Professor Notes About the Data Production Homework

- You must list the number of levels separately for each factor. In a multi-factor experiment, do NOT combine the levels to get just a single number.
- Note that the 36 randomly generated numbers were split into groups of six and then placed into the treatments. The first six (i.e., 1-6) random numbers were placed in the 10F and 10% salt treatment, the next six (i.e., 7-12) random numbers were placed in the 15F and 10% salt treatment, and so on.
- Questions that ask "physically, what is a replicate" are basically asking for what the individual is in the experiment. Number of replicates, on the other hand, is the number of individuals in each treatment.

Salt, Sand, and Ice

1. This was an experiment because the researchers controlled the levels of some variables at specific values (salt percentage and temperature) and attempted to control others at constant values.
2. The two factor are salt percentage and temperature.
3. There were two levels of salt percentage and three levels of temperature.
4. There were six $(2 * 3)$ treatments in this experiment
5. The response variable was the melting rate of ice.
6. Melting rate is a continuous quantitative variable.
7. A replicate or individual in this experiment is a chamber with a small piece of highway in it.
8. A diagram of the experiment is in Table 1.

Table 1. Depiction of ice melting on highway roads experiment.

	Temperature (F)		
%Salt	10	15	20
10	30,25,21,31,7,35	36,5,20,32,26,2	33,16,10,29,11,3
20	9,8,18,22,13,17	23,19,15,28,34,14	1,4,6,12,24,27

Fabry Disease

1. This is a voluntary response observational study because no treatment is imposed on the subjects in the study and the subjects chose to participate in the study or not.

Appendix – R Commands

```
d <- sample(36)
d[1:6]
d[7:12]
d[13:18]
d[19:24]
d[25:30]
d[31:36]
```