**Scientific Investigations Using Computation: ICA (In-Class Assessment) 1**

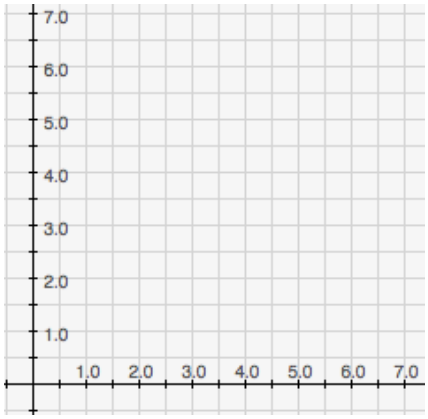
**(28 Sep 2021)**

**Name/Pledged_____**

**Not open notes, nor use of computer/web resources**

1. We have asserted since the first class that a description of modern science can be simplified down to three inter-related actions of the human person. Do you recall what these are?

2. Consider a quadratic function in the form: $y(x) = 3(x-2)^2 + 4$
   a. Sketch the main features of this function near its vertex




   b. If this ***same function*** were written in the form: $y(x) = ax^2 + bx + c$ what are ***a, b,*** and ***c***?

3. A model that has at least one element of randomness can be described as:

   _____

4. A model whose behavior depends solely on its parameter values and the initial conditions, yielding the same result each time, can be described as

   _____

5. For the purposes of this course, define “investigation.” Where does the word “investigation” come from?

6. List at least four characteristics that transform any “investigation” into a “***scientific*** investigation”?

7. Consider a dataset from an experiment of a large number (N) of independent observations. Briefly describe what each of the following ***measures*** or ***predicts*** with respect to that dataset:

    a. Average

    b. Standard Deviation

    c. Standard Error

8. (***non-graded***) The course has now completed its first month

    a. What are some things new to you have learned so far?

    b. What is something that you would like to learn before the course is over?