LESSON MAKER PRO

Sample Smart

Use random samples to estimate a population.

GRADE 7 · 7.SP.A.1

CCSS.Math.Content.7.SP.A.1 "Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population..."

NAME _____ DATE _____

THE BIG IDEA

A sample is a smaller group from a population. A random sample gives people a fair chance to be chosen, so it can support an estimate about the whole population.

WORKED EXAMPLE

A library has 60 student members. In a random sample of 15 members, 9 borrowed a graphic novel this month. Estimate how many members borrowed a graphic novel.

1. Write the sample fraction: 9/15.
2. Simplify: 9/15 = 3/5.
3. Find 3/5 of 60: 36.

Answer: About 36 members.

PRACTICE 5 problems

1 A band has 90 members. In a random sample of 18 members, 7 play percussion. Estimate how many band members play percussion.

ANSWER _____

2 To learn students' favorite lunch, a student surveys only students buying pizza. Is this sample representative?

ANSWER _____

3 A club has 64 members. In a random sample of 16 members, 3 ride a skateboard to school. Estimate how many club members ride a skateboard to school.

ANSWER _____

4 Which sample is random? A: Ask the first 20 students who arrive. B: Use a random number generator to choose 20 names from the roster.

ANSWER _____

5 A park has 100 trees. In a random sample of 20 trees, 8 are maple trees. Estimate how many trees in the park are maples.

ANSWER _____

APPLY IT Show your work

1 A school has 300 students. In a random sample of 25 students, 11 say they would join a coding club. Estimate how many students would join.

WORK SPACE

ANSWER _____

2 A skate park has 450 regular visitors. In a random sample of 30 visitors, 18 want later weekend hours. Estimate how many regular visitors want later hours.

WORK SPACE

ANSWER _____

CHALLENGE One step up

A student wants to estimate how many of 600 students prefer a longer lunch. In both samples, 18 of 30 students agree. Method A randomly chooses 30 names from the school roster. Method B surveys 30 basketball players. Which method supports an estimate for all 600 students? What is the estimate?

WORK SPACE AND ANSWER

ANSWER KEY

Sample Smart

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	A band has 90 members. In a random sample of 18 members, 7 play percussion. Estimate how many band members play percussion.	**35 members**
2	To learn students' favorite lunch, a student surveys only students buying pizza. Is this sample representative?	**No. It is biased because it includes only pizza buyers.**
3	A club has 64 members. In a random sample of 16 members, 3 ride a skateboard to school. Estimate how many club members ride a skateboard to school.	**12 members**
4	Which sample is random? A: Ask the first 20 students who arrive. B: Use a random number generator to choose 20 names from the roster.	**B**
5	A park has 100 trees. In a random sample of 20 trees, 8 are maple trees. Estimate how many trees in the park are maples.	**40 trees**

PART 2 · APPLY IT

1. **About 132 students** The sample fraction is 11/25. Since 300 ÷ 25 = 12, multiply 11 x 12 = 132.
2. **About 270 visitors** The sample fraction is 18/30 = 3/5. Find 3/5 of 450 to get 270.

CHALLENGE

Method A supports the estimate because it is a random sample of the school. The estimate is 360 students.

Accept equivalent proportional reasoning and estimates labeled as about. For representativeness explanations, accept answers that identify a biased group or a fair random selection.