LESSON MAKER PRO

Risk in Context

Use rates to test claims about data.

HIGH SCHOOL · GDA.DSP.A

GDA.DSP.A "Mathematical and statistical reasoning about data can be used to evaluate conclusions and assess risks."

NAME _____ DATE _____

COMPARE THE RATES

To compare risk across groups, divide the number of people with an outcome by the total in each group. Compare the rates, not just the outcome counts. A difference in rates does not, by itself, prove that one factor caused the outcome.

WORKED EXAMPLE

In a phone survey, which group had a higher rate of app freezes, and by how many percentage points?

PHONE SURVEY

Group	App freezes	Phones
Updated app	18	60
Did not update	6	40

1. Updated app: 18/60 = 30%.
2. Did not update: 6/40 = 15%.
3. Difference: 30% - 15% = 15 percentage points.

Answer: The updated-app group had a higher rate by 15 percentage points.

PRACTICE 6 problems

1 What percentage of shuttle riders were late?

ARRIVALS AT SCHOOL

Group	Late arrivals	Students
Shuttle riders	10	50
Other students	20	100

ANSWER _____

2 Which group reported headaches at a higher rate, and by how many percentage points?

SCREEN BREAKS AND HEADACHES

Group	Reported headaches	Students
Took screen breaks	12	80
Did not take breaks	30	100

ANSWER _____

3 What is the difference between the two no-show rates, in percentage points?

CLUB MEETING ATTENDANCE

Group	No-shows	Students signed up
New members	21	70
Returning members	15	75

ANSWER _____

4 Which group had a higher buffering rate despite having fewer buffering reports? By how many percentage points?

VIDEO BUFFERING REPORTS

Connection	Buffering reports	Viewing sessions
School Wi-Fi	16	80
Cellular	24	200

ANSWER _____

5 A student says tournament participants had a lower strain rate because 9 is less than 10. Do the rates support the claim? Give both rates.

REPORTED MUSCLE STRAINS

Group	Reported strains	Students
Tournament participants	9	90
Other students	10	50

ANSWER _____

6 Did riders on paved paths report punctures at a higher rate? Give both rates.

BIKE TIRE PUNCTURES

Route	Reported punctures	Riders
Paved paths	14	70
Other routes	11	55

ANSWER _____

APPLY IT Show your work

1 Students tracked concert tickets that turned out to have invalid codes. Which source had a higher invalid-code rate, and by how many percentage points?

CONCERT TICKET CODES

Ticket source	Invalid codes	Tickets checked
Official site	5	125
Resale messages	16	80

ANSWER _____

2 In a student driver survey, drivers reported whether they had a near miss last month. How many times as high was the reported near-miss rate for phone-navigation users? Does this survey show that phone navigation caused near misses?

STUDENT DRIVER SURVEY

Group	Reported a near miss	Drivers
Used phone navigation	27	90
Did not use it	12	120

ANSWER _____

CHALLENGE One step up

Compare the missed-assignment rates for planner users and nonusers within each course level and overall. Explain why the overall rates do not show that planners increase missed assignments.

PLANNERS AND MISSED ASSIGNMENTS

Course and planner use	Missed an assignment	Students
Advanced, used planner	45	90
Advanced, no planner	7	10
Standard, used planner	1	10
Standard, no planner	27	90

WORK SPACE AND ANSWER

Risk in Context

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	What percentage of shuttle riders were late?	**20%**
2	Which group reported headaches at a higher rate, and by how many percentage points?	**Students who did not take breaks, by 15 percentage points.**
3	What is the difference between the two no-show rates, in percentage points?	**10 percentage points**
4	Which group had a higher buffering rate despite having fewer buffering reports? By how many percentage points?	**School Wi-Fi, by 8 percentage points.**
5	A student says tournament participants had a lower strain rate because 9 is less than 10. Do the rates support the claim? Give both rates.	**Yes. The rates are 10% for tournament participants and 20% for other students.**
6	Did riders on paved paths report punctures at a higher rate? Give both rates.	**No. Both groups reported punctures at a rate of 20%.**

PART 2 · APPLY IT

1. **Resale messages, by 16 percentage points.** The official-site rate is 5/125 = 4%, and the resale-message rate is 16/80 = 20%. Subtract 4% from 20%.
2. **The rate was 3 times as high for phone-navigation users. No, the survey does not establish a cause.** The rates are 27/90 = 30% and 12/120 = 10%, so 30% is 3 times 10%. The survey shows an association, but other differences between the groups could affect the results.

CHALLENGE

In advanced courses, the rates are 50% for planner users and 70% for nonusers. In standard courses, they are 10% and 30%. Overall, they are 46/100 = 46% for planner users and 34/100 = 34% for nonusers. Planner users had a lower rate within each course level, but more planner users were in advanced courses, where missed assignments were more common. The overall rates do not establish that planners increase missed assignments.

Accept equivalent fractions or decimals when they match the stated percentages. For rate differences, require percentage points rather than percent.