LESSON 7-8

Problem Solving

Populations and Samples

Write the correct answer.

1. Max wants to find out the exercise habits of local children. He plans to survey every third child he sees coming out of a sporting goods store. Max says his sample is not biased. Do you agree? Explain your answer.

   No; Not all children are likely to have the same exercise habits as children who go to a sporting goods store.

2. Ms. Constantine is choosing among three field trips for her two classes. She wants to determine which trip her students prefer. Should she survey the entire population or use a sample? Explain.

   Possible answer: She should survey the entire population, since it is relatively small.

3. A researcher catches 60 fish from different locations in a lake. He then tags the fish and puts them back in the lake. Two weeks later, the researcher catches 40 fish from the same locations. 8 of these 40 fish are tagged. Predict the number of fish in the lake.

   300 fish

4. A high school has 1,800 students. A random sample of 80 shows that 24 have cell phones. Predict the number of students in the high school who have cell phones.

   540 students

Choose the letter for the best answer.

5. The school board wants to study computer literacy among teachers. Which would represent a random sample of teachers?
   - **A** all high school math teachers
   - **B** teachers from the middle school whose name begins with N
   - **C** all male teachers
   - **(D)** every eighth teacher on an alphabetical list

6. In a random sample, 3 of 400 computer chips are found to be defective. Based on the sample, about how many chips out of 100,000 would you expect to be defective?
   - **(F)** 750
   - **G** 3,000
   - **H** 4,000
   - **J** cannot be determined

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LESSON 7-8

Reading Strategies

Compare and Contrast

To get information about issues, a survey is conducted. Surveys can be done in two different ways.

- **Population** The entire group is surveyed.
- **Sample** Part of the entire group is surveyed.

1. Compare the difference between collecting information from the population and collecting a sample.

   Population is everyone and a sample is part of the population.

There are two different types of samples.

- **Unbiased sample** The sample represents the population.
- **Biased sample** The sample does not represent the population.

2. What is the difference between an unbiased sample and a biased sample?

   An unbiased sample represents the population and a biased sample does not.

Mrs. Jones wants to know which sport 7th graders in the district like best. There are 7th graders in 6 different schools in the district. She can collect data in one of the following ways:

Population—Ask every 7th grade student at all 6 schools.
Unbiased sample—Ask every other 7th grader at 3 of the schools.
Biased sample—Ask 7th grade boys at 3 of the schools.

Write "unbiased sample" **or** "biased sample" **to describe each survey.**

3. A survey conducted at an ice cream store asked only mothers their favorite ice cream flavor.

   biased sample

4. A reporter asked every tenth person coming out of a theater how well they liked the movie.

   unbiased sample

5. A survey asked only girls to identify their favorite item on the school cafeteria menu.

   biased sample

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LESSON 7-8

Puzzles, Twisters, & Teasers

Answer This!

Choose the best description of each sample.
Circle the letter above your answer.

1. Tyler surveys 60 people at a high school football game to find out which high school sports team is most popular.

   (O) biased **A** not biased

2. A computer manufacturer randomly calls 150 people who called its help line and surveys them to determine if they were satisfied with the help they received.

   M biased **(N)** not biased

3. Margie surveys 12 of her friends to determine what percentage of students participate in after-school clubs.

   F random sample **(D)** convenience sample

4. Tamira surveys 50 riders on one commuter train to determine whether riders on all trains in the system think that the on-time performance is adequate.

   (K) biased **A** not biased

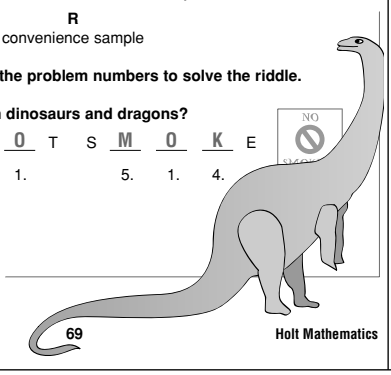
5. Sam calls every sixth student on a high school attendance list and surveys the students to determine their favorite subject.

   (M) random sample **R** convenience sample

Write the circled letters above the problem numbers to solve the riddle.

What is the difference between dinosaurs and dragons?

Dinosaurs	D	O	N	O	T	S	M	O	K	E
	3.	1.	2.	1.			5.	1.	4.	



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LESSON 7-9

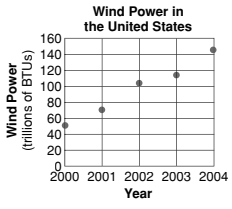
Practice A

Scatter Plots

The table shows how much energy was produced from wind power in the United States from 2000 to 2004.

Year	2000	2001	2002	2003	2004
Wind Power (trillions of BTUs)	57	70	105	115	143

1. Make a scatterplot of the data.



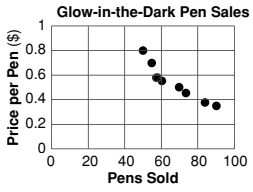
2. What does the scatter plot show about how much wind power was produced in the United States from 2001 to 2004?

   The amount of wind power increased over time.

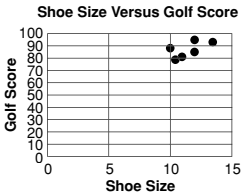
3. What kind of correlation does the scatter plot show—positive, negative, or no correlation?

   positive correlation

Write *positive, negative,* or *no correlation* to describe each relationship.

4. 

   negative correlation

5. 

   no correlation

6. outside temperature and the chance of your getting frostbite

   negative correlation

7. number of hours of spent studying for a test and the test scores

   positive correlation

8. number of basketballs going into the basket and distance in feet from the basket when shooting

   negative correlation

9. height and age of adults over 25

   no correlation

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