. 29
  - d. (29 47 lemon)
  - e. The truth