Rates Reveal Links

Fictional Montana school surveys about public events led by Indigenous community partners

MT.CORE.DATA.INT.7.c "Analyze the relationship between two categorical variables in context. This standard should incorporate cultural context relating to Montana Indigenous Peoples and local communities by: Identifying possible associations and trends in..."

NAME _____ DATE _____

POSSIBLE ASSOCIATION

Find the percentage saying yes in each group. Different percentages suggest a possible association between the two answers, but they do not show that one caused the other.

Of 10 bike riders, 8 chose apples. Of 10 nonriders, 3 chose apples. The yes rates are 80% and 30%.

NO ASSOCIATION SHOWN

Find the percentage saying yes in each group. If the percentages match, these data do not show an association between the two answers.

Of 10 library-card holders, 6 chose the bus. Of 20 nonholders, 12 chose the bus. Both yes rates are 60%.

1 SORT

8 items

Circle DIFFERENT or SAME for each fictional survey, then pick two items and explain each choice by comparing the percentages saying yes among attendees and nonattendees.

1.	Public poetry reading, attend another: 12 of 20 attendees said yes; 5 of 20 nonattendees said yes.	DIFFERENT	SAME
2.	Public art exhibit, take an art class: 8 of 20 attendees said yes; 4 of 10 nonattendees said yes.	DIFFERENT	SAME
3.	Public history talk, join a discussion: 9 of 15 attendees said yes; 12 of 20 nonattendees said yes.	DIFFERENT	SAME
4.	Public music performance, volunteer at a future event: 3 of 10 attendees said yes; 10 of 20 nonattendees said yes.	DIFFERENT	SAME
5.	Public book talk, borrow a related book: 14 of 20 attendees said yes; 7 of 20 nonattendees said yes.	DIFFERENT	SAME
6.	Public film screening, attend a follow-up talk: 6 of 10 attendees said yes; 4 of 20 nonattendees said yes.	DIFFERENT	SAME
7.	Public makers' fair, visit the next fair: 15 of 20 attendees said yes; 6 of 8 nonattendees said yes.	DIFFERENT	SAME
8.	Public photography exhibit, join a photo walk: 8 of 20 attendees said yes; 6 of 10 nonattendees said yes.	DIFFERENT	SAME

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 two new fictional survey results about a public event led by local Indigenous community partners: one with DIFFERENT yes rates and one with SAME yes rates. Give the number saying yes and the total in each group.

DIFFERENT

SAME

CHALLENGE

Write a fictional survey in which more attendees than nonattendees say yes, but attendees have a lower yes rate. Give both percentages and name the category.

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PART 1 · SORT

#	ITEM	CATEGORY	WHY
1	Public poetry reading, attend another: 12 of 20 attendees said yes; 5 of 20 nonattendees said yes.	**DIFFERENT**	The yes rates are 60% and 25%.
2	Public art exhibit, take an art class: 8 of 20 attendees said yes; 4 of 10 nonattendees said yes.	**SAME**	Both yes rates are 40%.
3	Public history talk, join a discussion: 9 of 15 attendees said yes; 12 of 20 nonattendees said yes.	**SAME**	Both yes rates are 60%.
4	Public music performance, volunteer at a future event: 3 of 10 attendees said yes; 10 of 20 nonattendees said yes.	**DIFFERENT**	The yes rates are 30% and 50%.
5	Public book talk, borrow a related book: 14 of 20 attendees said yes; 7 of 20 nonattendees said yes.	**DIFFERENT**	The yes rates are 70% and 35%.
6	Public film screening, attend a follow-up talk: 6 of 10 attendees said yes; 4 of 20 nonattendees said yes.	**DIFFERENT**	The yes rates are 60% and 20%.
7	Public makers' fair, visit the next fair: 15 of 20 attendees said yes; 6 of 8 nonattendees said yes.	**SAME**	Both yes rates are 75%.
8	Public photography exhibit, join a photo walk: 8 of 20 attendees said yes; 6 of 10 nonattendees said yes.	**DIFFERENT**	The yes rates are 40% and 60%.

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)

- **DIFFERENT**: Public beadwork exhibit, request another exhibit: 9 of 12 attendees said yes; 3 of 12 nonattendees said yes.
- **SAME**: Public community garden open house, request a plant workshop: 5 of 10 attendees said yes; 10 of 20 nonattendees said yes.

Challenge: Public mural tour, sign up for an art talk: 12 of 40 attendees said yes, and 8 of 20 nonattendees said yes. The rates are 30% and 40%, so the category is DIFFERENT.

For Part 2, accept any two items explained with accurate percentages for both groups. Different observed rates suggest a possible association, not causation or a claim about real communities.