Survey Signal

Sort the results, then defend a claim.

8A.DSP.F.42 "Design and carry out an investigation to determine whether there appears to be an association between two categorical variables, and write a persuasive argument based on the results of the investigation."

NAME _____ DATE _____

ASSOCIATION APPEARS

Compare the fraction who say yes in each group. Rates that are far apart suggest an association, but they do not show that one answer caused the other.

Of 20 students who take the bus, 15 like astronomy. Of 20 who do not take the bus, 5 like astronomy.

NO ASSOCIATION APPEARS

When the yes rates are about the same, the results do not suggest an association between the two answers.

Of 20 students who practice karate, 9 enjoy photography. Of 20 who do not practice karate, 9 enjoy photography.

1 SORT

8 items

Part 1 SORT: Circle DIFFERENT or SIMILAR for each survey; Part 2 PROVE IT: Pick two items from different categories and explain your choices using the yes fractions.

1.	Of 20 students in art club, 16 enjoy board games. Of 20 not in art club, 4 enjoy board games.	DIFFERENT SIMILAR
2.	Of 20 students who own a pet, 10 prefer apples. Of 20 without a pet, 10 prefer apples.	DIFFERENT SIMILAR
3.	Of 20 students who like comic books, 6 enjoy swimming. Of 20 who do not, 6 enjoy swimming.	DIFFERENT SIMILAR
4.	Of 20 students who play soccer, 15 enjoy music class. Of 20 who do not, 5 enjoy music class.	DIFFERENT SIMILAR
5.	Of 20 students who bring a water bottle, 4 like mysteries. Of 20 who do not, 16 like mysteries.	DIFFERENT SIMILAR
6.	Of 20 students who play video games, 12 enjoy baking. Of 20 who do not, 12 enjoy baking.	DIFFERENT SIMILAR
7.	Of 20 students who wear a hat, 17 prefer lemonade. Of 20 who do not, 3 prefer lemonade.	DIFFERENT SIMILAR
8.	Of 20 students who like spicy food, 14 enjoy gardening. Of 20 who do not, 6 enjoy gardening.	DIFFERENT SIMILAR

2 PROVE IT

Explain your thinking

Pick two items from different categories and explain your choices using the yes fractions.

ITEM # _____ **HOW I KNEW** _____

ITEM # _____ **HOW I KNEW** _____

3 MAKE YOUR OWN

One of each

Part 3 MAKE YOUR OWN: Write one new survey result for DIFFERENT and one for SIMILAR, showing the number who said yes and the total in each group.

DIFFERENT _____

SIMILAR _____

CHALLENGE

Survey at least 10 classmates with two yes-or-no questions. Include at least 3 classmates in each group formed by your first question. Compare the yes fractions for your second question, then argue whether an association appears. Explain why your results do not prove cause.

ANSWER KEY # Survey Signal

GRADE 8 · 8A.DSP.F.42

PART 1 · SORT

#	ITEM	CATEGORY	WHY
1	Of 20 students in art club, 16 enjoy board games. Of 20 not in art club, 4 enjoy board games.	**DIFFERENT**	The yes rates are 16/20 and 4/20, a large difference.
2	Of 20 students who own a pet, 10 prefer apples. Of 20 without a pet, 10 prefer apples.	**SIMILAR**	Both yes rates are 10/20.
3	Of 20 students who like comic books, 6 enjoy swimming. Of 20 who do not, 6 enjoy swimming.	**SIMILAR**	Both yes rates are 6/20.
4	Of 20 students who play soccer, 15 enjoy music class. Of 20 who do not, 5 enjoy music class.	**DIFFERENT**	The yes rates are 15/20 and 5/20, a large difference.
5	Of 20 students who bring a water bottle, 4 like mysteries. Of 20 who do not, 16 like mysteries.	**DIFFERENT**	The yes rates are 4/20 and 16/20, a large difference.
6	Of 20 students who play video games, 12 enjoy baking. Of 20 who do not, 12 enjoy baking.	**SIMILAR**	Both yes rates are 12/20.
7	Of 20 students who wear a hat, 17 prefer lemonade. Of 20 who do not, 3 prefer lemonade.	**DIFFERENT**	The yes rates are 17/20 and 3/20, a large difference.
8	Of 20 students who like spicy food, 14 enjoy gardening. Of 20 who do not, 6 enjoy gardening.	**DIFFERENT**	The yes rates are 14/20 and 6/20, a large difference.

PART 2 · PROVE IT

Task: Pick two items from different categories and explain your choices using the yes fractions.
Accept any explanation that names the deciding feature from the rule box for the chosen item.

PART 3 · MAKE YOUR OWN (SAMPLE ANSWERS)

- **DIFFERENT**: Of 20 students who visit the library weekly, 13 enjoy coding. Of 20 who do not, 7 enjoy coding.
- **SIMILAR**: Of 20 students who know sign language, 8 enjoy hiking. Of 20 who do not, 8 enjoy hiking.

Challenge: I asked 10 classmates, "Do you play an instrument?" and "Do you like science?" Of the 5 who play an instrument, 4 like science. Of the 5 who do not, 1 likes science. The yes fractions are 4/5 and 1/5, so these results suggest an association. They do not show that playing an instrument causes someone to like science.

For Part 2, accept any two items from different categories when the student correctly compares their yes fractions. The challenge response should use collected counts as evidence for its claim without claiming cause.