

Lesson 3 Practice Problems

1. Andre is in the band and he is conducting an experiment to determine if high school students find listening to classical music or listening to the sounds of the ocean more calming. He selects five students at random from the band to listen to classical music. He then selects five people at random from the swim team to listen to the sounds of the ocean. What is problematic about the way that Andre selected his groups?

2. You want to survey twenty of the 150 ninth graders to get their opinion on the school's new schedule. Which of the following methods is most likely to lead to a sample that is the most representative of the 150 ninth graders?
 - A. Choose 20 ninth graders from your first period class.
 - B. Choose the first 20 ninth graders from an alphabetical list.
 - C. Select 20 students at random from the ninth grade.
 - D. Select 5 students at random from each of ninth, tenth, eleventh and twelfth grade.

3. The United States Senate has 2 senators from each of the 50 states. Select **all** methods that would select a sample of 10 senators at random from the entire Senate.
 - A. Take the 10 senators from the 5 largest states.
 - B. Take the 10 senators who have served in the Senate the longest.
 - C. Place the names of all 100 senators on individual slips of paper placed into a bowl. Thoroughly mix up the slips and then select 10 of them.
 - D. Send letters to all 100 senators. Select the 10 that reply back the quickest.
 - E. Number the senators from 1 to 100. Use a random number generator to make a list of 10 random integers between 1 and 100 inclusive.

4. Jada is designing a study to determine whether mold grows faster in tap water or bottled water. To do this she compares the growth rate of mold growing in a glass of tap water to the growth rate of mold growing in a glass of bottled water.
- What type of study is Jada designing?
 - How could her design be improved to collect data that would be better for answering the question of interest?

(From Unit 7, Lesson 1.)

5. What type of study would you conduct if you wanted to know how many miles a week on average students on the school's cross country team run during the summer? Explain your reasoning.

(From Unit 7, Lesson 2.)

6. Describe the design of an experimental study that could determine whether you send text messages faster before or after exercise.

(From Unit 7, Lesson 2.)