LESSON MAKER PRO

Sample to School

Use random samples to make schoolwide estimates.

GRADE 7 · 7.DSP.A.10

7.DSP.A.10 "Examine a sample of a population to generalize information about the population. a. Differentiate between a sample and a population. b..."

NAME _____ DATE _____

THE BIG IDEA

A population is the whole group you want to learn about. A random sample gives members of that group a fair chance to be chosen, so its fraction can help you estimate a population total. Different random samples may give different estimates.

WORKED EXAMPLE

Use each random sample to estimate how many of the 150 students prefer more bike racks.

RANDOM SAMPLES OF 15 STUDENTS EACH

Sample	Prefer more bike racks
A	3
B	6

1. Sample A: 3/15 = 1/5.
2. 1/5 of 150 = 30.
3. Sample B: 6/15 = 2/5.
4. 2/5 of 150 = 60.

Answer: Sample A estimates 30 students. Sample B estimates 60 students.

PRACTICE 4 problems

1 In a random sample of 20 students, 5 want a chess club. Estimate how many of 80 students want one.

ANSWER _____

2 In a random sample of 40 students, 10 prefer a later start time. Estimate how many of 280 students prefer it.

ANSWER _____

3 In a random sample of 25 students, 10 want more library books. Estimate how many of 300 students want more books.

ANSWER _____

4 A student asks only basketball team members about a schoolwide music playlist. Can this sample support an estimate for the whole school? Explain.

ANSWER _____

APPLY IT Show your work

1 Students randomly sample classmates about starting a gaming club. Use each sample to estimate how many of the 400 students want the club.

RANDOM SAMPLES OF 20 STUDENTS EACH

Sample	Want gaming club
A	8
B	11
C	9

ANSWER _____

2 Student council randomly picks student IDs to ask about an outdoor movie night. Of 30 students, 12 vote yes. About how many of 600 students might vote yes? Why is this estimate more reliable than asking only movie club members?

WORK SPACE

ANSWER _____

CHALLENGE One step up

Four random samples of 25 students found 5, 10, 8, and 7 who want a longer lunch. Combine the samples to estimate how many of 250 students want a longer lunch. Why might one sample give a different estimate?

WORK SPACE AND ANSWER

ANSWER KEY

Sample to School

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	In a random sample of 20 students, 5 want a chess club. Estimate how many of 80 students want one.	**20 students**
2	In a random sample of 40 students, 10 prefer a later start time. Estimate how many of 280 students prefer it.	**70 students**
3	In a random sample of 25 students, 10 want more library books. Estimate how many of 300 students want more books.	**120 students**
4	A student asks only basketball team members about a schoolwide music playlist. Can this sample support an estimate for the whole school? Explain.	**No. Basketball team members may not have the same music preferences as the whole school.**

PART 2 · APPLY IT

1. **Sample A: 160 students; sample B: 220 students; sample C: 180 students.** Multiply each count by 400/20, or 20. The estimates differ because random samples can vary.
2. **About 240 students. Randomly picked students are less likely than movie club members to favor a movie night as a group.** 12/30 of 600 is 240. Asking only movie club members could bias the estimate toward yes.

CHALLENGE

The combined samples have 30 yes votes out of 100 students. Since 30/100 of 250 is 75, estimate 75 students. One sample might differ because random samples can vary.

Accept equivalent fraction or percent calculations. For the sampling question, accept a specific explanation that basketball team members may not represent all students.