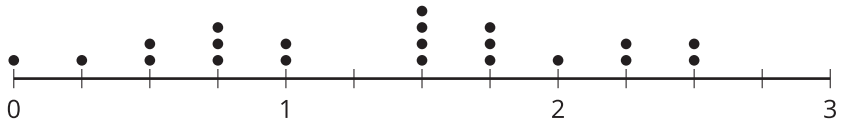
Unit 8, Lesson 1

Representing Data

Let's explore different kinds of data.

1.1 Dots of Data

Here is a **dot plot** for a data set.



1. Determine if each of these would be an appropriate label to represent the data in the dot plot? Be prepared to explain your reasoning.
   a. Number of children per class.
   b. Distance between home and school, in miles.
   c. Favorite subject in school.
   d. Weight of elephants, in pounds.
   e. Points received on a homework assignment.
2. Think of another label that can be used with the dot plot.
   a. Write it below the scale of the dot plot. Be sure to include the unit of measurement.
   b. In your scenario, what does one dot represent?
   c. In your scenario, what would a data point of 0 mean? What would a data point of $3\frac{1}{4}$ mean?

1.2 What's in the Data?

Ten sixth-grade students at a school were each asked five survey questions. Their answers to each question are shown here.

Data Set A	0	1	1	3	0	0	0	2	1	1
Data Set B	12	12	12	12	12	12	12	12	12	12
Data Set C	6	5	7	6	4	5	3	4	6	8
Data Set D	6	6	6	6	6	6	6	6	6	6
Data Set E	3	7	9	11	6	4	2	16	6	10

1. Here are the five survey questions. Match each question to a data set that could represent the students' answers. Explain your reasoning.
    - Question 1: Flip a coin 10 times. How many heads did you get?
    - Question 2: How many books did you read in the last year?
    - Question 3: What grade are you in?
    - Question 4: How many dogs and cats do you have?
    - Question 5: How many inches are in 1 foot?

2. How are survey Questions 3 and 5 different from the other questions?

1.3 Been There, Done That!

Priya wants to know if basketball players on 2 teams have had prior experience in international competitions. She gathers data on the number of times the players were on a team before 2016.

Team 1

3 0 0 0 0 1 0 0 0 0 0 0

Team 2

2 3 3 1 0 2 0 1 1 0 3 1

1. Did Priya collect categorical or numerical data?

2. Organize the information on the two basketball teams into these tables.

Team 1

number of prior competitions	frequency (number)
0	
1	
2	
3	
4	

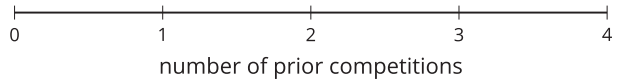
Team 2

number of prior competitions	frequency (number)
0	
1	
2	
3	
4	

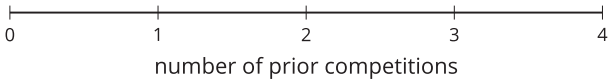
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3. Make a dot plot for each table.

Team 1



Team 2



4. Study your dot plots. What do they tell you about the competition participation of:

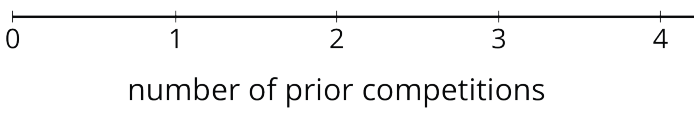
   a. The players on team 1?

   b. The players on team 2?

5. Explain why a dot plot is an appropriate representation for Priya's data.

Are you ready for more?

Combine the data for the players on both teams and represent it as a single dot plot. What can you say about the repeat participation of the basketball players?

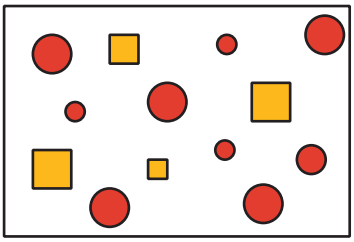


Lesson 1 Summary

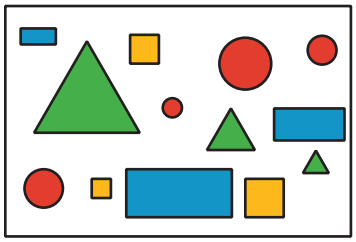
We often collect data to answer questions about something. The data we collect may show **variability**, which means the data values are not all the same.

Some data sets have more variability than others. Here are two sets of figures.

A



B



Set A has more figures with the same shape, color, or size. Set B shows more figures with different shapes, colors, or sizes, so Set B has greater variability than Set A.

When a question can be answered only by using data, and we expect that data to have variability, we call it a **statistical question**. Here are some examples.

- Who is the most popular musical artist at your school?
- When do students in your class typically eat dinner?
- Which classroom in your school has the most books?
- How much do the dogs at a pet adoption center weigh?

The table contains data about 10 dogs.

- The weights of the dogs are an example of **numerical data**, which are data that are numbers, quantities, or measurements. The weights of the dogs are measurements in kilograms.
- The dog breeds are an example of **categorical data**, which are data containing values that can be sorted into categories. In this case, there are three categories for dog breeds: pug, beagle, and German shepherd.

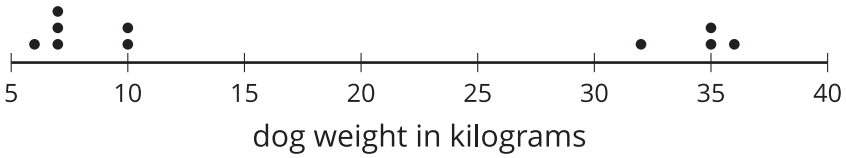
dog name	weight (kg)	breed
Duke	36	German shepherd
Coco	6	pug
Pierre	7	pug
Ginger	35	German shepherd
Lucky	10	beagle
Daisy	10	beagle
Buster	35	German shepherd
Pepper	7	pug
Rocky	7	beagle
Lady	32	German shepherd

When we analyze data, we are often interested in the **distribution**, which is information that shows all the data values and how often they occur. We can see the distribution of the dog weights in a table such as this one.

weight in kilograms	frequency
6	1
7	3
10	2
32	1
35	2
36	1

The term **frequency** refers to the number of times a data value occurs. In this case, we see that there are 3 dogs that weigh 7 kilograms, so 3 is the frequency for the value "7 kilograms."

Like a frequency table, a **dot plot** also shows the distribution of a data set. This dot plot shows the distribution of dog weights.



A dot plot uses a horizontal number line. We show the frequency of a value by the number of dots drawn above that value. Here, the two dots above the number 35 tell us that there are two dogs that weigh 35 kilograms.