LESSON MAKER PRO

Sample Sense

Use samples to make careful predictions.

GRADE 7 · 7.SP.1

7.SP.1 "Solve real-world and mathematical problems involving: Understand that a sample is a subset of a population. Differentiate between random and non-random sampling…"

NAME _____ DATE _____

FROM SAMPLE TO POPULATION

A sample is part of a population. A random sample gives each member an equal chance to be picked, so it tends to represent the population better than a group chosen for convenience. To estimate a count, multiply the sample fraction by the population size.

WORKED EXAMPLE

A school has 150 students. A random sample responds as shown. Estimate how many students prefer puzzles.

RANDOM SAMPLE

Asked	Prefer puzzles
45	18

1. Find the fraction: 18/45 = 2/5.
2. Multiply: 150 × 2/5 = 60.

Answer: About 60 students.

PRACTICE 4 problems

1 Of 80 students, 20 are chosen at random. Five prefer an earlier lunch. Estimate how many students prefer an earlier lunch.

ANSWER _____

2 Of 100 students, 25 are chosen at random. Ten want a movie night. Estimate how many students want a movie night.

ANSWER _____

3 Of 36 seventh graders, 12 are chosen at random. Eight prefer lunch outdoors. Estimate how many seventh graders prefer lunch outdoors.

ANSWER _____

4 A club asks its first 16 members to arrive. Four like chess. The club has 64 members. Estimate how many like chess, then say why the estimate may be weak.

ANSWER _____

APPLY IT Show your work

1 Of 140 gamers, 28 are chosen at random. The graph shows their votes for the next game mode. Estimate how many gamers would choose co-op.

GAME MODE VOTES



gamers

ANSWER _____

2 A school has 240 students. Of the 24 surveyed by the gym, 16 want more after-school sports. Estimate the total, then explain why the estimate may be unreliable.

WORK SPACE

ANSWER _____

CHALLENGE One step up

A school has 300 students. Two groups ask about a new music club. Find each group's estimate of schoolwide interest. Which estimate is more trustworthy, and why?

MUSIC CLUB SURVEYS

Group	Chosen from	Asked	Want club
A	School at random	35	14
B	Music class	30	27

WORK SPACE AND ANSWER

Sample Sense

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Of 80 students, 20 are chosen at random. Five prefer an earlier lunch. Estimate how many students prefer an earlier lunch.	**About 20 students.**
2	Of 100 students, 25 are chosen at random. Ten want a movie night. Estimate how many students want a movie night.	**About 40 students.**
3	Of 36 seventh graders, 12 are chosen at random. Eight prefer lunch outdoors. Estimate how many seventh graders prefer lunch outdoors.	**About 24 seventh graders.**
4	A club asks its first 16 members to arrive. Four like chess. The club has 64 members. Estimate how many like chess, then say why the estimate may be weak.	**The estimate is 16 members. It may be weak because the first members to arrive were not chosen at random.**

PART 2 · APPLY IT

1. **About 105 gamers.** The co-op fraction is 21/28 = 3/4. Multiply 140 × 3/4 = 105.
2. **The estimate is 160 students. Students by the gym may be more interested in sports than other students.** Multiply 240 × 16/24 = 160. The students were chosen by location, not at random.

CHALLENGE

Group A estimates 120 students, since 300 × 14/35 = 120. Group B estimates 270 students, since 300 × 27/30 = 270. Group A is more trustworthy because its students were chosen at random from the school.

Accept equivalent fractions and reasonable wording for the sampling explanations. Estimates based on non-random groups are calculations, not necessarily reliable predictions.