LESSON MAKER PRO

Spot the Slant

Compare survey results with the group they represent.

GRADE 7 · 7.DSP.A.10.e

7.DSP.A.10.e "Informally explain situations in which statistical bias may exist."

NAME _____ DATE _____

THE BIG IDEA

A survey may be biased if some people are more likely to be chosen than others. Compare the sample's rate with the whole group's rate, then ask how the people were chosen.

WORKED EXAMPLE

A survey asks whether students ride the bus. Students in the sample were chosen at the bus stop. Compare the rates and explain the possible bias.

BUS RIDERS

Group	Ride the bus	Total
School	50	200
Bus-stop sample	15	20

1. School rate: 50/200 = 1/4.
2. Sample rate: 15/20 = 3/4.
3. Bus riders are more likely to be at the bus stop.

Answer: The sample rate is higher, 3/4 compared with 1/4. Choosing students at the bus stop may overrepresent bus riders.

PRACTICE 4 problems

1 Of 120 students, 30 walk to school. At bus pickup, 2 of 16 surveyed students walk. Compare the rates. Why might this sample be biased?

ANSWER _____

2 Of 90 students, 45 bring lunch. A random sample of 10 includes 5 who bring lunch. Compare the rates. Does this result show bias?

ANSWER _____

3 Of 80 students, 24 prefer comics. At a comic fair, 8 of 10 surveyed students prefer comics. Compare the rates. Why might this sample be biased?

ANSWER _____

4 Of 60 students, 18 want a later start. An online poll gets 12 replies, 9 in favor. Its link was posted on a later-start fan page. Compare the rates. Why might the poll be biased?

ANSWER _____

APPLY IT Show your work

1 A school asks whether students want a new hot lunch option. The sample was taken from the lunch line. Compare the rates in the table and explain the possible bias.

NEW HOT LUNCH OPTION

Group	Want one	Total
School	60	150
Lunch-line sample	18	30

ANSWER _____

2 A gaming club posts a poll about buying more board games. Of 18 replies, 14 vote yes. Of the school's 72 students, 36 want more games. Compare the rates and explain the possible bias.

WORK SPACE

ANSWER _____

CHALLENGE One step up

A school asks whether students want new basketball hoops. Sample A was taken at a basketball game. Sample B was chosen randomly from the school. Which method is less likely to cause bias? Which sample rate is closer to the school rate? Explain why your answers differ.

NEW BASKETBALL HOOPS

Group	Want hoops	Total
School	40	100
Sample A	10	25
Sample B	6	10

WORK SPACE AND ANSWER

ANSWER KEY

Spot the Slant

GRADE 7 · 7.DSP.A.10.e

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Of 120 students, 30 walk to school. At bus pickup, 2 of 16 surveyed students walk. Compare the rates. Why might this sample be biased?	**School: 30/120 = 1/4. Sample: 2/16 = 1/8. Bus pickup may underrepresent students who walk to school.**
2	Of 90 students, 45 bring lunch. A random sample of 10 includes 5 who bring lunch. Compare the rates. Does this result show bias?	**Both rates are 1/2. This result does not show bias.**
3	Of 80 students, 24 prefer comics. At a comic fair, 8 of 10 surveyed students prefer comics. Compare the rates. Why might this sample be biased?	**School: 24/80 = 3/10. Sample: 8/10. A comic fair may overrepresent students who prefer comics.**
4	Of 60 students, 18 want a later start. An online poll gets 12 replies, 9 in favor. Its link was posted on a later-start fan page. Compare the rates. Why might the poll be biased?	**School: 18/60 = 3/10. Poll: 9/12 = 3/4. The fan page may attract more students who want a later start.**

PART 2 · APPLY IT

1. **The lunch-line rate is 18/30 = 3/5, higher than the school rate of 60/150 = 2/5. The lunch line may overrepresent students interested in hot lunch.** Divide the number who want the option by the total in each group. Consider which students are likely to be in the lunch line.
2. **The poll rate is 14/18 = 7/9, higher than the school rate of 36/72 = 1/2. A gaming club poll may attract students who want more games.** Find the yes rate for the poll and the school. Consider who is likely to see and answer the club's poll.

CHALLENGE

Sample B's random method is less likely to cause bias. Sample A's rate, 10/25 = 40%, matches the school's 40/100 = 40%, while sample B's rate is 6/10 = 60%. A sample can match the school rate by chance even if its selection method may be biased.

Accept equivalent fractions or percentages. Students should connect possible bias to how people were selected, not just to a difference between rates.