Unit 6, Lesson 2: Plotting Data

Let's collect and display some data about the class.

2.1: Representing Data

Lin surveyed 30 students about the longest time they had ever run. Andre asked them about their favorite color. How could Lin and Andre represent their data sets? Would they represent them in the same way? Why or why not?

2.2: Gathering Data

Are older students always taller? Do taller students tend to have bigger hands? To investigate these questions, the class will gather data.

- A person's *arm span* is the distance between the tips of their index fingers, when their arms are fully spread out.
- A person's *hand span* is the distance from the tip of their thumb to the tip of their little finger, when their fingers are fully spread out.

1. Each partner should:

   ○ Measure the other partner's height, arm span, and hand span for their right hand to the nearest centimeter.

   ○ Record the other partner's measurements and age (in months) in the table.

	height (cm)	arm span (cm)	hand span (cm)	age (months)
partner A				
partner B				

NAME   DATE   PERIOD

2. One partner records the data from your table in a table of data for the entire class.

2.3: Scatter Plots

1. What types of graphical representations could be used to show the class's height measurements? Make a graphical representation of the class's height measurements.

2. Choose a color and use it to plot a point on the coordinate plane that represents your own height and hand span. Then, in the same color, plot a second point that represents your partner's height and hand span.
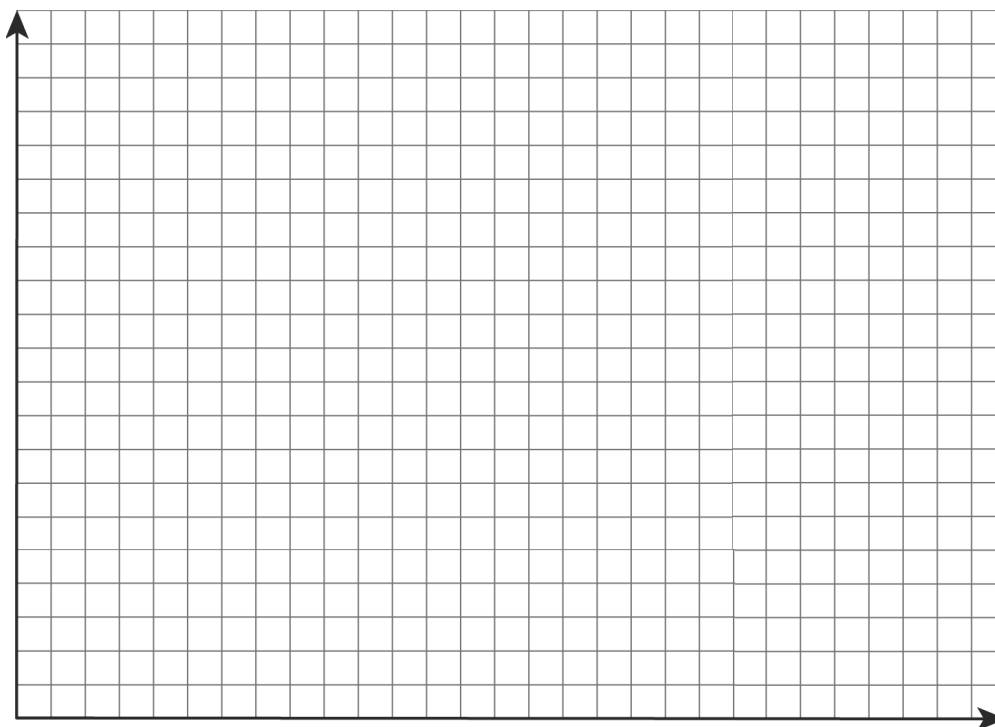
3. In a different color, plot the height and hand span of each student in your class, making a scatter plot of the heights and hand spans for the entire class.
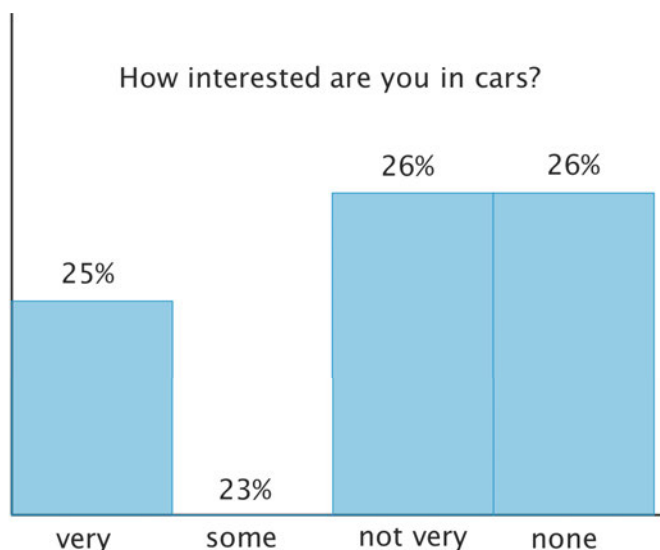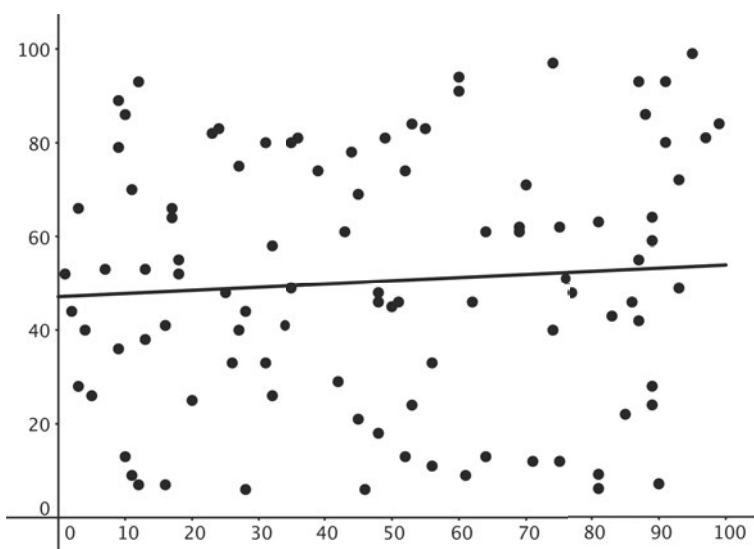
NAME   DATE   PERIOD

