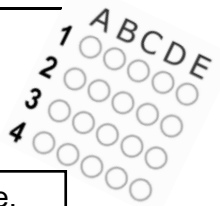


Name: \_\_\_\_\_ Hour: \_\_\_\_\_ Date: \_\_\_\_\_

## Does SAT prep improve scores?

SAT®



Last year EKHS offered an after school SAT prep class that students could volunteer to take. 44 students took the course and then took the SAT. The average SAT score for this group was 1220. The average SAT score for all students who did not take the prep class was 1050.

1. Is the situation described an observational study or an experiment?
2. Identify the explanatory variable and the response variable.
3. Can you conclude that taking the prep course will cause a student's SAT score to increase? Why or why not?
4. Identify as many other possible variables that you can that may explain why the SAT scores are higher for those who took the prep course than for those who did not.
5. Design an experiment that would allow us to determine if the SAT prep causes an increase in SAT scores. Be as thorough as possible.

Name: \_\_\_\_\_ Hour: \_\_\_\_\_ Date: \_\_\_\_\_

## Observational Studies and Experiments

Important Ideas:

### Check Your Understanding:

1. Do homes with metal roofs get worse cell service than homes with shingled roofs? Ben and Jerry are neighbors and own an ice cream business together. Ben has a metal roof on his home and Jerry has a shingled roof. Ben and Jerry select a random sample of 50 employees. They randomly assign them to come to a party at either Ben's house or Jerry's house. When they arrive Ben and Jerry ask them about their signal strength. Was this an observational study or an experiment? Justify your answer.
2. A study showed that one factor that strongly correlates with student academic success is the number of books that the family has in their home. Researchers randomly selected 100 students and measured their academic success as well as counted the number of books their family has in their home.
  - a. Is this an observational study or an experiment? Justify your answer.
  - b. What are the explanatory and response variables?
  - c. Explain clearly why such a study cannot establish a cause-and-effect relationship. Suggest a variable that may be confounded with number of books that the family have in their home.