STAA 553: HW1

YOUR NAME HERE

See Canvas Calendar for due date.
14 points total, 2 points per problem unless otherwise noted.
Add or delete code chunks as needed.
Content for all questions is from Sections 1 and 2.

Hand Washing 1 (Q1 - Q5)

An investigator is planning a hand-washing study. They want to evaluate the effect of water temperature (60, 80, 100 or 120 F) on bacterial count on people's palms after hand-washing. They plan to recruit a total of n = 32 subjects and will randomly assign each subject to wash their hands with a single water temperature.

Q1

Identify the experimental units.

Response

Q2

Identify the treatment (or factor) and number of levels.

Response

Q3

Identify the response variable.

Response

Q4

Suggest one approach that could be used to "reduce noise" when conducting this study. This is a "common sense" question with many possible correct answers, not something you will find in a textbook.

Response

Q5

Use R `sample()` to randomly assign 32 subjects to temperatures (60, 80, 100 or 120 F) requiring balance (equal number of subjects per temperature). Show a summary table giving the number of subjects per treatment.

Hand Washing 2 (Q6 - Q7)

We continue with the hand-washing study. But now suppose that each subject will be asked to wash their hands 4 times (on 4 different days), such that each subject experiences all 4 water temperatures. This is an example of a blocked or repeated measures design.

Q6

Name one benefit of this design as compared to the original design.

Response

Q7

Suggest one way that randomization could be incorporated into this study design.

Response

Appendix

```
#Retain this code chunk!!!
library(knitr)
knitr::opts_chunk$set(echo = FALSE)
knitr::opts_chunk$set(message = FALSE)
#Q5
```