

Name: _____ Hour: _____ Date: _____

SAT[®]

Does SAT prep improve scores? Part 2.



Some students at your school claim that taking an SAT prep course will help improve their SAT score. Design a study to help discover if this claim is true.

Here are six proposed studies for investigating the question of the day. Suppose we found that the mean SAT score of students who took an SAT prep course is significantly higher than the mean SAT score of students who didn't take an SAT prep course. What conclusions could we make? Can we generalize and can we determine causation?

1. Get all the students in a senior-only class to participate in a study. Ask them whether or not they took an SAT prep course and divide them into two groups based on their answer to this question.

Conclusion:

2. Select a random sample of Seniors from your school to participate in a study. Ask them whether or not they took an SAT prep course and divide them into two groups based on their answer to this question.

Conclusion:

3. Select a random sample of students who have taken the SAT from your school to participate in a study. Ask them whether or not they took an SAT prep course and divide them into two groups based on their answer to this question.

Conclusion:

4. Get all the students in a senior-only class to participate in a study. Randomly assign half of the students to take an SAT prep course and have the remaining half not take an SAT prep class. Then have both groups take the SAT again.

Conclusion:

5. Select a random sample of Seniors from your school to participate in a study. Randomly assign half of the students to take an SAT prep course and have the remaining half not take an SAT prep course. Then have both groups take the SAT again.

Conclusion:

6. Select a random sample of students who have taken the SAT from your school to participate in a study. Randomly assign half of the students to take an SAT prep course and have the remaining half not take an SAT prep course. Then have both groups take the SAT again.

Conclusion:

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Scope of Inference

Important Ideas:

Check Your Understanding:

1. Zach works at the Verizon store and wonders if iPhones last longer if the screen brightness is set to low. He selects a random sample of 20 brand new iPhones from this store and randomly splits them into two groups of 10. For the first group of 10 iPhones, he sets the screen brightness to low and then starts a movie. For the second group of 10 iPhones, he sets the screen brightness to high and then starts a movie. For each iPhone, he measures the amount of time until the battery is all the way dead. He finds that the low brightness iPhones lasted longer, on average, than the high brightness iPhones.
 - (a) Was this an observational study or an experiment? Explain your reasoning.
 - (b) What is the explanatory variable and the response variable?
 - (c) Was a random sample used to collect the data?
 - (d) Was random assignment used to set up an experiment?
 - (e) What conclusion can we make from this study?