Family Support Materials

Two-variable Statistics

In this unit, students learn about **two-way tables** and use them to determine if two categories have an association. For example, would you predict that a forecast of rain over a school is associated with the number of students wearing rain boots? What association do you think the rain has with students' eye colors?

It is possible for two things to have no association, as you may have guessed for rain and students' eye colors. With your student, make predictions about associations found in daily life. For example, do these pairs share an association?

- length of time a plant spends in sunlight and its growth
- the size of a car and the amount of gas it takes to be full
- number of open apps on your mobile phone and battery percentage

What other associations can you think of together?

Students can use tables and collected data to determine if two things are associated. One type of table is a **two-way table**, which organizes two categorical variables. A **categorical variable** is a variable that takes on values which can be divided into groups or categories. For example, color is a categorical variable which can take on values like red, blue, or green. In the table, you may notice that it has a total of four categories, but only two categorical variables (hand dominance and fruit preference).

With your student, examine the data collected from 1,914 other students.

	prefer mangoes	prefer pineapples	total
left-handed	50	66	
right-handed	826	972	
total			1,914

1. Predict if there is an association between hand dominance and fruit preference.
2. Complete the table with the totals for each column and row.

3. Among the students who are left-handed, the proportion who prefer pineapples is about 0.57, since $66 \div 116 = 0.57$. This means that about 57% of students in this group who are left-handed prefer pineapples over mangoes. What proportion of those who are left-handed prefer mangoes?

4. What proportion of those who are right-handed prefer mangoes?

5. Is there a significant difference between the proportion of left-handed students who prefer mangoes and the proportion of right-handed students who prefer mangoes?

6. Was your prediction accurate? Is there an association between hand dominance and fruit preference?

Solution

1. Sample response: I think there shouldn't be any association between hand dominance and fruit preference, since neither should influence the other.

2.

	prefer mangoes	prefer pineapples	total
left-handed	50	66	116
right-handed	826	972	1,798
total	876	1,038	1,914

3. 0.43, because $50 \div 116 = 0.43$ or $1 - 0.57 = 0.43$

4. 0.46, because $826 \div 1,798 = 0.46$

5. No, there is no significant difference between left-handed students who prefer mangoes and right-handed students who prefer mangoes, because 0.43 and 0.46 are close in value.

6. Sample response: I predicted there would be no association, and I think that the math supports my prediction. No, there is no association between hand dominance and fruit preference.

Video Lesson Summaries

Here are the video lesson summaries for Algebra 1, Unit 3: Two-Variable Statistics. Each video highlights key concepts and vocabulary that students learn across one or more lessons in the unit. The content of these video lesson summaries is based on the written Lesson Summaries found at the end of lessons in the curriculum. The goal of these videos is to support students in reviewing and checking their understanding of important concepts and vocabulary. Here are some possible ways families can use these videos:

- Keep informed on concepts and vocabulary students are learning about in class.
- Watch with their student and pause at key points to predict what comes next or think up other examples of vocabulary terms (the bolded words).
- Consider following the Connecting to Other Units links to review the math concepts that led up to this unit or to preview where the concepts in this unit lead to in future units.

Algebra 1, Unit 3: Two-Variable Statistics	Vimeo	YouTube
Video 1: Two-Way Tables (Lessons 1–3)	Link	Link
Video 2: Scatter Plots (Lessons 4–6)	Link	Link
Video 3: Correlation Coefficients (Lessons 7–9)	Link	Link

Video 1

Video 'VLS Alg1U3V1 Two-Way Tables (Lessons 1–3)' available here: https://player.vimeo.com/video/461873337.

Video 2

Video 'VLS Alg1U3V2 Scatter Plots (Lessons 4–6)' available here: https://player.vimeo.com/video/463695012.

Video 3

Video 'VLS Alg1U3V3 Correlation Coefficients (Lessons 7–9)' available here: https://player.vimeo.com/video/466358466.