

## Explore It!



ACTIVITY

The students in a sixth-grade class recorded the number of letters in their first and last names combined.



Justine Marcello (15)

Number of Letters in  
Sixth-Grade Students' Names



15, 11, 14, 8, 10, 15, 17, 16, 19, 12,  
13, 12, 14, 15, 11, 16, 9, 12, 13, 10



## Lesson 8-4

### Display Data in Frequency Tables and Histograms



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#### I can...

make and analyze frequency tables and histograms.



MAFS.6.SP.2.4 Display numerical data in plots on a number line, including... histograms...

Also 6.SP.2.5a

MAFS.K12.MP.2.1, MP.4.1, MP.6.1, MP.7.1, MP.8.1

A. How can the data be organized? Describe one way to organize the data.

B. Describe another way to organize the data.

C. Compare the two ways. What do you notice about the data in each way?

### Focus on math practices

**Generalize** What generalization can you make about the data set?

**EXAMPLE 1**



**Make a Frequency Table and a Histogram**

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Mr. Maxwell timed the cross-country team in a 2-mile run and recorded the times in the table shown. He wants to analyze the runners' times. What is one way that Mr. Maxwell can organize the data?

Team Times					
16:45	14:25	18:40	16:03	15:12	19:15
17:14	14:02	16:52	15:18	17:49	17:55

A **frequency table** shows the number of times a value occurs in each category or interval.

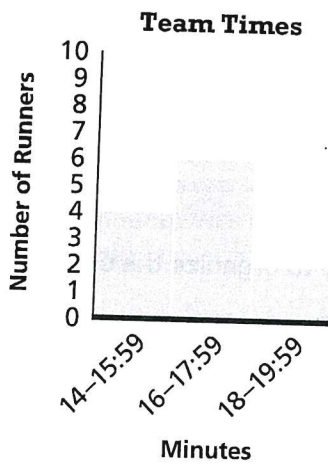
Running Times	Tally	Frequency
14:00–15:59		4
16:00–17:59		6
18:00–19:59		2

Mr. Maxwell can set up time intervals for the data, and then count the number, or frequency, of times for each interval.

Then he can use the frequency table to make a histogram.

Display the data by drawing a bar for each interval.

**Look for Relationships** How is a histogram similar to and different from a bar graph?

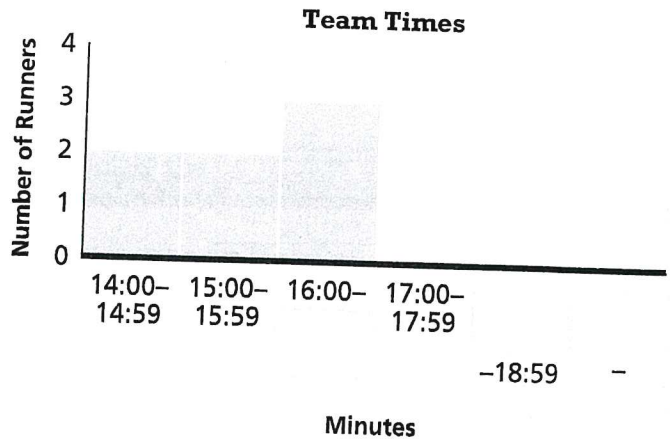


A **histogram** is a graph that uses bars to show the number of values in each category or interval.

The bars of a histogram always touch.

**Try It!**

This histogram shows a different way to represent Mr. Maxwell's data. Fill in the boxes with appropriate times and shade the bars for the last three intervals. How have the intervals changed?



**Convince Me!** How is the analysis of the information displayed different between the two histograms?

## EXAMPLE 2



### Use a Frequency Table to Solve Problems



ACTIVITY



ASSESS

Zack surveys a group of middle school students and asks them how many texts they sent yesterday. The table shows the results.

- a. Is the greatest number of texts sent between 60 and 79?

The greatest frequency is 11, which corresponds to students who sent 60–79 texts. However, the greatest number of texts sent is between 80 and 99.

- b. Is the lowest number of texts sent between 20 and 39?

The lowest frequency is 4, which corresponds to students who sent 20–39 texts. However, the lowest number of texts sent is between 0 and 19.

Number of Texts	Tally	Frequency
0–19		5
20–39		4
40–59		10
60–79		11
80–99		8



### Try It!

How many students sent between 20 and 59 texts?

## EXAMPLE 3



### Use a Histogram to Solve Problems

The histogram shows the number of points that Kendra scored during each basketball game she played last season.

- a. How many games did Kendra play last season?

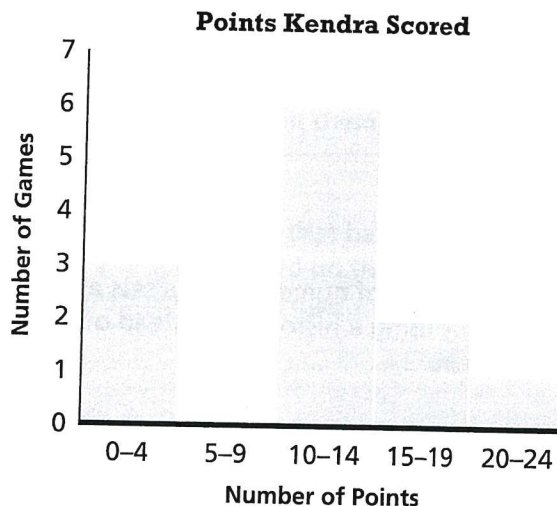
The total number of games can be found by adding the number of games shown by each bar.

$$3 + 0 + 6 + 2 + 1 = 12$$

Kendra played 12 games.

