

AP StatisticsUnit 03 – Designing Experiments
Homework #3

Name _____

Period _____

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- 45.** Experiment, because students were randomly assigned to the different teaching methods.
- 46.** Observational study, because the other researchers did not assign people to either use or not use cell phones.
- 47.**
- a)** Observational study, because mothers weren't assigned to eat different amounts of chocolate.
 - b)** Explanatory: the mother's chocolate consumption.
Response: the baby's temperament.
 - c)** No, this study is an observational study so we cannot draw a cause-and-effect conclusion. It is possible that women who eat chocolate daily have less stressful lives and the lack of stress helps their babies develop better temperaments.
- 48.**
- a)** Observational study, because children weren't assigned to different amounts of child care.
 - b)** Explanatory: amount of time in child care from birth to age 4.5 years.
Response: adult ratings of their behavior.
 - c)** No, this study is an observational study so we cannot make a cause-and-effect conclusion. It is possible that children who spend more time in child care have less time with their parents and get less instruction about proper behavior.
- 49.** Type of school. For example, private schools tend to have smaller class sizes and students that come from families with higher socioeconomic status. If these students do better in the future, we wouldn't know if the better performance was due to smaller class sizes or higher socioeconomic status.
- 52.** Experimental units: 300 people who haven't used Skype before.
Explanatory variable: whether ads are present.
Response variables: frequency and length of phone calls.
Treatments: no ads shown during phone calls and ads shown during phone calls.
- 54.** Experimental units: middle schools.
Explanatory variable: whether a physical activity program was offered and whether a nutrition program was offered.
Response variables: physical activity and lunchtime consumption of fat.
Treatments:
- (1) activity intervention only
 - (2) nutrition intervention only
 - (3) both interventions
 - (4) neither intervention.

- 55.** Experimental units: 24 fabric specimens.
Explanatory variable:
 (1) roller type
 (2) dyeing cycle
 (3) temperature
Response variables: a quality score.
Treatments:
 (1) metal, 30 minutes, 150 degrees
 (2) natural, 30 minutes, 150 degrees
 (3) metal, 40 minutes, 150 degrees
 (4) natural, 40 minutes, 150 degrees
 (5) metal, 30 minutes, 175 degrees
 (6) natural, 30 minutes, 175 degrees
 (7) metal, 40 minutes, 175 degrees
 (8) natural, 40 minutes, 175 degrees
- 59.** **a)** Write all names on slips of paper, put them in a container, and mix thoroughly. Pull out 40 slips of paper and assign these subjects to Treatment 1. Then pull out 40 more slips of paper and assign these subjects to Treatment 2. The remaining 40 subjects are assigned to Treatment 3.
- b)** Assign the students numbers 1 to 120. Using the command `RandInt(1,120)` on the calculator, assign the students corresponding to the first 40 unique numbers chosen to Treatment 1. The students corresponding to the next 40 unique numbers to Treatment 2, and the remaining 40 students to Treatment 3.
- c)** Assign the students numbers from 001 to 120. Pick a spot on Table D (or Table B) and read off the first 40 unique numbers between 001 and 120. The students corresponding to these numbers are assigned to Treatment 1. The students corresponding to the next 40 unique numbers between 001 and 120 are assigned to Treatment 2. The remaining 40 students are assigned to Treatment 3.
- 63.** *Comparison:* Researchers used a design that compared a low-carbohydrate diet with a low-fat diet.
Random Assignment: Subjects were randomly assigned to one of the two diets.
Control: The experiments used subjects who were all obese at the beginning of the study and who all lived in the same area.
Replication: There were 66 subjects in each treatment group.
- 65.** Write the names of the patients on 36 identical slips of paper, put them in a hat, and mix them well. Draw out 9 slips. The corresponding patients will receive the antidepressant. Draw out 9 more slips. Those patients will receive the antidepressant plus stress management. The patients corresponding to the next 9 slips drawn will receive the placebo, and the remaining 9 patients will receive the placebo plus stress management. At the end of the experiment, record the number and severity of chronic tension-type headaches for each of the 36 subjects and compare the results for the 4 groups.