LESSON MAKER PRO

Sample Sense

Use samples to estimate, then decide which estimates you can trust.

GRADE 7 · 7.DSP.A.10.c

7.DSP.A.10.c "Determine whether conclusions and generalizations can be made about a population based on a sample."

NAME _____ DATE _____

FROM SAMPLE TO SCHOOL

To estimate a number for a whole population, find the fraction in a sample and multiply it by the population size. A random sample gives everyone in the population a chance to be picked, so its result can support an estimate. An estimate is not an exact count, and a sample from only one part of the population may be biased.

WORKED EXAMPLE

A school has 75 students. In a random sample of 15 students, 9 prefer a longer lunch. About how many students in the school prefer a longer lunch?

1. Find the sample fraction: 9/15 = 3/5.
2. Multiply by the school population: 3/5 × 75 = 45.

Answer: About 45 students.

PRACTICE 6 problems

1 A random sample of 12 students finds that 6 want a board game club. The school has 48 students. About how many students want the club?

ANSWER _____

2 In a random sample of 28 students, 14 walk to school. The school has 84 students. Estimate how many walk to school.

ANSWER _____

3 At a skate park, 16 of 40 teens interviewed there say they skate each week. Can you use this sample to estimate how many of the 160 students at a school skate each week? Explain.

ANSWER _____

4 A school has 125 students. Use the random sample in the table to estimate how many students bring lunch from home.

LUNCH SURVEY

Students sampled	Bring lunch from home
25	5

ANSWER _____

5 In a random sample of 16 students, 4 choose soccer as their favorite sport. The school has 64 students. A student says exactly 16 students in the school choose soccer. Is that conclusion justified? Explain.

ANSWER _____

6 Two surveys ask whether students want a movie night. The school has 66 students. Which survey supports an estimate for the school? Use it to estimate how many students want a movie night.

MOVIE NIGHT SURVEYS

Survey	Students asked	Want movie night
Randomly chosen students	22	11
Students who chose to reply	22	18

ANSWER _____

APPLY IT Show your work

1 Your school is choosing music for a dance. In a random sample of 35 students, 21 vote for a student-made playlist. The school has 140 students. About how many students would vote for the playlist?

WORK SPACE

ANSWER _____

2 A gaming club posts a poll on its account asking whether the school should hold a game tournament. Of the 36 followers who reply, 27 vote yes. The school has 180 students. A club member predicts that 135 students would vote yes. Is that prediction supported by the poll? Explain how to get a better estimate.

WORK SPACE

ANSWER _____

CHALLENGE One step up

A school takes separate random samples from each grade. Use the table to estimate how many students in the whole school want an art club. Explain why you calculated an estimate for each grade.

ART CLUB SURVEY

Grade	Students in grade	Students sampled	Want art club
Grade 7	96	16	8
Grade 8	144	18	12

WORK SPACE AND ANSWER

ANSWER KEY

Sample Sense

GRADE 7 · 7.DSP.A.10.c

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	A random sample of 12 students finds that 6 want a board game club. The school has 48 students. About how many students want the club?	**About 24 students.**
2	In a random sample of 28 students, 14 walk to school. The school has 84 students. Estimate how many walk to school.	**About 42 students.**
3	At a skate park, 16 of 40 teens interviewed there say they skate each week. Can you use this sample to estimate how many of the 160 students at a school skate each week? Explain.	**No. Teens at the skate park may be more likely to skate than students at the school.**
4	A school has 125 students. Use the random sample in the table to estimate how many students bring lunch from home.	**About 25 students.**
5	In a random sample of 16 students, 4 choose soccer as their favorite sport. The school has 64 students. A student says exactly 16 students in the school choose soccer. Is that conclusion justified? Explain.	**No. The sample suggests about 16 students, but it does not give an exact count.**
6	Two surveys ask whether students want a movie night. The school has 66 students. Which survey supports an estimate for the school? Use it to estimate how many students want a movie night.	**The random survey supports an estimate of about 33 students. Students who chose to reply may not represent the school.**

PART 2 · APPLY IT

1. **About 84 students.** The sample fraction is 21/35 = 3/5. Multiply 3/5 by 140 to get 84.
2. **No. The poll includes only followers who chose to reply, so it may not represent the school. Ask a random sample of students instead.** The calculation 27/36 × 180 = 135 is correct, but the poll is not a random sample of the school's students. A random sample would better support a schoolwide estimate.

CHALLENGE

About 144 students. For grade 7, 8/16 × 96 = 48. For grade 8, 12/18 × 144 = 96. Add 48 + 96 = 144. Calculating by grade uses each grade's sample fraction with its own population size.

Accept equivalent explanations that distinguish an estimate from an exact count. For biased samples, students should identify who was more likely to be included, not just say the sample was unfair.