LESSON MAKER PRO

Spot the Pattern

Compare groups using two-way tables.

GRADE 8 · 8.SP.4

8.SP.4 "Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table..."

NAME _____ DATE _____

COMPARE FAIRLY

A two-way table sorts the same people by two categories. To compare rows, divide a cell count by its row total. A difference in these row relative frequencies may suggest an association between the categories.

WORKED EXAMPLE

Students were asked whether they want a school radio station and whether they use playlists. Compare the share of playlist users in each radio group.

SCHOOL RADIO SURVEY

	Uses playlists	Does not use playlists
Wants radio	9	3
Does not want radio	6	18

1. Find the row totals: 9 + 3 = 12 and 6 + 18 = 24.
2. For students who want radio, 9/12 = 75% use playlists.
3. For students who do not want radio, 6/24 = 25% use playlists.

Answer: Playlist use is more common in the group that wants radio: 75% compared with 25%.

PRACTICE 6 problems

1 What fraction of students who bring a reusable bottle also bring a snack?

BOTTLES AND SNACKS

	Brings a snack	Does not bring a snack
Brings a bottle	11	11
Does not bring a bottle	2	8

ANSWER _____

2 Fill in the missing row total.

TRAVEL AND CHESS

	Plays chess	Does not play chess	Total
Takes the bus	13	7	___
Does not take the bus	17	11	28
Total	30	18	48

ANSWER _____

3 Which group had a higher share of students join the art club? Give the fraction for each row.

CLUB FAIR AND ART CLUB

	Joined art club	Did not join art club
Attended the club fair	14	2
Did not attend the fair	8	8

ANSWER _____

4 Use column relative frequencies. What percent of each notes group reviews nightly? Which group has the higher percent?

NOTES AND REVIEW HABITS

	Chooses online notes	Chooses paper notes
Reviews nightly	11	7
Does not review nightly	11	13

ANSWER _____

5 Of 13 students who follow a game streamer, 11 play the streamer's game. Of 17 students who do not follow the streamer, 4 play the game. Fill in the four empty cells inside the table.

STREAMER SURVEY

	Plays the game	Does not play the game	Total
Follows streamer	___	___	13
Does not follow	___	___	17

ANSWER _____

6 Do these data suggest an association between having a desk space and finishing homework before dinner? Use row relative frequencies to explain.

DESK SPACE AND HOMEWORK

	Finishes before dinner	Does not finish before dinner
Has a desk space	14	14
Does not have a desk space	8	8

ANSWER _____

APPLY IT Show your work

1 A student council survey asked about team sports and watching game highlights. What fraction of each row watched highlights? Which group had the higher share?

SPORTS AND HIGHLIGHTS

	Watched highlights	Did not watch highlights
Plays a team sport	22	8
Does not play a team sport	7	13

ANSWER _____

2 Students tracked whether they used a study timer and finished a project early. Use column relative frequencies to find the percent who finished early in each timer group. Which group had the higher percent?

STUDY TIMERS AND PROJECTS

	Used a timer	Did not use a timer
Finished early	14	8
Did not finish early	11	17

ANSWER _____

CHALLENGE One step up

A school surveyed 60 students about joining a coding club and planning to enter a tech contest. Of 20 club members, 16 plan to enter. Of 40 nonmembers, 16 plan to enter. Fill in the table, then compare the row relative frequencies. Why would comparing only the two counts of 16 be misleading?

CODING CLUB AND CONTEST PLANS

	Plans to enter	Does not plan to enter	Total
Joined coding club	___	___	20
Did not join	___	___	40
Total	___	___	60

WORK SPACE AND ANSWER

ANSWER KEY

Spot the Pattern

GRADE 8 · 8.SP.4

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	What fraction of students who bring a reusable bottle also bring a snack?	**11/22 = 1/2**
2	Fill in the missing row total.	**20**
3	Which group had a higher share of students join the art club? Give the fraction for each row.	**Students who attended the fair: 14/16 = 7/8. Students who did not: 8/16 = 1/2. The fair group had the higher share.**
4	Use column relative frequencies. What percent of each notes group reviews nightly? Which group has the higher percent?	**Online notes: 11/22 = 50%. Paper notes: 7/20 = 35%. The online-notes group has the higher percent.**
5	Of 13 students who follow a game streamer, 11 play the streamer's game. Of 17 students who do not follow the streamer, 4 play the game. Fill in the four empty cells inside the table.	**Follows streamer: 11 play, 2 do not. Does not follow: 4 play, 13 do not.**
6	Do these data suggest an association between having a desk space and finishing homework before dinner? Use row relative frequencies to explain.	**No association is suggested by these data. In each row, 1/2 of the students finish before dinner.**

PART 2 · APPLY IT

1. **Team-sport group: 22/30 = 11/15. Other group: 7/20. The team-sport group had the higher share.** Divide the highlights count by each row total. Compare 11/15 and 7/20.
2. **Used a timer: 14/25 = 56%. Did not use a timer: 8/25 = 32%. The timer group had the higher percent.** Each column contains 25 students. Divide the number who finished early by 25 in each column.

CHALLENGE

Club members: 16 plan to enter and 4 do not. Nonmembers: 16 plan to enter and 24 do not. Column totals are 32 and 28. The row relative frequencies are 16/20 = 80% for members and 16/40 = 40% for nonmembers. The equal counts of 16 hide a difference because the groups have different totals.

Accept equivalent fractions or percentages when they represent the stated row or column group. An association describes a pattern in these data, not proof that one category causes the other.