LESSON MAKER PRO

Spot the Association

Compare group rates to make a claim from data.

HIGH SCHOOL · MT.CORE.DATA.LIT.2

MT.CORE.DATA.LIT.2 "Ask a statistical question to determine whether there appears to be an association between two variables, design and carry out an investigation, and write a persuasive argument based on the results of the investigation."

NAME _____ DATE _____

COMPARE THE RATES

For each group, divide the number with the outcome by that group's total. A difference in rates suggests an association, but it does not prove that one variable causes the other.

WORKED EXAMPLE

Does planner use appear associated with meeting a deadline? Compare the rates.

CLASS SURVEY

Group	Met deadline	Missed deadline
Planner users	9	6
Nonusers	3	12

1. Planner users: 9/(9 + 6) = 9/15 = 60%.
2. Nonusers: 3/(3 + 12) = 3/15 = 20%.
3. The rates differ by 40 percentage points.

Answer: Planner use appears associated with meeting the deadline: 60% of users met it, compared with 20% of nonusers.

PRACTICE 4 problems

1 In a survey, 14 of 28 bus riders and 7 of 28 walkers listen to podcasts on the way to school. What percent of each group listens?

ANSWER _____

2 In a poll, 18 of 30 gamers and 11 of 22 nongamers prefer subtitles. Find the difference in their rates, in percentage points.

ANSWER _____

3 Of 45 students who cook at home, 27 pack lunch. Of 48 who do not cook at home, 24 pack lunch. Find both rates. Does an association appear?

ANSWER _____

_____

4 Of 70 calendar users, 35 finish tasks on time. Of 42 nonusers, 21 do. Does this poll show an association? Explain with rates.

ANSWER _____

_____

APPLY IT Show your work

1 A student surveys classmates about late-night screen use and feeling tired the next morning. Ask a statistical question, then compare the tired rates and make a claim.

CLASSMATE SURVEY

Screen use	Tired	Not tired
Late-night	26	14
Not late-night	18	22

ANSWER _____

2 Class officers randomly survey students about event reminders and attendance. What statistical question do the data answer? Compare attendance rates and argue whether an association appears.

SCHOOL EVENT SURVEY

Reminder	Attended	Did not attend
Got one	33	22
Did not get one	22	33

ANSWER _____

CHALLENGE One step up

In a survey, 32 of 40 students who attend review sessions pass a quiz, compared with 36 of 60 who do not attend. Propose a sampling plan to check the association across grade levels. Then write a two-sentence argument using both passing rates without claiming cause.

WORK SPACE AND ANSWER

ANSWER KEY # Spot the Association

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	In a survey, 14 of 28 bus riders and 7 of 28 walkers listen to podcasts on the way to school. What percent of each group listens?	**Bus riders: 50%. Walkers: 25%.**
2	In a poll, 18 of 30 gamers and 11 of 22 nongamers prefer subtitles. Find the difference in their rates, in percentage points.	**10 percentage points.**
3	Of 45 students who cook at home, 27 pack lunch. Of 48 who do not cook at home, 24 pack lunch. Find both rates. Does an association appear?	**60% of students who cook and 50% of students who do not cook pack lunch. An association appears.**
4	Of 70 calendar users, 35 finish tasks on time. Of 42 nonusers, 21 do. Does this poll show an association? Explain with rates.	**No association appears in this poll. Both groups have a 50% on-time rate.**

PART 2 · APPLY IT

1. **Is late-night screen use associated with feeling tired the next morning? The tired rates are 26/40 = 65% for late-night users and 18/40 = 45% for other students. The 20-percentage-point difference supports an association, but it does not prove cause.** Divide each tired count by its row total of 40. Compare the rates without claiming that screen use caused tiredness.
2. **Is getting an event reminder associated with attending the event? Attendance was 33/55 = 60% among students who got a reminder and 22/55 = 40% among those who did not. The 20-percentage-point difference supports an association.** Each group totals 55 students. Compare the attendance counts as percentages of those group totals.

CHALLENGE

Randomly sample students within each grade level and compare passing rates for attendees and nonattendees in each grade. The passing rate is 32/40 = 80% for attendees and 36/60 = 60% for nonattendees. This 20-percentage-point difference supports an association in the survey, but it does not prove that attending caused students to pass.

Accept equivalent statistical questions and claims that correctly compare rates. Students should describe association, not causation.