Combine and Compare

Sort the results, prove two choices, then create your own.

8A.DSP.D.40.a "Aggregate data from several groups to find an overall association between two categorical variables."

NAME _____ DATE _____

DIFFERENT OVERALL RATES

Add the successes and totals from both groups for each choice. If the two combined fractions are different, the data show an overall association.

At two aquariums, visitors with maps spotted a shark: 1/4 and 5/6. Visitors without maps spotted a shark: 1/4 and 3/6. The combined rates are 6/10 and 4/10.

SAME OVERALL RATES

Add the successes and totals from both groups for each choice. If the two combined fractions are equal, the data show no overall association.

At two orchards, green baskets held apples: 1/4 and 5/6. Yellow baskets held apples: 2/4 and 4/6. Both combined rates are 6/10.

1 SORT

8 items

In each item, the first fraction is from group 1 and the second is from group 2; combine each choice's fractions, circle DIFFERENT or SAME, then pick one item of each kind and explain your choices using the combined fractions.

1.	Quiz passes: practiced 3/5, 9/15; did not practice 4/10, 4/10.	DIFFERENT	SAME
2.	Library visits: joined a club 4/8, 8/12; did not join 3/6, 4/14.	DIFFERENT	SAME
3.	Books finished: used a bookmark 2/5, 8/15; did not use one 3/10, 7/10.	DIFFERENT	SAME
4.	Team tryouts: attended practice 1/5, 11/15; did not attend 2/10, 6/10.	DIFFERENT	SAME
5.	Flowers grown: watered daily 4/5, 6/15; did not water daily 8/10, 2/10.	DIFFERENT	SAME
6.	Prizes won: chose a puzzle 3/5, 7/15; chose trivia 6/10, 4/10.	DIFFERENT	SAME
7.	Music notes read: took lessons 2/5, 11/15; took no lessons 3/10, 5/10.	DIFFERENT	SAME
8.	Art ribbons earned: used paint 3/5, 8/15; used pencil 4/10, 4/10.	DIFFERENT	SAME

2 PROVE IT

Explain your thinking

Pick one item of each kind and explain your choices using the combined fractions.

ITEM # _____ **HOW I KNEW** _____

ITEM # _____ **HOW I KNEW** _____

3 MAKE YOUR OWN

One of each

Write two new examples with results from two groups: one with DIFFERENT combined rates and one with SAME combined rates.

DIFFERENT

SAME

CHALLENGE

Create results for two groups where choice A has a higher success rate than choice B in each group, but choice A has a lower combined success rate; show all four fractions and both combined rates.

ANSWER KEY

Combine and Compare

GRADE 8 · 8A.DSP.D.40.a

PART 1 · SORT

#	ITEM	CATEGORY	WHY
1	Quiz passes: practiced 3/5, 9/15; did not practice 4/10, 4/10.	**DIFFERENT**	Practiced: 12/20 passed. Did not practice: 8/20 passed.
2	Library visits: joined a club 4/8, 8/12; did not join 3/6, 4/14.	**DIFFERENT**	Joined: 12/20 visited. Did not join: 7/20 visited.
3	Books finished: used a bookmark 2/5, 8/15; did not use one 3/10, 7/10.	**SAME**	Both choices have a combined finish rate of 10/20.
4	Team tryouts: attended practice 1/5, 11/15; did not attend 2/10, 6/10.	**DIFFERENT**	Attended: 12/20 made the team. Did not attend: 8/20 made the team.
5	Flowers grown: watered daily 4/5, 6/15; did not water daily 8/10, 2/10.	**SAME**	Both choices have a combined flower-growing rate of 10/20.
6	Prizes won: chose a puzzle 3/5, 7/15; chose trivia 6/10, 4/10.	**SAME**	Both choices have a combined prize rate of 10/20.
7	Music notes read: took lessons 2/5, 11/15; took no lessons 3/10, 5/10.	**DIFFERENT**	Took lessons: 13/20 read notes. Took no lessons: 8/20 read notes.
8	Art ribbons earned: used paint 3/5, 8/15; used pencil 4/10, 4/10.	**DIFFERENT**	Used paint: 11/20 earned ribbons. Used pencil: 8/20 earned ribbons.

PART 2 · PROVE IT

Task: Pick one item of each kind and explain your choices using the combined 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**: Cooking: used a recipe 3/4, 5/6 made soup; did not use one 2/4, 3/6 made soup. The combined rates are 8/10 and 5/10, so they are DIFFERENT.
- **SAME**: Recycling: signed up 2/4, 4/6 collected a bag; did not sign up 3/6, 3/4 collected a bag. Both combined rates are 6/10, so they are SAME.

Challenge: Group 1: A 3/4, B 5/8. Group 2: A 1/8, B 0/4. A has the higher rate in each group, but the combined rates are A 4/12 and B 5/12.

For Part 2, accept any two items from different categories when the student shows the correct combined fractions and compares them. Different combined rates show an association, but they do not prove that one choice caused the result.