Family Support Materials

Associations in Data

Here are the video lesson summaries for Grade 8, Unit 6: Associations in Data. 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.

Grade 8, Unit 6: Associations in Data	Vimeo	YouTube
Video 1: Using Scatter Plots to Visualize Data (Lessons 1–3)	Link	Link
Video 2: Using Lines to Model Data (Lesson 4–8)	Link	Link
Video 3: Associations in Categorical Data (Lessons 9–10)	Link	Link

Video 1

Video 'VLS G8U6V1 Using scatter plots to visualize data (Lessons 1–3)' available here: https://player.vimeo.com/video/500190466.

Video 2

Video 'VLS G8U6V2 Using Lines to Model Data (Lesson 4–8)' available here: https://player.vimeo.com/video/502223668.

Video 3

Video 'VLS G8U6V3 Associations in Categorical Data (Lessons 9–10)' available here: https://player.vimeo.com/video/507557063.

Does This Predict That?

Family Support Materials 1

This week your student will work with **scatter plots**. Scatter plots show us how two different variables are related. In the example below, each plotted point corresponds to a dog, and its coordinates tell us the height and weight of that dog. The point on the lower left of the graph, for example, might represent a dog that is 8 inches tall and weighs about 5 pounds. The plot shows that, generally speaking, taller dogs weigh more than shorter dogs.
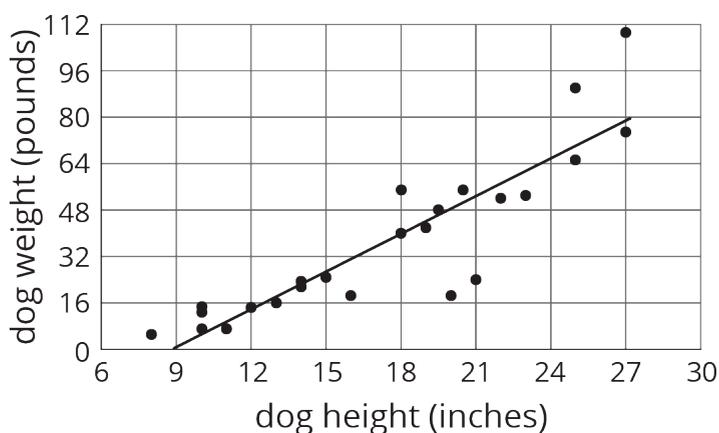
Since a larger value for one characteristic (height) generally means a larger value for the other characteristic (weight), we say that there is a **positive association** between dog height and dog weight.

In the next example, each point corresponds to a car, and its coordinates tell us the weight and fuel efficiency of the car.
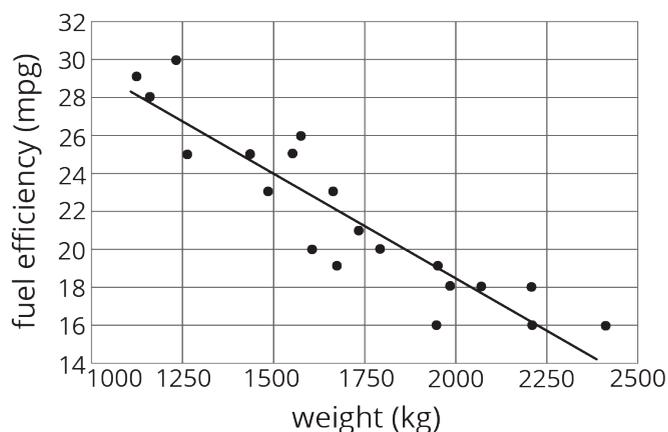
This time, we see that larger values for one characteristic (car weight) generally have lower values for the other characteristic (fuel efficiency), and so we say that there is a **negative association** between car weight and fuel efficiency.

