LESSON MAKER PRO

Check the Claim

Use sample rates and sampling methods to test survey claims.

HIGH SCHOOL · S.IR.3.2

S.IR.3.2 "Evaluate the statistical validity of claims made."

NAME _____ DATE _____

TWO CHECKS

Find the sample rate by dividing the number who gave a response by the total number surveyed. Compare that rate with the claim, then check whether the sample represents the group named in the claim. A sample can support a claim, but it cannot prove an exact rate for everyone.

WORKED EXAMPLE

A random sample of 20 students finds that 7 want a longer break. Does this sample support the claim that at least 90% of students want a longer break?

1. Find the sample rate: 7/20 = 35%.
2. Compare the rates: 35% is less than 90%.
3. The sample does not support the claim.

Answer: No. The sample rate is 35%, which is below 90%.

PRACTICE 6 problems

1 In a survey, 6 of 15 students say they bike to school. What percent of the surveyed students bike to school?

ANSWER _____

2 In a random sample, 12 of 15 students want a school movie night. Does the sample support the claim that at least 75% of students want one? Give the sample rate.

ANSWER _____

3 In a random sample, 3 of 12 students choose the same lunch special. Does the sample rate match the claim that 1 in 4 students would choose it? Give the rate.

ANSWER _____

4 In a random sample, 16 of 40 students favor an earlier school start time. Does the sample support the claim that more than half of students favor it? Give the rate.

ANSWER _____

5 In a random sample, 5 of 8 students say they use the library after school. Does the sample support the claim that at least 3/5 of students use it? Compare the rates.

ANSWER _____

6 A club surveys only its members. Of the 24 members surveyed, 18 want more club events. Find the sample rate. Is this a valid basis for claiming that at least 2/3 of all students want more club events?

ANSWER _____

APPLY IT Show your work

1 A school randomly selects 28 students to ask whether they would use an ad-free music app. Of those students, 21 say yes. Does this sample support the claim that at least 2/3 of students would use the app? Explain what the survey cannot prove.

WORK SPACE

ANSWER _____

2 An esports team asks 44 people at its tournament whether they want another school esports event. Of those asked, 33 say yes. A post claims that at least 2/3 of all students want another event. Find the sample rate and decide whether this survey is a valid basis for the claim.

WORK SPACE

ANSWER _____

CHALLENGE One step up

A school wants to know whether more than half of its students want a later lunch. It randomly surveys 10 students from each lunch period. The two periods serve different shares of the school. Find the rate in the combined sample, then estimate the schoolwide rate using each period's share. Which rate is better for evaluating the claim, and does it support the claim?

LATER LUNCH SURVEY

Lunch period	Share of school	Want later lunch	Surveyed
Early	3/4	8	10
Late	1/4	2	10

WORK SPACE AND ANSWER

ANSWER KEY

Check the Claim

HIGH SCHOOL · S.IR.3.2

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	In a survey, 6 of 15 students say they bike to school. What percent of the surveyed students bike to school?	**40%**
2	In a random sample, 12 of 15 students want a school movie night. Does the sample support the claim that at least 75% of students want one? Give the sample rate.	**Yes. The sample rate is 80%, which is at least 75%.**
3	In a random sample, 3 of 12 students choose the same lunch special. Does the sample rate match the claim that 1 in 4 students would choose it? Give the rate.	**Yes. The sample rate is 3/12 = 1/4, or 25%.**
4	In a random sample, 16 of 40 students favor an earlier school start time. Does the sample support the claim that more than half of students favor it? Give the rate.	**No. The sample rate is 40%, which is less than half.**
5	In a random sample, 5 of 8 students say they use the library after school. Does the sample support the claim that at least 3/5 of students use it? Compare the rates.	**Yes. The sample rate is 5/8 = 62.5%, which is greater than 3/5 = 60%.**
6	A club surveys only its members. Of the 24 members surveyed, 18 want more club events. Find the sample rate. Is this a valid basis for claiming that at least 2/3 of all students want more club events?	**The sample rate is 75%. No, surveying only club members may not represent all students.**

PART 2 · APPLY IT

1. **Yes. The sample rate is 21/28 = 3/4, or 75%, which is greater than 2/3. The survey cannot prove the rate for all students.** Simplify 21/28 to 3/4, then compare 3/4 with 2/3. A random sample provides an estimate, not an exact population rate.
2. **The sample rate is 33/44 = 75%, but the survey is not a valid basis for the claim about all students. Tournament attendees may be more interested in esports than other students.** Simplify 33/44 to 3/4, or 75%, which exceeds 2/3. The survey did not sample students beyond the tournament, so its rate may not represent the whole school.

CHALLENGE

The combined sample rate is (8 + 2)/(10 + 10) = 50%. The schoolwide estimate is (3/4)(8/10) + (1/4)(2/10) = 65%. The 65% estimate is better because it accounts for the different sizes of the lunch periods. It supports the claim that more than half want a later lunch, but does not prove it.

Accept equivalent fractions or percents and clear comparisons. Distinguish a sample rate that supports a claim from proof about every student.