LESSON MAKER PRO

Who Got Heard?

Check the numbers behind a survey claim.

HIGH SCHOOL · A2S.DSP.G.30

A2S.DSP.G.30 "Evaluate where bias, including sampling, response, or nonresponse bias, may occur in surveys, and whether results are representative of the population of interest."

NAME _____ DATE _____

COMPARE THE SHARES

To check whether a surveyed group represents a population, compare the fraction in each group. Even matching fractions cannot rule out bias from unanswered surveys or leading questions.

WORKED EXAMPLE

A library polls students about weekend hours. Does the respondent group match the school by preferred reading format?

PREFERRED READING FORMAT

Group	School	Respondents
Print	300	10
E-books	100	10

1. Print readers are 300/400 = 3/4 of the school.
2. They are 10/20 = 1/2 of respondents.
3. Since 3/4 and 1/2 differ, print readers are underrepresented.

Answer: No. The respondents do not match the school by preferred reading format.

PRACTICE 4 problems

1 In a club, 48 of 64 members take art. Among 16 survey respondents, 6 take art. Find both shares. Are art students underrepresented?

ANSWER _____

2 A club has 18 ninth graders among 36 members. A survey has 9 ninth graders among 18 respondents. Do the shares match? Does that prove the survey is free of bias?

ANSWER _____

3 Of 24 students invited to a poll, 6 reply. What fraction replied? Name the bias that could occur because others did not reply.

ANSWER _____

4 A poll asks, "Don't you agree our amazing new schedule is better?" Of 56 replies, 42 say yes. What fraction say yes? Name a possible bias.

ANSWER _____

APPLY IT Show your work

1 A student polls people leaving a senior event about the school dance playlist. Compare seniors' share of the school with their share of respondents. Is the poll representative by grade?

PLAYLIST POLL

Group	School	Respondents
Seniors	24	18
Other grades	72	6

ANSWER _____

2 A school sends a lunch survey to 80 students. Only 32 reply, and 24 of those request a longer lunch. Find the response rate and the fraction of all students contacted who requested it. Why might the replies be misleading?

WORK SPACE

ANSWER _____

CHALLENGE One step up

A random sample of 60 students receives a poll about phone rules. Only 15 reply, and 12 support a change. What are the lowest and highest possible fractions of all 60 who support it? Explain why 12/15 could mislead.

WORK SPACE AND ANSWER

ANSWER KEY

Who Got Heard?

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	In a club, 48 of 64 members take art. Among 16 survey respondents, 6 take art. Find both shares. Are art students underrepresented?	**Club: 48/64 = 3/4. Respondents: 6/16 = 3/8. Yes.**
2	A club has 18 ninth graders among 36 members. A survey has 9 ninth graders among 18 respondents. Do the shares match? Does that prove the survey is free of bias?	**Yes, both shares are 1/2. No, other bias could still occur.**
3	Of 24 students invited to a poll, 6 reply. What fraction replied? Name the bias that could occur because others did not reply.	**6/24 = 1/4 replied. Nonresponse bias.**
4	A poll asks, "Don't you agree our amazing new schedule is better?" Of 56 replies, 42 say yes. What fraction say yes? Name a possible bias.	**42/56 = 3/4 say yes. Response bias from the leading question.**

PART 2 · APPLY IT

1. **Seniors are 24/96 = 1/4 of the school but 18/24 = 3/4 of respondents. No, seniors are overrepresented.** Add each column before finding the senior shares. The shares differ, as expected when polling at a senior event.
2. **The response rate is 32/80 = 2/5. The fraction of all students contacted who requested it is 24/80 = 3/10. Students who did not reply might feel differently.** Use all 80 students contacted as the denominator for both fractions. Nonresponse could make the replies unrepresentative.

CHALLENGE

The lowest is 12/60 = 1/5. The highest is (12 + 45)/60 = 57/60 = 19/20. The 45 students who did not reply could all oppose or all support the change, so 12/15 may not represent the full sample.

Accept equivalent fractions or percentages. Matching group shares in problem 2 does not establish that every source of bias is absent.