LESSON 22 | SESSION 3 ■ ■ ■

? **UNDERSTAND:** How can you use samples to gain information about a population?

● **Refine** Ideas About Random Sampling

Apply It

➤ **Complete problems 1–5.**

1 **Evaluate** Members of the Green Club survey a random sample of 20 of the students in Mr. Díaz's math class. They find that 55% of students in the sample recycle plastic bottles. They use their results to design the poster at the right. Describe one reason the poster is misleading.

The club's sample is likely to be representative of students in Mr. Diaz's class, but it might not be representative of students in the entire school.

Only 55%
of Washington Middle School students recycle plastic bottles.

DO YOUR PART
Recycle today and every day!

2 **Compare** A baseball league has players who are 12 and 13 years old. Dakota considers three plans to select a sample of players from the league.

- **Plan 1:** Put the names of the 12-year-old players in a box. Select 10% of the names without looking. Repeat for the 13-year-old players.

- **Plan 2:** Select all the players on the team with the most wins this season.

- **Plan 3:** Assign a different two-digit number to each player. Spin a spinner with equal regions 0–9 twice to get a two-digit number. Repeat to select a total of 20 players.

Which plan is *least* likely to produce a sample that is representative of the league? Explain.

Plan 2. Only players on one team have a chance to be included, so the sample will not be representative of the league.

3 **Explain** The producers of a television singing contest post a survey on their website that asks viewers which singer they like best. Alison says that the results will tell the producers which singer viewers like best. Do you agree? Explain.

No. Not all viewers may know about the survey or have an equal chance to take it, so the results are unlikely to represent all viewers

4 A doctor plans to add evening appointments one day per week. She wants to know which day her patients would most prefer for evening appointments. She decides to ask a representative sample of her patients which day they prefer.

PART A What does it mean for a sample of the doctor's patients to be representative of the population?

It means that the sample has similar characteristics to the entire population of the doctor's patients.

PART B The doctor uses a computer to make a list of every patient between the ages of 18 and 25. She selects every third name on this list. Is this sample likely to be representative of the population of her patients? Explain.

No. Patients who are not between the ages of 18 to 25 have no chance of being included. The patients between 18 and 25 might be very different from everyone else in the population.

PART C Describe one way the doctor could select a random sample of her patients.

She could roll a number cube to select one of the first 6 names in a list of all patients, then select every 6th name after that.

5 **Math Journal** An assistant at an animal shelter wants to know the typical age of dogs admitted to the shelter. The shelter has admitted 353 dogs. Each dog has an ID number. How could the assistant select a representative sample of the dogs and use it to gain information about the population?

The assistant could make a list of the ID numbers and use a computer to randomly select 10% of them. Then the assistant could determine the typical age of the dogs in the sample.

☑ **End of Lesson Checklist**

☐ **INTERACTIVE GLOSSARY** Find the entry for *random sample*. Tell two important things you learned about random samples in this lesson.