Name _____ Date _____ Class_____

LESSON
1-2

Problem Solving

Data Gathering

One hundred students out of 1100 at a school were surveyed. The results are recorded in each problem below. For Exercises 1–4, predict the number of students in the population that would answer similarly.

1. Eighty-two students said they would take a study hall or resource period if it were offered. _____

2. Twelve students said they were members of the after-school music program. _____

3. Ninety-four students said they used the Internet for their homework. _____

4. Thirty-two students said they drove to school. _____

5. The principal wanted to know if he should allow cell phones in the classroom. He surveyed the students in Algebra 2 class. Decide whether the sampling method could result in a biased sample. Explain your reasoning.

   _____

6. A discount store chain wants to know how often families in a certain area would shop regularly at a discount store. Their representative surveys 100 people at a mall in the same area. Are his results likely to be representative of the population? Explain.

   _____

Select the best answer.

7. The director of the Glee Club would like to know if her Booster Club parents would do a fundraiser. Which sampling method is most likely to yield an accurate prediction of the population?

   A Survey every 3rd Booster Club parent who comes to a fundraiser meeting.

   B Survey every 10th Booster Club parent who comes to a fundraiser meeting.

   C Survey only the parents who respond to a letter from the director.

   D Survey only the parents who run the Booster Club.

8. The principal of the school would like to determine if the cafeteria should sell snacks during non-lunch hour periods. Which sampling method is most likely to yield an accurate prediction of the population?

   F Survey every 20th student who enters the cafeteria during lunch hour.

   G Survey 50 random students each from the 9th, 10th, 11th, and 12th grades.

   H Survey the first 25 students that walk into the school.

   J Survey the entire 12th grade class.

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5. Possible answer: No; the sample is random.

6. Possible answer: Yes; the sample is large.

7. Possible answer: Yes; I may need to change the question to, "Would you join a foreign language club if it were offered?"

8. Answers will vary. Possible answer: yes

Problem Solving

1. 902 students

2. 132 students

3. 1034 students

4. 352 students

5. Yes; the sample is a convenience sample so it is likely to be biased.

6. No; the population may be underrepresented because the sample only includes mall shoppers.

7. A

8. G

Reading Strategies

1. sample; random sample

2. sample; self-selected sample

3. population; sample; self-selected sample; not representative; statistics, predictions

1-3 SURVEYS, EXPERIMENTS, AND OBSERVATIONAL STUDIES

Practice A

1. Observational study; the park ranger gathers data without controlling the individuals or applying a treatment.

2. Experiment; the park ranger applies a treatment (planting near the lake) to some of the individuals (all 20 trees the ranger planted).

3. Experiment; the zoo applies a treatment (providing the cave) to some of the individuals (all wildcats at the zoo).

4. Observational study; the caretaker gathers data without controlling the individuals or applying a treatment.

5. The treatment is feeding high-fat and high-calorie foods. The treatment group is the rats that were fed the diet that was not nutritious. The control group is the rats that were fed the nutritious diet.

6. The treatment is *taking the class online*. The treatment group is the online class. The control group is the in-person class.

7. Possible answer: It would not be ethical to impose the treatment (being a smoker) to a group of people, so the study is best addressed through an observational study. I would set up the study by randomly selecting a group of 20 people who already smoke and 20 people who do not. Then, I would track the individuals in the study for a year and have them report the number of colds they get.

Practice B

1. Observational study; the teacher gathers data without controlling the individuals or applying a treatment.

2. Observational study; the biologist gathers data without controlling the individuals or applying a treatment.

3. Experiment; the cafeteria manager applies a treatment (getting a half-price lunch) to some of the individuals (50 students).

4. The treatment is *getting a certain medicine*. The treatment group is the 10 patients who get the medicine. The control group is the 10 patients who get the placebo.

5. The treatment is *using a special website*. The treatment group is the 50 best customers who use the special website. The control group is the 50 best customers who do not use the special website.

6. Possible answer: The treatment (getting 7 hours of sleep) is not practical to assign to a group of students. Perform an observational study. Divide students into two groups: those who get less than 7 hours of sleep, and those who get at least 7 hours of sleep. Monitor the

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