

**BE.104 Spring**  
**Concepts in Variance or "Oh, What a Fuzzy World We Live In"**  
**Classroom exercise**  
**Prof. James L. Sherley**

**Making Variance**

**Exercise 1- The length of desks versus the length of forearms**

**A. Desks** (*2 students*)

- 1) Use a 12-inch ruler to measure the length of the shorter side of every desk in the classroom.
- 2) Record the measurements

**B. Forearms** (*2 students*)

- 1) Use a 12-inch ruler to measure the lengths of all forearms in the room
- 2) Record the measurements

**Exercise 2- Pitching pennies**

**A. Line** ( $\geq 3$  *students*)

- 1) Stand at least 15 feet from a chalk line drawn longitudinally on the floor in the classroom.
- 2) Pitch pennies at the chalk line on the floor with the aim of getting them to land as close as possible to the line.
- 3) Record all distances of pitched pennies from the line with a 12-inch ruler.
- 4) Record as many distances as humanly possible in the time allotted.

**B. Wall** ( $\geq 3$  *students*)

- 1) Stand at least 15-feet from a wall in the classroom.
- 2) Pitch pennies at the wall with the aim of getting them to land as close as possible to the wall.
- 3) Record all distances of pitched pennies from the wall with a 12-inch ruler.
- 4) Record as many distances as humanly possible in the time allotted.

**Exercise 3- Random Sampling**

*(4 students; 2 per flask)*

- 1) Each student should take a foiled flask of beads. Do not peek inside! ;-)
- 2) Withdraw 5 beads.
- 3) Record the number of black beads drawn, including "0," if none are observed.
- 4) Put the drawn beads back in the flask, close, shake, and draw another 5 beads.
- 5) Repeat the drawing/recording as many times as humanly possible in the time allotted.