4. Based on your scatter plot, answer these questions:

a. Do taller students in your class tend to have bigger hands? Explain how you know.

b. Is hand span a linear function of height? Explain how you know.

Are you ready for more?

Although the data may be accurate, displaying the data incorrectly can tell the wrong story. What is wrong with each of these graphic representations of the data?
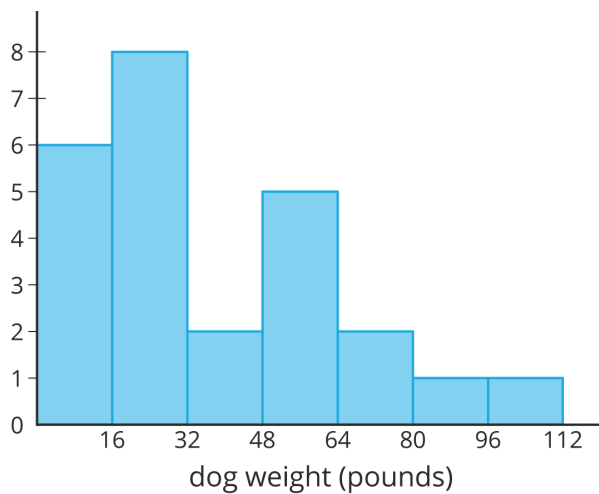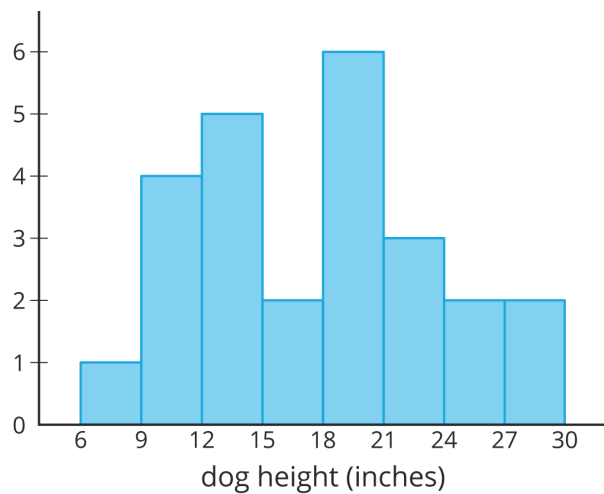
Lesson 2 Summary

