**Math 323 Probability and Statistics**

**Class 01 Collecting Data**

*Data* are the answers to questions posed to entities of interest. Today an entity of interest will be a slide of a coin by a person from behind a designated slide line attempting to have the coin stop as close as possible to a target line. We will ask each such entity who slid the coin, what kind of coin was slid, what was the distance between the slide and target lines, and what was the (signed) distance between the stopped coin and the target line. Each entity of interest is called a *case* or *observation*; each question asked is called a *variable*; the answers are called *data*; and the collection of all entities for which the questions were asked is called the *sample*.

Teams of three to four students will examine the ability of each team member to slide coins on a table to stop on a target line. See the figure for the recommended set up. The single target line should be about two-thirds of the distance from one end to the other end, and the five slide lines should be spaced somewhat evenly in the available space. The slide and target lines could be drawn in pencil and then cleaned off after the activity is completed. Measure the distances between the target line and each slide line in centimeters to the nearest tenth.

target

line

slide

lines

For each observation, one student will slide either a penny or a quarter from a designated slide line and attempt to have the coin stop with its furthest edge on the target line. The student must release the coin by the time it reaches the designated slide line. When the coin stops sliding, a measurement in centimeters to the nearest tenth will be made from the target line to the front edge of the coin as shown in the figure. If the coin’s front edge is beyond the target line as in the figure, the measurement is positive. If the coin’s front edge is before the target line, the measurement is negative. Each trial should be recorded in a spreadsheet (e.g., Excel or Google Sheets) in chronological order with column headers

* Name (the person who slid the coin),
* Coin (the coin that was slid),
* Slide (the distance from the designated slide line to the target line in centimeters to the nearest tenth OR “NA” if the coin was not released before the designated line), and
* Target (the distance from the target line to the front of the stopped coin in centimeters to the nearest tenth OR “NA” if the coin did not stop on the table).

Each team should obtain a tape measure, pencil, eraser, quarter, and penny.

We will be interested in whether there are differences among students (is one student more accurate than another student?), between coins (is one coin easier to slide accurately?), over distance to target (are slides from shorter distances more accurate?), and over time (is there a learning effect and/or a fatigue effect?). **Before starting the trials**, the team should determine the number of trials (at least 4 slides of each coin from each slide line by each group member) and the order for the trials so that any differences might be detected.

The recorded data should be saved in a comma separated values (csv) file with a name indicating the group collecting the data. As a part of assignment A01, this file should be uploaded in Moodle by each member of the group.