LESSON MAKER PRO

Risk in the Data

Compare rates before you judge a claim.

GRADE 8 · 8A.DSP.E

8A.DSP.E "Mathematical and statistical reasoning about data can be used to evaluate conclusions and assess risks."

NAME _____ DATE _____

COMPARE THE RATES

To compare how often an event happens in two groups, divide the number of people who experienced it by the total in each group. Compare the percentages, especially when the groups have different sizes. A difference in rates does not prove that one factor caused the event.

WORKED EXAMPLE

A survey asked students whether they played games after bedtime. What was the missed-deadline rate for each group, and how many percentage points apart were the rates?

STUDENT SURVEY

Group	Missed a deadline	Total students
Played after bedtime	11	20
Did not play after bedtime	13	50

1. Played after bedtime: 11 / 20 = 55%.
2. Did not play after bedtime: 13 / 50 = 26%.
3. 55% - 26% = 29 percentage points.

Answer: The rates were 55% and 26%, a difference of 29 percentage points.

PRACTICE 6 problems

1 What percent of students who brought a water bottle reported feeling thirsty at practice?

THIRST AT PRACTICE

Group	Felt thirsty	Total students
Brought a bottle	6	30
Did not bring a bottle	9	18

ANSWER _____

2 Which group had a higher rate of close calls while riding? How many percentage points higher was it?

SCOOTER RIDERS

Group	Had a close call	Total riders
Used a light	8	32
Did not use a light	18	36

ANSWER _____

3 Find the rate of lost game progress for each group. Which group had the lower rate?

GAME PROGRESS

Group	Lost progress	Total players
Saved manually	14	28
Used autosave	6	24

ANSWER _____

4 Which group had more missed check-ins? Which group had the higher rate of missed check-ins?

TEAM GAME CHECK-INS

Group	Missed check-in	Total players
Team A	21	42
Team B	28	112

ANSWER _____

5 How many percentage points higher was the rate of ringing ears in the high-volume group?

HEADPHONE SURVEY

Group	Reported ringing ears	Total students
Lower volume	9	45
High volume	16	32

ANSWER _____

6 A student says, "The study app caused late assignments." Calculate both rates. Does this table prove the student's claim? Explain briefly.

STUDY APP SURVEY

Group	Had a late assignment	Total students
Used the app	12	48
Did not use the app	6	48

ANSWER _____

APPLY IT Show your work

1 At a school gaming tournament, 18 of 60 players using Wi-Fi lost their connection. Of the players using a wired connection, 9 of 90 lost their connection. Find both rates. Was the Wi-Fi group's rate three times the wired group's rate?

WORK SPACE

ANSWER _____

2 At a basketball clinic, 8 of 64 students who warmed up reported a sore muscle. Among students who skipped the warm-up, 12 of 48 reported a sore muscle. How many percentage points higher was the rate for students who skipped the warm-up? Does this prove that skipping the warm-up caused soreness?

WORK SPACE

ANSWER _____

CHALLENGE One step up

Players tried an easy or hard game level. Calculate the overall unfinished rate for players who used hints and for players who did not. Does the overall comparison agree with the comparison within each level? Explain using the rates.

UNFINISHED GAME LEVELS

Level	Used hints: unfinished / total	No hints: unfinished / total
Easy	2 / 10	9 / 30
Hard	18 / 30	7 / 10

WORK SPACE AND ANSWER

ANSWER KEY

Risk in the Data

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	What percent of students who brought a water bottle reported feeling thirsty at practice?	**20%**
2	Which group had a higher rate of close calls while riding? How many percentage points higher was it?	**Riders who did not use a light, by 25 percentage points (50% versus 25%).**
3	Find the rate of lost game progress for each group. Which group had the lower rate?	**Saved manually: 50%. Used autosave: 25%. The autosave group had the lower rate.**
4	Which group had more missed check-ins? Which group had the higher rate of missed check-ins?	**Team B had more missed check-ins (28 versus 21). Team A had the higher rate (50% versus 25%).**
5	How many percentage points higher was the rate of ringing ears in the high-volume group?	**30 percentage points**
6	A student says, "The study app caused late assignments." Calculate both rates. Does this table prove the student's claim? Explain briefly.	**The rates were 25% for app users and 12.5% for nonusers. No, the table shows a difference in rates but does not prove the app caused late assignments.**

PART 2 · APPLY IT

1. **Wi-Fi: 30%. Wired: 10%. Yes, the Wi-Fi group's rate was three times the wired group's rate.** Compute 18 / 60 = 30% and 9 / 90 = 10%. Then compare 30% to 10%.
2. **The rate was 12.5 percentage points higher for students who skipped the warm-up. No, these data do not prove what caused the soreness.** The rates are 8 / 64 = 12.5% and 12 / 48 = 25%. Subtract to get 12.5 percentage points; the comparison alone cannot establish cause.

CHALLENGE

Overall, 20 / 40 = 50% of players who used hints did not finish, compared with 16 / 40 = 40% of players who did not use hints. The overall comparison does not agree with the level-by-level comparisons. On the easy level, the rates were 20% with hints and 30% without; on the hard level, they were 60% with hints and 70% without. More hint users played the hard level, which had higher unfinished rates.

Accept equivalent fractions or decimals alongside correct percentages. For explanations about cause, accept a clear statement that a difference in rates alone does not prove causation.