

S.IC.B.3: Analysis of Data 1

- 1 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

- 2 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

- 3 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

- 4 In which method of data collection does the researcher intentionally intervene to arrange for a comparison of results?
 - 1) taking a survey
 - 2) making observations
 - 3) filling out a questionnaire
 - 4) conducting a controlled experiment

- 5 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.
 - 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.
 - 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.
 - 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.

- 6 Which task is *not* a component of an observational study?
- 1) The researcher decides who will make up the sample.
 - 2) The researcher analyzes the data received from the sample.
 - 3) The researcher gathers data from the sample, using surveys or taking measurements.
 - 4) The researcher divides the sample into two groups, with one group acting as a control group.
- 7 Which statement about statistical analysis is *false*?
- 1) Experiments can suggest patterns and relationships in data.
 - 2) Experiments can determine cause and effect relationships.
 - 3) Observational studies can determine cause and effect relationships.
 - 4) Observational studies can suggest patterns and relationships in data.
- 8 Describe how a controlled experiment can be created to examine the effect of ingredient X in a toothpaste.
- 9 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.

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Answer Section

1 ANS: 4 REF: 061101a2

2 ANS: 2 REF: 061301a2

3 ANS: 4 REF: 011406a2

4 ANS: 4 REF: 081606a2

5 ANS: 2 REF: 081717a2

6 ANS: 4 REF: 011127a2

7 ANS: 3 REF: 011706a2

8 ANS:

Randomly assign participants to two groups. One group uses the toothpaste with ingredient X and the other group uses the toothpaste without ingredient X .

REF: 061626a2

9 ANS:

Controlled experiment because Howard is comparing the results obtained from an experimental sample against a control sample.

REF: 081030a2