LESSON MAKER PRO

Survey Smart

Choose samples and make careful estimates.

HIGH SCHOOL · MA.912.DP.5

MA.912.DP.5 "Determine methods of data collection and make inferences from collected data."

NAME _____ DATE _____

FROM SAMPLE TO INFERENCE

Use a random sample so each person in the population has a fair chance to be chosen. Find the sample proportion, then use that proportion to estimate the whole population.

WORKED EXAMPLE

A random sample of 24 students finds that 18 prefer a later start time. Estimate how many of 180 students may prefer it.

1. Sample proportion = 18/24 = 3/4.
2. Estimate = 3/4 of 180.
3. 180 / 4 = 45, and 45 x 3 = 135.

Answer: About 135 students

PRACTICE 5 problems

1 Name a random method for choosing 16 students from a school.

ANSWER _____

2 A survey asks only basketball players about school lunches. What is the problem?

ANSWER _____

3 In a random sample, 14 of 35 students use the tutoring center. Estimate how many of 210 students use it.

ANSWER _____

4 A principal randomly surveys 27 seniors about graduation plans. What is the population?

ANSWER _____

5 A random sample shows that 28 of 70 students want a new club. Estimate how many of 215 students may want it.

ANSWER _____

APPLY IT Show your work

1 A student media team randomly selects 32 students from a school of 320. Of those students, 20 say they would watch an esports tournament. Estimate how many students would watch.

WORK SPACE

ANSWER _____

2 A club posts an online poll, and 63 of 75 respondents want a gaming event. Can the club claim that 84% of all students want the event? Name a better collection method.

WORK SPACE

ANSWER _____

CHALLENGE One step up

Two groups report that 60% of students support a school dance. Group A randomly selected 60 students, and 36 supported it. Group B asked 135 students who chose to answer online, and 81 supported it. Which result should the school use to infer support among all students? Explain.

WORK SPACE AND ANSWER

Survey Smart

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Name a random method for choosing 16 students from a school.	**List all student IDs and randomly choose 16 IDs.**
2	A survey asks only basketball players about school lunches. What is the problem?	**Selection bias, because basketball players may not represent all students.**
3	In a random sample, 14 of 35 students use the tutoring center. Estimate how many of 210 students use it.	**84 students**
4	A principal randomly surveys 27 seniors about graduation plans. What is the population?	**All seniors at the school**
5	A random sample shows that 28 of 70 students want a new club. Estimate how many of 215 students may want it.	**About 86 students**

PART 2 · APPLY IT

1. **About 200 students** The sample proportion is 20/32 = 5/8. Then 5/8 of 320 is 200.
2. **No. The poll is voluntary, so it may be biased. Randomly select students from the school roster.** Although 63/75 = 84%, voluntary respondents may not represent the whole school. A random sample would support a stronger inference.

CHALLENGE

Use Group A. Both samples show 60%, but Group A used a random sample, while Group B used a voluntary sample that may be biased.

Accept equivalent proportion work and estimates labeled as approximate. For sampling-method responses, accept any method that randomly selects from a complete list of students.