LESSON MAKER PRO

Survey Signals

Use random samples to estimate what a whole group thinks.

GRADE 7 · 7A.DSP.A.26

7A.DSP.A.26 "Examine a sample of a population to generalize information about the population. a. Differentiate between a sample and a population. b..."

NAME _____ DATE _____

FROM SAMPLE TO POPULATION

A population is the whole group. A sample is a smaller group chosen from it. A random sample tends to represent the population, so you can multiply the sample fraction by the population size to make an estimate.

WORKED EXAMPLE

A random sample gives the results shown. About how many of the school's 280 students want a garden?

GARDEN SURVEY

Students sampled	Want a garden
14	7

1. Find the sample fraction: 7/14 = 1/2.
2. Multiply by the population size: 1/2 × 280 = 140.

Answer: About 140 students.

PRACTICE 4 problems

1 Of 120 students, 10 are randomly sampled. If 4 prefer basketball, about how many students prefer basketball?

ANSWER _____

2 Of 180 students, 15 are randomly sampled. If 5 want a mural, about how many students want a mural?

ANSWER _____

3 Of 200 students, 25 are randomly sampled. If 9 like the new lunch, about how many students like it?

ANSWER _____

4 Of 360 students, 30 are randomly sampled. If 18 want a dance, about how many students want a dance?

ANSWER _____

APPLY IT Show your work

1 A school has 480 students. In a random sample of 24, 9 want a gaming club. Predict how many students at the school want one.

WORK SPACE

ANSWER _____

2 A school has 320 students. Two random samples asked about a later start time. Use each sample to estimate how many students want it.

LATER START SURVEYS

Sample	Students sampled	Want a later start
A	16	6
B	16	10

ANSWER _____

CHALLENGE One step up

A school has 500 students. In a random sample of 50, 13 bike to school. Of 50 students surveyed at the bike racks, 40 bike to school. Which sample should you use to estimate the number of students who bike? Give the estimate and explain your choice.

WORK SPACE AND ANSWER

Survey Signals

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Of 120 students, 10 are randomly sampled. If 4 prefer basketball, about how many students prefer basketball?	**About 48 students.**
2	Of 180 students, 15 are randomly sampled. If 5 want a mural, about how many students want a mural?	**About 60 students.**
3	Of 200 students, 25 are randomly sampled. If 9 like the new lunch, about how many students like it?	**About 72 students.**
4	Of 360 students, 30 are randomly sampled. If 18 want a dance, about how many students want a dance?	**About 216 students.**

PART 2 · APPLY IT

1. **About 180 students.** The sample fraction is 9/24 = 3/8. Multiply 480 × 3/8 to get 180.
2. **Sample A: about 120 students. Sample B: about 200 students.** Multiply 320 by 6/16 for Sample A and by 10/16 for Sample B. The estimates differ because random samples can vary.

CHALLENGE

Use the random sample. About 130 students bike to school because 13/50 × 500 = 130. Surveying students at the bike racks is biased toward students who bike.

Accept estimates stated without "about." In the challenge, accept explanations that the bike-rack survey is less representative because it is more likely to include students who bike.