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## Additional Practice

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#### Abstract

Aaron wants to learn about how much time students at his school spend playing sports. He asks all the boys on the basketball team and all the girls on the volleyball team to estimate how many hours per week they spend playing sports.


1. Is Aaron's sample a voluntary-response sample, a systematic sample, or a convenience sample? Explain your reasoning.
2. Suppose Aaron asked all the students in his mathematics class to estimate how many hours per week they spend playing sports.
a. Would this be a voluntary-response sample, a systematic sample, or a convenience sample? Explain your reasoning.
b. Would you expect the median number of hours spent playing sports for students in Aaron's mathematics class to be higher or lower than his sample from the basketball and volleyball teams? Explain your reasoning.
3. There are 1,232 students enrolled at Aaron's school. The principal's office has an alphabetical list of all the students' names. Suppose Aaron asked every 20th student on the list to estimate the number of hours he or she spends playing sports each week. Would this be a voluntary-response sample, a systematic sample, or a convenience sample? Explain.
4. Aaron placed an ad in the school newspaper with a form for students to complete and return. The form asked how much time the students spent playing sports each week. Aaron received 53 responses. Is this a voluntaryresponse sample, a systematic sample, or a convenience sample? Explain.
$\qquad$ Date $\qquad$ Class $\qquad$

For Exercises 5-7, use this information: Marci works on the yearbook staff at Metropolis Middle School. Of the $\mathbf{9 2}$ businesses in the downtown area, 41 purchased advertising space in the yearbook last year.
5. Suppose Marci wants to investigate why businesses did not advertise in the yearbook last year. Describe a sampling strategy she could use to call 10 businesses.
6. Suppose Marci wants to investigate how satisfied advertisers are with yearbook ads. Describe a sampling strategy she could use to call 10 businesses.
7. Suppose Marci wants to investigate how likely a typical downtown business is to advertise in the upcoming yearbook. Describe a sampling strategy she could use to call 10 businesses.
8. The principal of a nearby school, Megalopolis Middle School, decided to conduct a survey of the 1,107 enrolled students. She asked three teachers how many students they thought should be surveyed. One teacher said to survey 200 girls and 100 boys, the second said to randomly select and survey 50 students, and the third said to survey the first 100 students to enter the building one morning next week.
a. Explain which of the three samples will produce data that may best represent all the students at Megalopolis.
b. Explain why you feel that the other two samples would not be as representative of all the students as the one you chose in part a.
$\qquad$ Date $\qquad$ Class $\qquad$

## Additional Practice (continued)

In a survey of the cafeteria food at a middle school, 50 students were asked to rate how well they liked the lunches on a scale of 1 to 10, with 1 being the lowest rating and 10 being the highest rating. The box plot below was made from the collected data.

9. What is the range of students' ratings in the sample?
10. What percent of the students in the sample rated the cafeteria food between 5.75 and 9 ?
11. Based on the sample data, how many of the 1,000 students at the school do you estimate would rate the cafeteria food 6 or higher? Explain your reasoning.
12. A rating of 8 to 10 indicates "highly satisfied" on the rating scale.
a. What percent of students in the sample are "highly satisfied" with the cafeteria food?
b. Estimate how many students at the middle school would give the cafeteria food a "highly satisfied" rating.

