8.SP.4 Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects.

Rudy surveyed 80 people about whether they prefer blueberry or cherry pie and if they like ice cream with their pie. The results are shown in the table below.

Pie and Ice-Cream Preferences

	Blueberry Pie	Cherry Pie
With Ice Cream	29	24
Without Ice Cream	15	12

What conclusion can be made based on the results?

A. About 1/3 prefer pie without ice cream
B. There are twice as many people who prefer blueberry pie to cherry pie
C. Fewer prefer cherry pie with ice cream than blueberry pie without ice cream
D. The ratio of people who prefer blueberry pie to cherry pie is equal to the ratio who prefer pie with ice cream to those who prefer pie without ice cream.

The table below shows the results of a survey of where middle school students like to eat lunch.

FAVORITE PLACE TO EAT LUNCH

	Cafeteria	Outside	Total
Boys	16	21	37
Girls	24	14	38
Total	40	35	75

How many total students were surveyed?

A. 40
B. 35
C. 75
D. 37

The table below shows the results of a survey of where middle school students like to eat lunch.

FAVORITE PLACE TO EAT LUNCH

	Cafeteria	Outside	Total
Boys	16	21	37
Girls	24	14	38
Total	40	35	75

Which expression represents the relative frequency of the number of boys who prefer to eat in the cafeteria?

A. (16/21) x 100
B. (16/40) x 100
C. (16/37) x 100
D. (16/75) x 100

A group of 50 students were surveyed. The results are displayed in the table below.

	Owns a Bicycle	Does Not Own a Bicycle
Plays Sports	?	5
Does Not Play Sports	3	18

How many students play sports and own a bicycle?

A. 26
B. 5
C. 24
D. 18

Plainview High School mailed a survey to the students who graduated the previous year. The survey asked the students whether or not they are enrolled in a college. The results of the students who returned the survey are listed below:

- There are 254 students
- 172 of the students are female
- 48 of the males are enrolled in college
- 124 of the females are enrolled in college.

Survey Results

	Male	Female	Total
Enrolled in College			
Not Enrolled in College			
Total			

Part A: Complete the two-way table based on the given data.

Part B: Calculate the relative frequency of all the females surveyed who have enrolled in college and the relative frequency of all the males surveyed who have enrolled in college. Explain your answers.

Should the average of the two relative frequencies you found be equal to the relative frequency of all the students surveyed who have enrolled in college? Explain why or why not.