

Practice & Problem Solving



Leveled Practice In 8–10, use the sample data to answer the questions.

Alicia and Thea are in charge of determining the number of T-shirts to order to sell in the school store. Each student collected sample data from the population of 300 students. Alicia surveyed 50 students in the cafeteria. Thea surveyed the first 60 students who arrived at school one morning.

Results of Alicia's Survey

$\frac{30}{50}$ said they would like a T-shirt.

Results of Thea's Survey

$\frac{51}{60}$ said they would like a T-shirt.

8. Use Alicia's data to estimate the number of T-shirts they should order.

$$\begin{array}{c} \boxed{} \\ \hline \boxed{} \end{array} = \frac{x}{\boxed{}}$$

$$\boxed{} = x$$

They should order about T-shirts.

9. Use Thea's data to estimate the number of T-shirts they should order.

$$\begin{array}{c} \boxed{} \\ \hline \boxed{} \end{array} = \frac{x}{\boxed{}}$$

$$\boxed{} = x$$

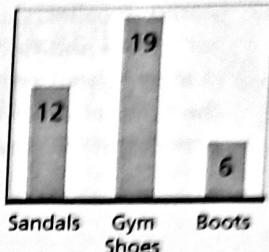
They should order about T-shirts.

10. **Construct Arguments** Can Alicia or Thea make a valid inference? Explain.

11. Three of the five medical doctors surveyed by a biochemist prefer his newly approved Brand X as compared to the leading medicine. The biochemist used these results to write the TV advertisement shown. Is the inference valid? Explain your answer.



12. Aaron conducted a survey of the type of shoes worn by a random sample of students in his school. The results of his survey are shown at the right.
- a. Make a valid inference that compares the number of students who are likely to wear gym shoes and those likely to wear boots.



- b. Make a valid inference that compares the number of students who are likely to wear boots and those likely to wear sandals.

13. Shantel and Syrus are researching the types of novels that people read. Shantel asks every ninth person at the entrance of a mall. She infers that about 26% of the population prefers fantasy novels. Syrus asks every person in only one store. He infers that about 47% of the population prefers fantasy novels.

- a. **Construct Arguments** Whose inference is more likely to be valid? Explain.

- b. What mistake might Syrus have made?

14. **Higher Order Thinking** A national TV news show conducted an online poll to find the nation's favorite comedian. The website showed the pictures of 5 comedians and asked visitors of the site to vote. The news show inferred that the comedian with the most votes was the funniest comedian in the nation.

A graphic of a smartphone screen displaying a poll titled "Who's the funniest comedian?". It shows five options with radio buttons:

- Comedian #1
- Comedian #2
- Comedian #3** (radio button is filled)
- Comedian #4
- Comedian #5

- a. Is the inference valid? Explain.

- b. How could you improve the poll? Explain.

In 15 and 16, use the table of survey results from a random sample of people about the way they prefer to view movies.

15. Lindsay infers that out of 400 people, 300 would prefer to watch movies in a theater. Is her inference valid? Explain.

16. Which inferences are valid? Select all that apply.

- Going to a theater is the most popular way to watch a movie.
- About twice as many people would prefer to stream movies instead of watching in a theater.
- About 3 times as many people would prefer to watch a movie on DVD instead of watching in a theater.
- About 8 times as many people would prefer to watch a movie on DVD instead of streaming.
- Most people would prefer streaming over any other method.

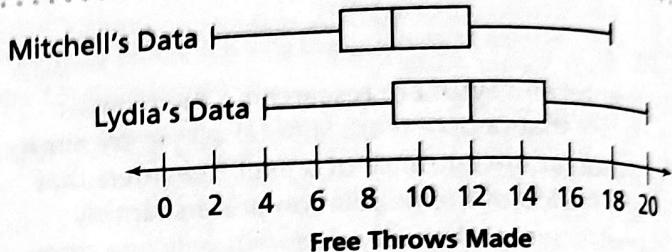
Preferred Ways to View Movies

Method	Number of People
Theater	30
Streaming	62
DVD	8

17. Monique collects data from a random sample of seventh graders in her school and finds that 10 out of 25 seventh graders participate in after-school activities. Write and solve a proportion to estimate the number of seventh graders, n , who participate in after-school activities if 190 seventh graders attend Monique's school.

18. Each of the 65 participants at a basketball camp attempted 20 free throws. Mitchell collected data for the first 10 participants, most of whom were first-time campers. Lydia collected data for the next 10 participants, most of whom had attended the camp for at least one week.

- a. Using only his own data, what inference might Mitchell make about the median number of free throws made by the 65 participants?
- b. Using only her own data, what inference might Lydia make about the median number of free throws made by the 65 participants?
- c. Who made a valid inference? Explain.



Assessment Practice

19. June wants to know how many times most people have their hair cut each year. She asks two of her friends from Redville and Greenburg, respectively, to conduct a random survey. The results of the surveys are shown below.

Redville: 50 people surveyed

Median number of haircuts: 7

Mean number of haircuts: 7.3

Greenburg: 60 people surveyed

Median number of haircuts: 6.5

Mean number of haircuts: 7.6

June infers that most people get 7 haircuts per year. Based on the survey results, is this a valid inference? Explain.

Name: _____

**MID-TOPIC
CHECKPOINT**

- 1. Vocabulary** Krista says that her chickens lay the most eggs of any chickens in the county. To prove her claim, she could survey chicken farms to see how many eggs each of their chickens laid that day. In this scenario, what is the *population* and what is a possible *representative sample*? *Lesson 6-1*

- 2. Marcy** wants to know which type of book is most commonly checked out by visitors of her local public library. She surveys people in the children's reading room between 1:00 and 2:00 on Saturday afternoon. Select all the statements about Marcy's survey that are true. *Lesson 6-1*

- Marcy's sample is not representative because not all of the library's visitors go to the children's reading room.
- Marcy's sample is a representative sample of the population.
- Marcy will get a random sample by surveying as many people in the children's reading room as possible.
- The population of Marcy's study consists of all visitors of the public library.
- The results of Marcy's survey include a mode, but neither a mean nor a median.

For Problems 3–5, use the data from the table.

- 3. Michael** surveyed a random sample of students in his school about the number of sports they play. There are 300 students in Michael's school. Use the results of the survey to estimate the number of students in Michael's school who play exactly one sport. Explain your answer. *Lesson 6-2*

Number of Sports
Students Play

Number of Sports	Number of Students
None	13
Exactly 1	15
More than 1	32

- 4. What inference can you draw about the number of students who play more than one sport? *Lesson 6-2***

- 5. Avi** says that Michael's sample was not random because he did not survey students from other schools. Is Avi's statement correct? Explain. *Lesson 6-1*



Did you pass the mid-topic checkpoint? Fill in the stars.

MID-TOPIC PERFORMANCE TASK

Sunil is the ticket manager at a local soccer field. He wants to conduct a survey to determine how many games most spectators attend during the soccer season.

PART A

What is the population for Sunil's survey? Give an example of a way that Sunil could collect a representative sample of this population.

PART B

Sunil conducts the survey and obtains the results shown in the table below. What can Sunil infer from the results of the survey?

Soccer Game Attendance

Number of Games	Number of Spectators
1–2	57
3–4	43
5 or more	50

PART C

Suppose 2,400 spectators attend at least one game this soccer season. Use the survey data to estimate the number of spectators who attended 5 or more games this season. Explain how you made your estimate.