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Here is a task to try with your student:

The following scatter plot shows the relationship between average temperature and gas usage in a buildings.
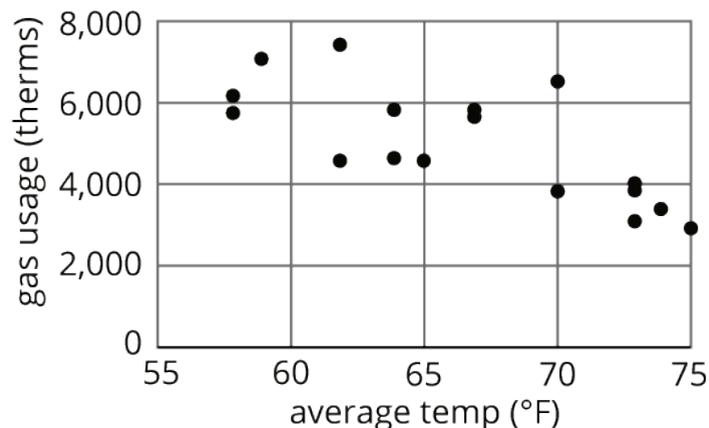
1. How many points in the graph describe the building on 70-degree days? Approximately how much gas was used on each of these days?

2. Do the variables in the gas usage for a building scatter plot show a positive association or a negative association?

3. On a 78-degree day, would the building be most likely to use (a) 1,800 therms of gas, (b) 4,200 therms of gas, or (c) 5,800 terms of gas?

Solution:

1. There are two points that describe gas usage for 70-degree days. On one of those days, the building used a little less than 4,000 therms of gas. On the other, the building used a little more than 6,000 therms.

2. Since less gas is used on warmer days, there is a negative association.

3. Following the trend in the graph, the building would likely use about 1,800 therms on a 78-degree day. You may draw in a line as in the dog and car scatter plots to help see this.

Associations in Categorical Data

Family Support Materials 2

This week your student will use two-way tables. Two-way tables are a way of comparing two variables. For example, this table shows the results of a study of the relation between meditation and state of mind of athletes before a track meet.

	meditated	did not meditate	total
calm	45	8	53
agitated	23	21	44
total	68	29	97

23 of the people who meditated were agitated, while 21 of the people who did not meditate were agitated. Does this mean that meditation has no impact or even a slight negative association with mood? Probably not. When we look for associations between variables it can be more informative to know the percentages in each category, like this:

	meditated	did not meditate
calm	66%	28%
agitated	34%	72%
total	100%	100%

Of the people who meditated, 66% were calm, and 34% were agitated. When we compare that to the percentages for people who did not meditate, we can now see more easily that the group of people who meditated has a lower percentage of athletes who are agitated. The percentages in this table are called **relative frequencies**.

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Here is a task to try with your student:

The following table contains data about whether people in various age groups use their cell phone as their main alarm clock.

	use cell phone as alarm	do not use cell phone as alarm	total
18 to 29 years old	47	16	63
30 to 49 years old	66	23	87
50+ years old	31	39	70
total	144	78	220

1. Fill in the blanks in the table below with the relative frequencies for each row. These will tell us the percentage of people in each age group who use their phone as an alarm.

	use cell phone as alarm	do not use cell phone as alarm	total
18 to 29 years old	75%, since $\frac{47}{63} = 0.75$		100%
30 to 49 years old			
50+ years old			

2. Comparing just the 18 to 29 year olds and the 30 to 49 year olds, is there an association between cell phone alarm use and age?

3. Comparing the two youngest age brackets with the 50+ age bracket, is there an association between cell phone alarm use and age?

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Solution:

1.

	use cell phone as alarm	do not use cell phone as alarm	total
18 to 29 years old	75%, since $\frac{47}{63} = 0.75$	25%, since $\frac{16}{63} = 0.25$	100%
30 to 49 years old	76%, since $\frac{66}{87} = 0.76$	24%, since $\frac{23}{87} = 0.24$	100%
50+ years old	44%, since $\frac{31}{70} = 0.44$	56%, since $\frac{39}{70} = 0.56$	100%

2. No: the relative frequencies are very similar.

3. Yes: using a cell phone as an alarm is associated with being in the younger age brackets. About 75% of 18 to 29 and 30 to 49-year olds use their cell phone as an alarm, but only 44% of people 50 years or older do.

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