Histograms show us how measurements of a single attribute are distributed. For example, a veterinarian saw 25 dogs in her clinic one week. She measured the height and weight of each dog.

This histogram shows how the weights of the dogs are distributed.

This histogram shows how the heights of the dogs are distributed.

These histograms tell us how the weights of the dogs and how the heights of dogs were distributed. But, they do not give any evidence of a connection between a dog's height and its weight.

Scatter plots allow us to investigate possible connections between two attributes. In this example, each plotted point corresponds to one of the 25 dogs, and its coordinates tell us the height and weight of that dog. Examination of the scatter plot allows us to see a connection between height and weight for the dogs.
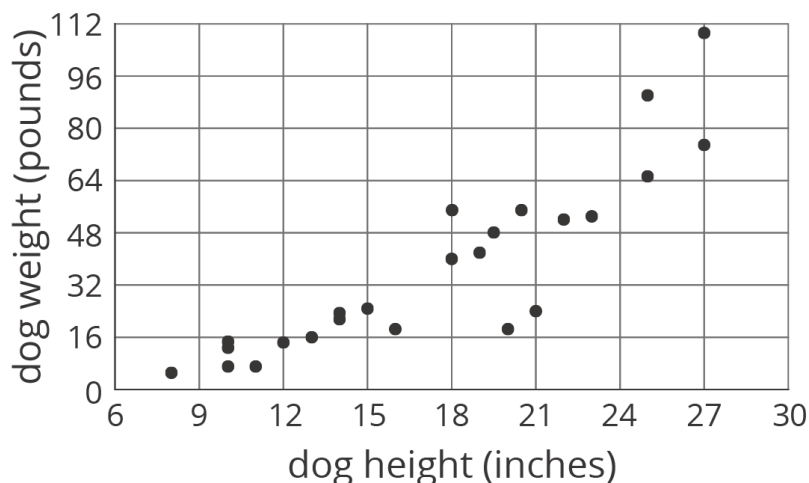
NAME _____ DATE _____ PERIOD _____

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1. In hockey, a player gets credited with a "point" in their statistics when they get an assist or goal. The table shows the number of assists and number of points for 15 hockey players after a season.

assists	points
22	28
16	18
46	72
19	29
13	26
9	13
16	22
8	18
12	13
12	17
37	50
7	12
17	34
27	58
18	34

Make a scatter plot of this data. Make sure to scale and label the axes.

2. Select **all** the representations that are appropriate for comparing bite strength to weight for different

carnivores.

    A. Histogram
    B. Scatter plot
    C. Dot plot
    D. Table
    E. Box plot

3. When is it better to use a table? When is it better to use a scatter plot?

4. There are many cylinders with radius 6 meters. Let h represent the height in meters and V represent the volume in cubic meters.

    a. Write an equation that represents the volume V as a function of the height h.

    b. Sketch the graph of the function, using 3.14 as an approximation for π.

    c. If you double the height of a cylinder, what happens to the volume? Explain this using the equation.

    d. If you multiply the height of a cylinder by $\frac{1}{3}$, what happens to the volume? Explain this using the graph.

    (from Unit 5, Lesson 17)