LESSON MAKER PRO

# Sample Sense

*Use samples to make estimates and spot bias.*

**GRADE 8 · PA.D.2.2**

**PA.D.2.2** "Determine how samples are chosen (randomness) to draw and support conclusions about generalizing a sample to a population, including identifying limitations and biases."

NAME _____ DATE _____

## FROM SAMPLE TO SCHOOL

To estimate a population count, multiply the fraction found in a random sample by the population size. An estimate may be biased if only one group is asked or people choose whether to respond.

## WORKED EXAMPLE

Students were picked at random from the school list and asked if they want a later start. Estimate how many of the 200 students want one.

**LATER START?**

| Response | Students |
|---|---|
| Yes | 9 |
| No | 16 |

1. Find the sample size: 9 + 16 = 25.
2. Find the yes fraction: 9/25.
3. Estimate: 9/25 × 200 = 72.

**Answer: About 72 students want a later start.**

## PRACTICE 4 problems

**1** In a random sample of 30 students, 12 want more outdoor seating. Estimate how many of the 300 students want it.

**ANSWER** _____

**2** In a random sample of 40 students, 18 want a shorter lunch line. Estimate how many of the 600 students do not want one.

**ANSWER** _____

**3** In a random sample of 35 students, 14 walk to school. What percent walk? Estimate how many of the 350 students walk.

**ANSWER** _____

**4** Of 30 skate club members, 24 want a new skate rack. Estimate the count out of 500 students, then explain why it may be biased.

**ANSWER** _____

## APPLY IT Show your work

**1** Students picked at random from the grade list voted on a new dance playlist. Use the table to estimate how many of the 280 students would vote yes.

**NEW PLAYLIST?**

| Vote | Students |
|---|---|
| Yes | 21 |
| No | 7 |

**ANSWER** _____

**2** A music club asks 48 members if they would buy a school concert ticket. Of those, 36 say yes. For a school of 480 students, calculate an estimate, then explain whether to trust it.

WORK SPACE

**ANSWER** _____

## CHALLENGE One step up

For a school of 900, a random sample finds 24 of 60 students want a new snack. An online poll finds 45 of 60 want it. Find both schoolwide estimates. Which is more trustworthy, and why?

WORK SPACE AND ANSWER

**ANSWER KEY**

# Sample Sense

**GRADE 8 · PA.D.2.2**

## PART 1 · PRACTICE

| # | PROBLEM | ANSWER |
|---|---|---|
| 1 | In a random sample of 30 students, 12 want more outdoor seating. Estimate how many of the 300 students want it. | **About 120 students.** |
| 2 | In a random sample of 40 students, 18 want a shorter lunch line. Estimate how many of the 600 students do not want one. | **About 330 students.** |
| 3 | In a random sample of 35 students, 14 walk to school. What percent walk? Estimate how many of the 350 students walk. | **40%; about 140 students.** |
| 4 | Of 30 skate club members, 24 want a new skate rack. Estimate the count out of 500 students, then explain why it may be biased. | **400 students; skate club members may want a rack more than other students do.** |

## PART 2 · APPLY IT

1. **About 210 students.** The yes fraction is 21/28 = 3/4. Multiply 3/4 × 280 = 210.
2. **360 students; do not trust this as a schoolwide estimate because music club members may be more interested in the concert.** Multiply 36/48 × 480 = 360. The club is not a random sample of the school.

## CHALLENGE

**Random sample: 360 students. Online poll: 675 students. The random sample is more trustworthy because students chose whether to answer the online poll.**

Accept equivalent explanations of bias. Estimates assume the sample fraction applies to the whole school.