LESSON MAKER PRO

Sample Smart

Use random samples to make fair estimates.

HIGH SCHOOL · MA.912.DP.5.2

MA.912.DP.5.2 "Explain how random sampling produces data that is representative of a population."

NAME _____ DATE _____

RANDOM MEANS FAIRER

A random sample gives every member of a population an equal chance to be chosen. It is more likely to represent the whole population than a convenience or volunteer sample.

WORKED EXAMPLE

A library has 64 teen members. A random sample of 16 members shows that 6 read ebooks. Estimate how many teen members read ebooks.

1. 6/16 = 3/8
2. Use the sample fraction: 3/8 x 64 = 24
3. The IDs were chosen randomly, so the sample can estimate the population.

Answer: About 24 teen members read ebooks.

PRACTICE 5 problems

1 A survey assigns each of 81 students an ID and randomly selects 9 IDs. Is the sample random?

ANSWER _____

2 A survey asks the first 14 students who enter school. Is the sample random?

ANSWER _____

3 A teacher randomly selects 11 names from a list of 55 students. Why can this sample represent the class?

ANSWER _____

4 A survey asks only team captains about school lunches. Is the sample representative of all students?

ANSWER _____

5 In a random sample of 25 students, 10 support a school garden. Estimate how many of 125 students support it.

ANSWER _____

APPLY IT Show your work

1 A gaming club has 180 members. A random sample of 30 members finds that 12 want a tournament. Estimate how many members want a tournament.

WORK SPACE

ANSWER _____

2 A school has 210 students. In a random sample of 35 students, 14 prefer a later start time. Estimate how many students prefer a later start time.

WORK SPACE

ANSWER _____

CHALLENGE One step up

A student asks only classmates in one honors class about a later school start time. Explain why this may not represent the school, then describe a random sampling method.

WORK SPACE AND ANSWER

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	A survey assigns each of 81 students an ID and randomly selects 9 IDs. Is the sample random?	**Yes. Each student has an equal chance of being selected.**
2	A survey asks the first 14 students who enter school. Is the sample random?	**No. Students who arrive early are more likely to be selected.**
3	A teacher randomly selects 11 names from a list of 55 students. Why can this sample represent the class?	**Every student has an equal chance of being selected.**
4	A survey asks only team captains about school lunches. Is the sample representative of all students?	**No. Team captains may not have the same opinions as all students.**
5	In a random sample of 25 students, 10 support a school garden. Estimate how many of 125 students support it.	**50 students**

PART 2 · APPLY IT

1. **72 members** 12/30 = 2/5. Then 2/5 x 180 = 72.
2. **84 students** 14/35 = 2/5. Then 2/5 x 210 = 84.

CHALLENGE

One honors class may have opinions that differ from other students. List all student IDs and use a random number generator to select students from the whole school.

Accept equivalent fractions and estimates. For the challenge, accept any method that gives all students an equal chance to be selected.