

QUIZZ Worksheets

AP Statistics-Experimentation 2022

Total questions: 8

Worksheet time: 18mins

Instructor name: Linda Jackson

Name

Class

Date

1. A study of human development showed two types of movies to groups of children. Crackers were available in a bowl, and the investigators compared the number of crackers eaten by children watching the different kinds of movies. One kind of movie was shown at 8 AM (right after the children had breakfast) and another at 11 AM (right before the children had lunch). It was found that during the movie shown at 11 AM, more crackers were eaten than during the movie shown at 8 AM. The investigators concluded that the different types of movies had an effect on appetite.

The results cannot be trusted because

- a) the study was not double-blind. Neither the investigators nor the children should have been aware of which movie was being shown.
- b) the investigators were biased. They knew beforehand what they hoped the study would show.

- c) the time the movie was shown is a confounding variable.
- d) the investigators should have used several bowls, with crackers randomly placed in each.

2. Consider an experiment to investigate the effectiveness of different insecticides in controlling pests and their effects on subsequent yield. What is the best reason for randomly assigning treatment levels (spraying or not spraying) to the experimental units (farms)?

- a) Randomization is required by statistical consultants before they will help you analyze the experiment.
- b) Randomization makes the analysis easier since the data can be collected and entered into the computer in any order.

- c) Randomization makes the experiment easier to conduct since we can apply the insecticide in any pattern rather than in a systematic fashion.
- d) Randomization will tend to average out all other uncontrolled factors such as soil fertility so that they are not confounded with the treatment effects. ★

3. A nutritionist wants to study the effect of storage time (6, 12, and 18 months) on the amount of vitamin C present in freeze dried fruit when stored for these lengths of time. Vitamin C is measured in milligrams per 100 milligrams of fruit. Six fruit packs were randomly assigned to each of the three storage times. The treatment, experimental unit, and response are respectively:

- a) A fruit pack, amount of vitamin C, a specific storage time
- b) Random assignment, a fruit pack, amount of vitamin C
- c) A specific storage time, amount of vitamin C, a fruit pack
- d) A specific storage time, a fruit pack, amount of vitamin C

4. Can pleasant aromas help a student learn better? Two researchers believed that the presence of a floral scent could improve a person's learning ability in certain situations. They had 22 people work through a pencil-and-paper maze 6 times. Three of the times they wore a floral-scented mask and three times they wore an unscented mask. The three trials for each mask followed one another. Testers measures the length of time it took subjects to complete each of the six trials. They reported that, on average, subjects wearing the floral-scented mask completed the maze more quickly that those wearing the unscented mask, although, the difference was not statistically significant. This study is:

- a) an observational study
- b) a double-blind experiment
- c) a convenience sample
- d) an experiment, but not double-blind

Children may have eaten more crackers at 11:00 because they were hungry, not because of the type of movie shown

*fruit packs ← 6 mo → amount of vitamin C
RA 12 mo →
18 mo →*

Subjects will know whether they are wearing a scented mask

5. Researchers in Britain randomly divided a large number of premature babies into three groups. One received donated breast milk, one received infant formula made for premature babies, and the third received regular infant formula. Each diet was used for one month as a sole food or as a supplement to mother's milk. Sixteen years later, the children returned and had their blood pressure measured. It was found that diastolic and systolic blood pressure both tended to be lower in the children who were fed breast milk than in the children who were fed formula. This study is an example of

- a) a census
 b) A retrospective observational study
 c) A prospective observational study
 d) An experiment

Treatments were applied

6. A researcher in early childhood education believes that kindergarten-age children are more receptive to help from a female teacher than from a male teacher. From a list of kindergarten teachers in the state, the researcher randomly samples four classes with male teachers and four classes with female teachers. He then observes the students over the next 2 years and measures how receptive the students in each class are to get help from the teacher. This is an example of

- a) A retrospective observational study
 b) An experiment
 c) A prospective observational study
 d) A census

← Past (already happened)

✗ Treatments not applied

Follows over next 2 years

7. An agricultural scientist wants to compare the effect on yield of three different methods of growing blueberries. To control for variables such as soil condition and location, he plants 30 plots on each of six different farms. On each farm, each treatment (growing method) is randomly assigned to 10 of the 30 plots. She measures and compares the marketable yield of blueberries produced by each plot. Which of the following best describes the design of this experiment?

- a) a randomized block design with six blocks and three treatments
 b) an observational study
 c) a completely randomized design with three treatments
 d) a randomized block design with three blocks and six treatments

8. Which of the following best describes the purpose of replication in an experimental design?

- a) Repeating an experiment several times to see if results are similar.
 b) Reducing the impact of variables other than the treatment variable.
 c) Using many subjects to reduce variation in the response variable (reduce the role of chance in the outcome)