

MTH 441A: Lab 11

P 1. Consider an experiment in which the experimenter is interested to analyse the effect increasing the amount of baking soda to the height of cake. Suppose there are four categories of baking soda are used (in grams) namely: 0.25, 0.5, 0.75, and 1. Also suppose that there are 16 cakes are available.

- (a) How will you setup the experiment using complete randomized design?
- (b) After performing the experiment using CRD, suppose the outcome is as follows:

Table 1: Baking soda Cake experiment

0.25	0.50	0.75	1.0
1.4	7.8	7.6	1.6
2.0	9.2	7.0	3.4
2.3	6.8	7.3	3.0
2.5	6.0	5.5	3.9

Perform the analysis of variance to conclude that whether the increase in cake height is significantly different in any of the group (amount of baking soda).

P 2. Install packages "palmerpenguins" and "tidyverse". From the data set "penguins" extract the data containing "species", and "flipper_length_mm". This can be done as follows: `data <- penguins[, c("species", "flipper_length_mm")]`.

- (a) Obtain the summary of the data. Plot the scatter plots of "species", versus "flipper_length_mm" for different species (groups).
- (b) Perform the analysis of variance to conclude that whether the flipper length is significantly different in any of the group (species).