# Spot the Pattern

Compare response shares in segmented bars.

**A1P.DSP.D** "The association between two categorical variables is typically represented by using two-way tables and segmented bar graphs."

NAME _____ DATE _____

## SAME SHARE

Compare the shaded share of the top bar with the shaded share of the bottom bar. Equal shares suggest no association between the two categorical variables in these data, even if the bars have different numbers of parts.

At a library, the top bar represents teens and the bottom bar represents adults. Shading means "borrowed a novel: yes." Both bars show a yes share of 1/3.



## DIFFERENT SHARES

If the shaded shares differ, the response varies by group. This suggests an association between the two categorical variables in these data, but it does not show that one causes the other.

At a pool, the top bar represents weekday visitors and the bottom bar represents weekend visitors. Shading means "used the diving board: yes." The yes shares are 4/6 and 3/9.



## 1 SORT

8 items

In each figure, the top bar represents bus riders, the bottom bar represents non-bus riders, and each shaded part represents a student who answered yes to "Would you join a school study group?", so circle SAME or DIFFERENT after comparing the shaded shares.

**1.**

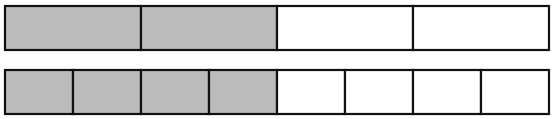


Figure 1

SAME DIFFERENT

**2.**

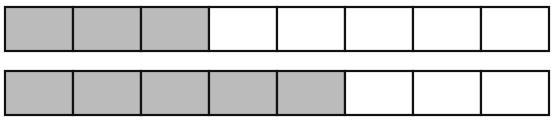


Figure 2

SAME DIFFERENT

**3.**



Figure 3

**SAME** **DIFFERENT**

**4.**

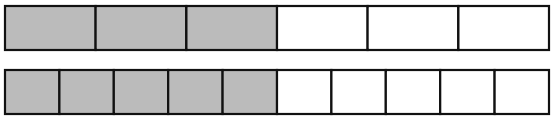


Figure 4

**SAME** **DIFFERENT**

**5.**

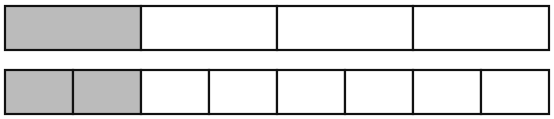


Figure 5

**SAME** **DIFFERENT**

**6.**



Figure 6

**SAME** **DIFFERENT**

**7.**



Figure 7

**SAME** **DIFFERENT**

**8.**

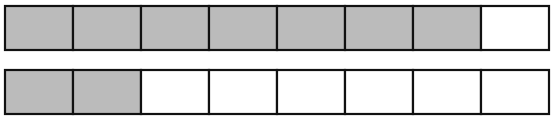


Figure 8

**SAME** **DIFFERENT**

## 2 PROVE IT

Explain your thinking

Choose one figure from each category and explain your choices using fractions.

**ITEM #** _____ **HOW I KNEW** _____

**ITEM #** _____ **HOW I KNEW** _____

## 3 MAKE YOUR OWN

One of each

For each category, describe a new pair of bars by giving the number of yes responses and the total for bus riders and non-bus riders; state what the shares suggest about association.

**SAME**

**DIFFERENT**

**CHALLENGE**

Figure 2 shows responses from only eight students in each group. Explain why a larger survey might show different shares, and whether Figure 2 proves that bus riding causes interest in the study group.

**ANSWER KEY** # Spot the Pattern



## PART 1 · SORT

| # | ITEM | CATEGORY | WHY |
|---|---|---|---|
| 1 | Figure 1 (fractionbars) | **SAME** | The yes shares are 2/4 and 4/8, both 1/2. |
| 2 | Figure 2 (fractionbars) | **DIFFERENT** | The yes shares are 3/8 and 5/8. |
| 3 | Figure 3 (fractionbars) | **DIFFERENT** | The yes shares are 6/10 and 3/10. |
| 4 | Figure 4 (fractionbars) | **SAME** | The yes shares are 3/6 and 5/10, both 1/2. |
| 5 | Figure 5 (fractionbars) | **SAME** | The yes shares are 1/4 and 2/8, both 1/4. |
| 6 | Figure 6 (fractionbars) | **DIFFERENT** | The yes shares are 4/12 and 9/12. |
| 7 | Figure 7 (fractionbars) | **DIFFERENT** | The yes shares are 1/5 and 4/10. |
| 8 | Figure 8 (fractionbars) | **DIFFERENT** | The yes shares are 7/8 and 2/8. |

## PART 2 · PROVE IT

**Task:** Choose one figure from each category and explain your choices using fractions.
Accept any explanation that names the deciding feature from the rule box for the chosen item.

## PART 3 · MAKE YOUR OWN (SAMPLE ANSWERS)

- **SAME**: Bus riders have 6 of 12 yes responses, and non-bus riders have 4 of 8. Both shares are 1/2, so these data do not suggest an association.
- **DIFFERENT**: Bus riders have 2 of 10 yes responses, and non-bus riders have 6 of 10. The shares differ, so these data suggest an association.

**Challenge:** Figure 2 shows 3 of 8 bus riders and 5 of 8 non-bus riders answering yes. A larger survey might have different shares, and this association does not prove that bus riding causes interest.

Accept equivalent fractions and explanations that compare the yes shares within each group. For Part 2, a valid explanation names two figures from different categories and gives both shares for each.