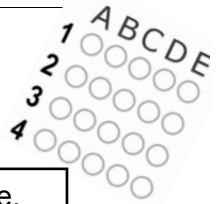


Name: _____ Hour: _____ Date: _____

SAT[®]

Lesson 4.2: Day 1: Does SAT prep improve scores?



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.

Lesson 4.2: Day 1: Observational Studies and Experiments

Big Ideas:

Check Your Understanding:

1. Does reducing screen brightness increase battery life in laptop computers? To find out, researchers obtained 30 new laptops of the same brand. They chose 15 of the computers at random and adjusted their screens to the brightest setting. The other 15 laptop screens were left at the default setting— moderate brightness. Researchers then measured how long each machine’s battery lasted. Was this an observational study or an experiment? Justify your answer.

Questions 2–4 refer to the following setting. Does eating dinner with their families improve students’ academic performance? According to an ABC News article, “Teenagers who eat with their families at least five times a week are more likely to get better grades in school.”²⁴ This finding was based on a sample survey conducted by researchers at Columbia University.

2. Was this an observational study or an experiment? Justify your answer.
3. What are the explanatory and response variables?
4. Explain clearly why such a study cannot establish a cause-and-effect relationship. Suggest a variable that may be confounded with whether families eat dinner together.