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Date _____
Algebra II

Statistical Studies

1. Determine whether each scenario is a survey, census, observational study, or controlled experiment. Explain your answer.

A. Researchers want to determine if there is a relationship between whether or not a woman smoked during pregnancy and the birth weight of her baby. Researchers examined records for the past five years at a large hospital.

Observational study. You're not giving cigarettes to pregnant women.

B. A large high school wants to know the proportion of students who would be interested in a driver's education class. Counselors asked a random sample of 200 students if they would be interested.

Sample survey, you're asking a sample.

C. A company develops a new dog food. The company wants to know if dogs would prefer its new food over the competition's dog food. One hundred dogs, who were food deprived overnight, were given equal amounts of the two dog foods: the new food versus the competitor's food. The proportion of dogs preferring the new food versus the competitor's was recorded.

Controlled experiment. Contol grop and ~~experiment~~ treatment grop with the treatment grop receiving a treatment.

D. An elementary school Principal wants to determine if any students in the school have a peanut allergy. He has every family in the school return a questionnaire regarding peanut allergies.

Census. Every member of the population is surveyed.

2. Which scenario is best described as an observational study?

1) For a class project, students in Health class ask every tenth student entering the school if they eat breakfast in the morning. Survey (Sample)

2) A social researcher wants to learn whether or not there is a link between attendance and grades. She gathers data from 15 school districts.

Observational study

3) A researcher wants to learn whether or not there is a link between children's daily amount of physical activity and their overall energy level. During lunch at the local high school, she distributed a short questionnaire to students in the cafeteria. Survey

4) Sixty seniors taking a course in Advanced Algebra Concepts are randomly divided into two classes. One class uses a graphing calculator all the time, and the other class never uses graphing calculators. A guidance counselor wants to determine whether there is a link between graphing calculator use and students' final exam grades. Controlled experiment

3. A doctor wants to test the effectiveness of a new drug on her patients. She separates her sample of patients into two groups and administers the drug to only one of these groups. She then compares the results. Which type of study *best* describes this situation?

1) census
2) survey
3) observation
4) controlled experiment

Controlled experiment

4. A market research firm needs to collect data on viewer preferences for local news programming in Buffalo. Which method of data collection is most appropriate?

1) census
2) survey
3) observation
4) controlled experiment

ask people what they want to watch

5. A school cafeteria has five different lunch periods. The cafeteria staff wants to find out which items on the menu are most popular, so they give every student in the first lunch period a list of questions to answer in order to collect data to represent the school. Which type of study does this represent?

1) observation
2) controlled experiment
3) population survey
4) sample survey (not every student in the school was asked)

6. Determine whether each scenario is a survey, an observational study, or a controlled experiment. Explain your answer.

a) A study is done to see how high soda will erupt when mint candies are dropped into two-liter bottles of soda. You want to compare using one mint candy, five mint candies, and 10 mint candies. You design a cylindrical mechanism, which drops the desired number of mint candies all at once. You have 15 bottles of soda to use. You randomly assign five bottles into which you drop one candy, five into which you drop five candies, and five into which you drop 10 candies. For each bottle, you record the height of the eruption created after the candies are dropped into it.

Controlled experiment, you dropped the candies into the bottle (administered a treatment)

b) You want to see if fifth-grade boys or fifth-grade girls are faster at solving multiplication problems. You randomly select twenty fifth-grade boys and twenty fifth-grade girls from fifth graders in your school district. You time and record how long it takes each student to solve multiplication problems.

observational study, you're not giving one of the guys anything to make them faster and slower.

c) You want to determine if people would be interested in watching a video of you performing Mr. Schlansky's math songs. You ask every 5th student walking into Mr. Schlansky's math class if they would want to watch the video.

Survey (sample). You're asking questions to a sample.

7. Howard collected fish eggs from a pond behind his house so he could determine whether sunlight had an effect on how many of the eggs hatched. After he collected the eggs, he divided them into two tanks. He put both tanks outside near the pond, and he covered one of the tanks with a box to block out all sunlight. State whether Howard's investigation was an example of a controlled experiment, an observation, or a survey. Justify your response.

Controlled experiment. You covered one of the tanks (applied a treatment).

8. Darryl conducted a study comparing the statistics of baseball players in the steroid era compared to the non steroid era. Would this investigation be an example of a controlled experiment, an observation, or a survey? Justify your response.

Observation study. He's looking at data, not giving baseball players steroids.