Unit 3 Progress Check: FRQ

1. Show all your work. Indicate clearly the methods you use, because you will be scored on the correctness of your methods as well as on the accuracy and completeness of your results and explanations.

Researchers are investigating whether people who exercise with a training partner have a greater increase, on average, in targeted exercise intensity compared with people who exercise alone. Two methods of collecting data have been proposed.

Method I: Recruit volunteers who are willing to participate. Randomly assign each participant to exercise with a training partner or to exercise alone.
Method II: Select a random sample of people from all the people who exercise at a community fitness center. Ask each person in the sample whether they use a training partner, and use the response to create the two groups.

(a) For each method, the researchers will record the change in targeted exercise intensity for each person in the investigation. They will compare the mean change in intensity between those who exercise with a training partner and those who do not.

(i) Describe the population of generalization if method I is used. Explain your answer.

(ii) Describe the population of generalization if method II is used. Explain your answer.

(b) Suppose the investigation produces a result that is statistically significant using both methods. What can be concluded if method I is used that cannot be concluded if method II is used? Explain your answer.
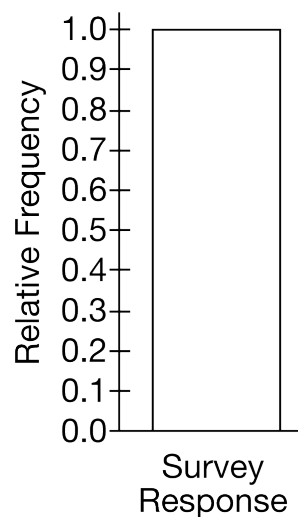
Unit 3 Progress Check: FRQ

2. Show all your work. Indicate clearly the methods you use, because you will be scored on the correctness of your methods as well as on the accuracy and completeness of your results and explanations.

A survey was given to a random sample of 400 people living in a certain community. The people were asked whether they supported the construction of walking trails in the community park. The results are shown in the following table.

Response	Frequency
Yes, support	210
No, do not support	90
No opinion	100
Total	400

(a) Complete the following segmented bar chart to show the relative frequencies of the results.

A follow-up study will be conducted with a sample of 20 people from the 300 people who responded yes (support) and no (do not support). Two sampling methods have been proposed: a simple random sample and a stratified random sample with the survey response as strata.

(b) If the stratified random sample is used, what is the number of people that will be selected from those who responded yes? Support your answer by showing your work.

(c) Describe a statistical advantage of using the stratified random sample instead of the simple random sample for the follow-up study.