

**LESSON**  
**1-2****Practice C****Data Gathering**

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**Decide whether the sampling method could result in a biased sample.**

**Explain your reasoning.**

1. The principal at a school wants to know if new teachers feel that they have been given enough support from the administration. He makes appointments to interview half of the teachers who have been at the school for two years or less and ask for their feedback.
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2. A state politician's office is conducting a survey to find which issues are most important to the state's citizens. The office randomly selects 100 residents of the state's cities, 100 residents of the state's rural communities, and 100 of the state's suburban communities to call and ask to participate in a telephone poll.
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**Decide whether the results of the survey are likely to be representative of the population. Explain.**

3. A customer satisfaction survey is conducted by giving a questionnaire to every customer at the check-out. Customers are then asked to complete the survey online when they get home.
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4. A teacher wants to know how much her students are reading at home. She randomly selects 15 students and calls their parents to ask how many hours the student reads per week, on average.
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**One hundred and twenty students out of 2,108 at a school have been surveyed. The results are recorded below. Predict the number of students in the population that would answer similarly.**

5. Fifty-three said they were planning to attend a school dance.
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6. Seventeen said they were planning to graduate early.
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7. The manager of a luxury car dealership is considering whether to carry less expensive models. He surveys every fifth customer who comes in over a week and asks them whether they would be interested in buying models less expensive than the ones the dealership currently sells, if the dealership carried them. Among those he surveyed, 70% said they would not be interested in buying a less expensive model. Because this percentage is so high, the manager decides not to look into carrying less expensive models. Did the manager make a good decision? Explain your answer.
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7. No; customers who are family and friends of employees are overrepresented, so the sample is not likely to be representative of the population. Friends and family of employees may be more likely to give a favorable response, especially if they are given a discount.
8. 1000 students
9. 200 students

### Practice B

1. No; the sample includes a large number of students, and they are chosen randomly.
2. Yes; the sample is random but the sample is a self-selected convenience sample which is not likely to be representative of the population.
3. Yes; the sample is random but the sample is self-selected, and is not likely to be representative of the population.
4. No; the sample is selected from teenagers who are his customers, but the sample size may be too small to be representative of the population. The sample is biased.
5. Yes; the sample is selected from the entire population, and there is no group that is overrepresented or underrepresented. The sample is not likely to be biased.
6. No; the sample is selected from the entire population (the constituents), but since the constituents may not be actual voters, the voting population may be underrepresented. The sample is biased.
7. 480 students
8. 900 students
9. 168 students
10. 1008 students

### Practice C

1. Yes; the new teachers may be hesitant to saying anything negative since it is the principal, their boss, who is surveying them.

2. Yes; the populations in the cities, suburbs, and rural areas are most likely not equal, since populations are dense in cities and sparse in rural areas, so residents of cities may be underrepresented when compared to rural residents.
3. No; the sample is self-selected, which is not likely to be representative of the population.
4. No; parents may not know how much their children read, or may be inclined to overestimate the number of hours students spend reading.
5. 931 students
6. 299 students
7. No, he did not make a good decision. Only people who are already in the dealership to buy luxury cars are selected for the survey, so other groups of potential customers are underrepresented.

### Review for Mastery

1. No; there is a large number of students, and they are chosen randomly.
2. Yes; the sample is random but is self-selected, which is not likely to be representative of the population.
3. No; the sample is self-selected, so it is not likely to be representative of the population.
4. No; the sample is a convenience sample, which does not represent the shoppers who are at the mall at other times in the day.
5. 492 people
6. 450 people
7. 72 people

### Challenge

1. Possible answer: Should the school start a foreign language club?
2. Possible answer: Yes; the type of club is specific and it is an easy yes or no answer.
3. The entire student population.
4. Possible answer: I will ask 100 students chosen randomly by ID number.