LESSON MAKER PRO

Compare the Crowds

Find patterns in two-way tables

GRADE 8 · 8.SP.4b

8.SP.4b "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 shows counts for two categories at once. To compare groups of different sizes, divide each count by its row total or column total, using the same kind of total for both groups. Different relative frequencies may suggest an association, but they do not prove that one category causes the other.

WORKED EXAMPLE

Which club has the larger fraction of members who chose a morning meeting? How much larger is the fraction?

CLUB MEETING CHOICES

Club	Morning	Afternoon	Total
Robotics	41	49	90
Drama	53	37	90
Total	94	86	180

1. Robotics: 41/90 chose morning.
2. Drama: 53/90 chose morning.
3. 53/90 - 41/90 = 12/90 = 2/15.

Answer: Drama, by 2/15.

PRACTICE 6 problems

1 Among students who bring lunch, what fraction chose fruit?

LUNCH CHOICES

Lunch	Fruit	Chips	Total
Bring lunch	15	5	20
Buy lunch	12	8	20
Total	27	13	40

ANSWER _____

2 Of the Grade 8 students, what fraction ride to school?

TRIPS TO SCHOOL

Trip	Grade 7	Grade 8	Total
Walk	12	10	22
Ride	15	10	25
Total	27	20	47

ANSWER _____

3 Which group has a larger fraction choosing to meet in person? Give both row fractions.

BOARD GAME MEETUPS

Group	In person	Online	Total
Weekday	24	8	32
Weekend	12	12	24
Total	36	20	56

ANSWER _____

4 Find the missing count. Then find the fraction of Grade 8 students who said yes.

TRY A NEW CAFETERIA DISH?

Grade	Yes	No	Total
Grade 7	25	15	40
Grade 8	8	?	24
Total	33	31	64

ANSWER _____

5 Is there an association between club membership and voting for Mascot A in this table? Compare the row fractions.

MASCOT VOTE

Student	Mascot A	Mascot B	Total
Club member	18	9	27
Not a member	24	12	36
Total	42	21	63

ANSWER _____

6 Among students with alerts on and students with alerts off, what fraction checks messages before school? Which group has the larger fraction?

PHONE ALERTS AND MESSAGES

Before school	Alerts on	Alerts off	Total
Checks messages	15	5	20
Does not check	9	15	24
Total	24	20	44

ANSWER _____

APPLY IT Show your work

1 Students chose a movie after some watched its trailer. Does the table suggest an association between watching the trailer and picking the sci-fi movie? Compare the row fractions.

MOVIE CHOICES

Trailer	Picked sci-fi	Picked comedy	Total
Watched	28	12	40
Did not watch	16	24	40
Total	44	36	80

ANSWER _____

2 Students signed up for an online or offline game event. How much larger is the fraction who came with a friend among online players than among offline players? Use column fractions.

GAME EVENT SIGN-UPS

Sign-up	Online	Offline	Total
With a friend	24	9	33
Solo	8	15	23
Total	32	24	56

ANSWER _____

CHALLENGE One step up

A student says daily music streaming is linked to being in Grade 7 because more Grade 7 students than Grade 8 students stream daily. Does this table support that claim? Explain using row fractions and tell why the counts alone are misleading.

DAILY MUSIC STREAMING

Grade	Streams daily	Does not stream daily	Total
Grade 7	21	7	28
Grade 8	12	4	16
Total	33	11	44

WORK SPACE AND ANSWER

ANSWER KEY

Compare the Crowds

GRADE 8 · 8.SP.4b

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Among students who bring lunch, what fraction chose fruit?	**15/20 = 3/4**
2	Of the Grade 8 students, what fraction ride to school?	**10/20 = 1/2**
3	Which group has a larger fraction choosing to meet in person? Give both row fractions.	**Weekday: 24/32 = 3/4. Weekend: 12/24 = 1/2. The weekday group has the larger fraction.**
4	Find the missing count. Then find the fraction of Grade 8 students who said yes.	**The missing count is 16. The fraction is 8/24 = 1/3.**
5	Is there an association between club membership and voting for Mascot A in this table? Compare the row fractions.	**No association is shown. The fractions voting for Mascot A are 18/27 = 2/3 and 24/36 = 2/3.**
6	Among students with alerts on and students with alerts off, what fraction checks messages before school? Which group has the larger fraction?	**Alerts on: 15/24 = 5/8. Alerts off: 5/20 = 1/4. The alerts-on group has the larger fraction.**

PART 2 · APPLY IT

1. **Yes. The fractions picking sci-fi are 28/40 = 7/10 for students who watched the trailer and 16/40 = 2/5 for those who did not.** Divide each sci-fi count by its row total. The fractions differ by 3/10, which suggests an association.
2. **The fraction is 3/8 larger among online players.** Online: 24/32 = 3/4 came with a friend. Offline: 9/24 = 3/8, so the difference is 3/4 - 3/8 = 3/8.

CHALLENGE

No. Both grades have the same fraction streaming daily: 21/28 = 3/4 and 12/16 = 3/4. The Grade 7 count is larger because more Grade 7 students were surveyed, not because a larger share streams daily.

Accept equivalent fractions or percentages. For association questions, accept wording that compares the correct row or column relative frequencies without claiming cause and effect.