1. An ANOVA output is shown below. Fill in the missing information.

**One-way ANOVA**

Source DF SS MS F P

Factor 3 36.15 ? ? ?

Error ? ? ?  
Total 19 196.04

1. I belong to a golf club in my neighborhood. I divide the year into three golf seasons: summer (June–September), winter (November–March), and shoulder (October, April, and May). I believe that I play my best golf during the summer (because I have more time and the course isn’t crowded) and shoulder (because the course isn’t crowded) seasons and my worst golf is during the winter (because when all of the part-year residents show up, the course is crowded, play is slow, and I get frustrated). Data from the last year are shown in the following table.

Calendar

Description automatically generated with medium confidence

a. Do the data indicate that my opinion is correct? Use alpha 0.05.

b. Analyze the residuals from this experiment and comment on model adequacy.

1. An article in Environment International (Vol. 18, No. 4, 1992) describes an experiment in which the amount of radon released in showers was investigated. Radon-enriched water was used in the experiment, and six different orifice diameters were tested in shower heads. The data from the experiment are shown in the following table:

Table

Description automatically generated

* 1. Does the size of the orifice affect the mean percentage of radon released? Use alpha 0.05.
  2. Find the P-value for the F statistic in part (a).
  3. Analyze the residuals from this experiment.
  4. Construct a graph to compare the treatment means. What conclusions can you draw?

1. Suppose that we have data on the weight loss of 100 people, each person assigned to one specific diet, each diet having assigned to it the same number of people. In performing an ANOVA, the analysts arrived at the table below, which is incomplete; Fill in the blanks.

Table

Description automatically generated

1. Consider the data set HW2\_Q5.csv, which represents the yield of soybean (in kg) grown using different potassium concentrations (in ppm). Are there significant differences due to the concentration of potassium used? Use alpha = 0.05.
2. Using information from question 4, write the statistical model (all 3: the cell means, the treatment effect, as well as the matrix form) explaining what each term means.
3. In an experiment that aims to compare plant growth under the application of 3 different fertilizers, the researcher has 6 experimental units available. Assuming a CRD will be used with an equal number of replications, provide below the Linear Model in matrix form and write all matrices with their elements (see slide 5 from Week3\_part1).
4. Design a CRD, i.e., create a table with the randomized treatments for the experiment mentioned in question 7. Include your table below and indicate how it was generated.
5. The data set HW2\_Q9.csv is from an experiment aiming to evaluate the influence of yacon flour consumption on the glycemic index. Run an ANOVA, check the assumptions, and if they are not met, re-run the model with the appropriate transformation.
6. There is an “Exercises” section at the end of chapter 3. For this homework, answer question 5 of the Exercises list of chapter 3.