COSC150: Laboratory 2 (21 February 2023)
How do Variances Vary and Deviations Deviate?

Scientific Investigation of Driving Questions: Using Excel and/or GoogleSheets as your "sand box," conduct a scientific investigation to shed light on the following driving questions and enter your ***results*** for each in https://tinyurl.com/COSC150SharedMeasures :

Driving Questions:

Are "Pseudo-Random Numbers (PRN)" random enough for scientific investigations?
What characteristics do you EXPECT PRN's to have to be "random enough"?
What do you OBSERVE about Excel's PRN?
Does Excel's PRN behave differently than GoogleSheets?

Discuss with your lab colleagues how best to do these exercises using Excel and/or GoogleSheets, but enter your ***results*** for each in https://tinyurl.com/COSC150SharedMeasures :

I. What do you expect from RAND()?
   a. What is the AVERAGE of 10 random numbers (use =RAND())?
   b. What is the VARIANCE of 10 random numbers?
   c. What is the Standard Deviation (use =STDEV) of 10 random numbers?
   d. What is the STANDARD ERROR (use =STDEV/SQRT(N-1))
   e. Are these measures consistent with expectations? Are these consistent if repeated?

   f. What is the AVERAGE 100 random numbers (use =RAND())?
   g. What is the VARIANCE of 100 random numbers?
   h. What is the Standard Deviation (use =STDEV) of 100 random numbers?
   i. What is the STANDARD ERROR of 100 random numbers =STDEV/SQRT(N-1)
   j. Are these measures consistent with expectations? Are these consistent if repeated?

   k. What is the AVERAGE 1000 random numbers (use =RAND())?
   l. What is the VARIANCE of 1000 random numbers?
   m. What is the Standard Deviation (use =STDEV) of 1000 random numbers?
   n. What is the STANDARD ERROR of 1000 random numbers =STDEV/SQRT(N-1)
   o. Are these measures consistent with expectations? Are these consistent if repeated?

II. What do you expect from simulating a flipped coin?

III. What do you expect from simulating the roll of a 6-sided dice

IV. What do you expect from simulating the sum of rolling two 6-sided dice?

By the end of the day Thursday, turn (via e-mail to ***panoffrm@wofford.edu***) a 2-3 (PDF) page write up of these explorations describing your Expectations, Observations, and Reflections.