

AP Statistics

2019-01-10 4.2 Assignment

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Pg. 230 37-42

Question 37: **C**

Question 38: **D**

Question 39: **D**

Question 40: **C**

Question 41: **E**

Question 42: **A**

Pg. 253-256 45ac,49,51,57,63,67,69

Question 45

Part A

Observational - the researchers did not change/control the treatments

Part C

No - only experimental studies allow for cause and effect conclusions.

Question 49

A lurking variable would be what happened in the home lives of these students, their incomes (which may affect the class sizes of the school), or other personal details of the students' lives. This could cause confounding as, for example, lower income students may be forced to attend crowded schools, however, may value education more and try harder in their classes.

Question 51

Units: pine seedlings/trees

Explanatory factors: applied lighting levels

Treatments: Full light, 25% light, 5% light

Response variables: weight of young trees.

Question 57

Other issues, such as time of day, world events, etc., may be causing changes in heart rates/blood flow which are not accounted for by the

study. A control group should be formed in order to draw more reliable conclusions.

Question 63

Part A

Other conditions at the time, such as quality of life, as well as extensiveness of the disease.

Part B

I would use a matched pairs design, which allows for these additional factors to be accounted for. Pairs would be formed of similar patients (in terms of age, weight, external health issues, progression of disease, etc.) and then each member of the pair would either be given the old or new treatment. This will help to eliminate variation among units and improve the reliability of overall conclusions.

Question 67

Part A

Controls helps find lurking variables that may affect the response. Proper design ensures that lurking variables are accounted for and minimized.

Random Assignment: use impersonal (random) chance to assign experimental units to treatments

Replication: use enough experimental units in each group so that any differences in treatments can be distinguished from the groups.

Part B

Controls, such as race and income, helped to ensure that lurking variables (and thus confounding) were minimized.

Random assignment was used to select the assignees to each group

There were over fifty students in each group, allowing the overall trends in the groups to be sufficiently distinguishable.

Question 69

Part A

The placebo was being told that the leaf was harmless when, in fact, it was not.

Part B

Both treatments were given to each subject. When the placebo treatment was given, 85% of subjects did not receive the negative consequences that would be expected from the non-placebo treatment.