Same or Different?

Compare groups using invented Montana community planning data.

MT.CORE.DATA.INT.7.a "Analyze the relationship between two categorical variables in context. This standard should incorporate cultural context relating to Montana Indigenous Peoples and local communities by: Summarizing categorical data for two categories in..."

NAME _____ DATE _____

SAME RATES

Find the percent of each group that gave the named response. If the percents are equal, these data do not show an association between group and response.

At a farmers market, 6 of 15 bakers select green badges, and 10 of 25 growers select green badges. Both rates are 40%.

DIFFERENT RATES

If the groups have different percents for the named response, these data show an association between group and response. An association does not prove that one variable causes the other.

At a music rehearsal, 3 of 15 drummers prefer the front row, and 15 of 25 singers prefer the front row. The rates are 20% and 60%.

1 SORT

8 items

For each case, compare the percent in each group that gave the named response and circle SAME or DIFFERENT; in Part 2, pick two items and explain each choice using both percents.

1.	1. Montana Indigenous language workshop: 6 of 12 teens choose morning; 9 of 18 adults choose morning.	SAME DIFFERENT
2.	2. Tribal college science fair: 15 of 20 students plan to attend; 12 of 30 neighbors plan to attend.	SAME DIFFERENT
3.	3. Community library reading night: 4 of 16 teens choose a weekday; 18 of 24 adults choose a weekday.	SAME DIFFERENT
4.	4. Indigenous art exhibit planning: 9 of 15 students favor Saturday; 15 of 25 adults favor Saturday.	SAME DIFFERENT
5.	5. Montana tribal youth program: 14 of 20 youth choose a hike; 12 of 40 adults choose a hike.	SAME DIFFERENT
6.	6. Community center game night: 5 of 20 youth request chess; 10 of 40 adults request chess.	SAME DIFFERENT
7.	7. Montana tribal college open house: 8 of 20 students request a campus tour; 21 of 30 neighbors request a campus tour.	SAME DIFFERENT
8.	8. Local heritage event: 24 of 30 students favor afternoon; 4 of 20 adults favor afternoon.	SAME DIFFERENT

2 PROVE IT

Explain your thinking

Pick two items from Part 1. For each one, tell how you knew where it belonged.

ITEM # _____ **HOW I KNEW** _____

ITEM # _____ **HOW I KNEW** _____

3 MAKE YOUR OWN

One of each

Write one new survey case for SAME and one for DIFFERENT, each with two groups and a yes-or-no response; include each group's total and yes count.

SAME

DIFFERENT

CHALLENGE

On separate paper, make a two-way frequency table for item 1 showing morning and not morning for each group, draw a 100% stacked bar graph from the table, and explain what the graph suggests about association.

ANSWER KEY

Same or Different?

HIGH SCHOOL · MT.CORE.DATA.INT.7.a

PART 1 · SORT

#	ITEM	CATEGORY	WHY
1	1. Montana Indigenous language workshop: 6 of 12 teens choose morning; 9 of 18 adults choose morning.	**SAME**	The morning rates are 50% for teens and 50% for adults.
2	2. Tribal college science fair: 15 of 20 students plan to attend; 12 of 30 neighbors plan to attend.	**DIFFERENT**	The attendance rates are 75% for students and 40% for neighbors.
3	3. Community library reading night: 4 of 16 teens choose a weekday; 18 of 24 adults choose a weekday.	**DIFFERENT**	The weekday rates are 25% for teens and 75% for adults.
4	4. Indigenous art exhibit planning: 9 of 15 students favor Saturday; 15 of 25 adults favor Saturday.	**SAME**	The Saturday rates are 60% for students and 60% for adults.
5	5. Montana tribal youth program: 14 of 20 youth choose a hike; 12 of 40 adults choose a hike.	**DIFFERENT**	The hike rates are 70% for youth and 30% for adults.
6	6. Community center game night: 5 of 20 youth request chess; 10 of 40 adults request chess.	**SAME**	The chess rates are 25% for youth and 25% for adults.
7	7. Montana tribal college open house: 8 of 20 students request a campus tour; 21 of 30 neighbors request a campus tour.	**DIFFERENT**	The tour rates are 40% for students and 70% for neighbors.
8	8. Local heritage event: 24 of 30 students favor afternoon; 4 of 20 adults favor afternoon.	**DIFFERENT**	The afternoon rates are 80% for students and 20% for adults.

PART 2 · PROVE IT

Accept any explanation that names the deciding feature from the rule box for the chosen item.

PART 3 · MAKE YOUR OWN (SAMPLE ANSWERS)

- **SAME**: Community garden survey: Would you plant beans? Of 16 volunteers, 4 say yes; of 24 visitors, 6 say yes. Both rates are 25%.
- **DIFFERENT**: School book swap survey: Would you attend on Friday? Of 10 ninth graders, 7 say yes; of 20 tenth graders, 4 say yes. The rates are 70% and 20%.

Challenge: Table entries: teens, 6 morning and 6 not morning; adults, 9 morning and 9 not morning. The column totals are 15 morning and 15 not morning. Each group's bar is 50% morning and 50% not morning, so the data do not show an association.

The survey counts are invented and do not describe actual Montana communities. Accept Part 2 explanations that calculate both within-group percents and compare them, rather than comparing counts alone.