- b. In how many games did Kendra score from 5 to 9 points?

There is no bar on the histogram for 5–9 points. Kendra did not score 5–9 points in any games last season.



### Try It!

Does the histogram show the mode of the number of points Kendra scored in the games? Explain.





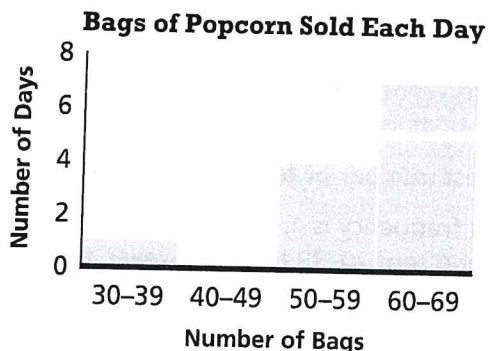
Data displays can be used to help make sense of data.

**Bags of Popcorn Sold Each Day**

62, 65, 58, 31, 64, 58, 66, 68, 56, 67, 68, 51

You can organize data in a frequency table.

Bags	Tally	Frequency
30-39		1
40-49		0
50-59		4
60-69		7



You can use a frequency table to make a histogram.

**Do You Understand?**

1. **Essential Question** How can a frequency table or histogram help you organize and analyze data?

2. How is a histogram different from a bar graph?

3. What types of numerical data sets are easier to display using a histogram instead of a dot plot? Explain.

4. **Reasoning** How are frequency tables and histograms alike and how are they different?

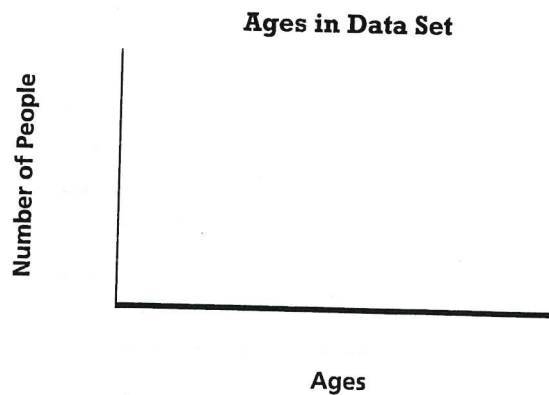
**Do You Know How?**

5. A data set contains ages ranging from 6 to 27.

6, 11, 9, 13, 18, 15, 21, 15, 17, 24, 27, 12

Complete the frequency table and histogram.

Ages	Tally	Frequency
6-10		
11-15		
16-20		
21-25		
26-30		



Name: \_\_\_\_\_



PRACTICE



TUTORIAL

# Practice & Problem Solving



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Leveled Practice In 6–11, use the data in the chart.

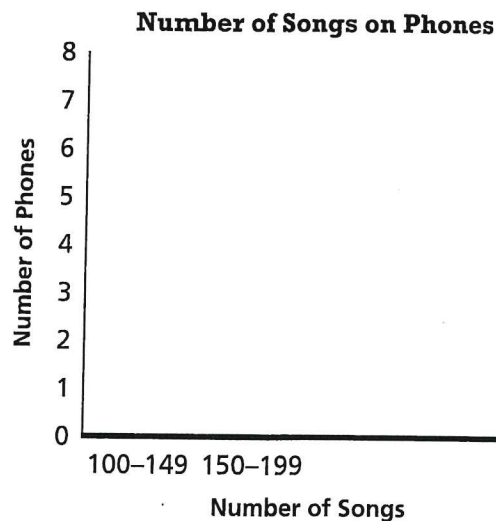
## Number of Songs on Phones

125, 289, 115, 203, 192, 178, 256,  
248, 165, 233, 147, 209, 225,  
184, 156, 201, 143, 125, 263, 210

6. Complete the frequency table below for the number of songs stored on phones.

Song Range	Tally	Frequency
100–149		
150–199		
200–		
–		

7. Use your frequency table to complete the histogram.

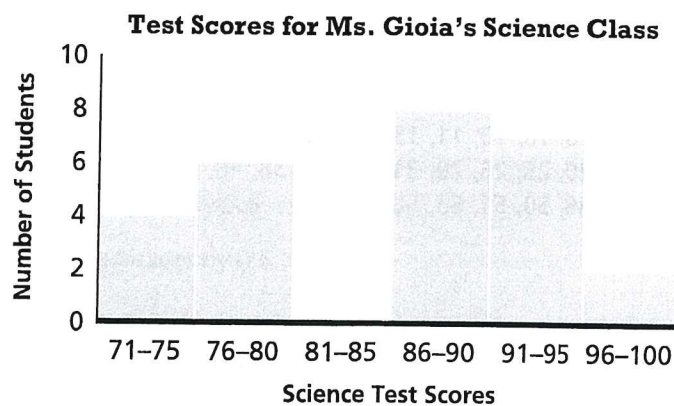


8. How many people have between 150 and 199 songs stored on their phones?
10. Is the greatest number of songs stored on phones between 200 and 249 songs?

9. Do more than half of the phones have fewer than 149 songs stored on them?
11. Are there more phones that have between 200 and 249 songs stored on them than have between 150 and 199 songs?

In 12–14, use the data in the histogram.

12. How many students in Ms. Gioia's class took the science test?
13. How many more students had scores that were 80 or lower than had scores that were higher than 90?
14. **Be Precise** Can you tell from the histogram how many students scored 83 on the test? Explain.



In 15–17, use the data in the chart.

**Bicycle Stopping Times (in seconds)**

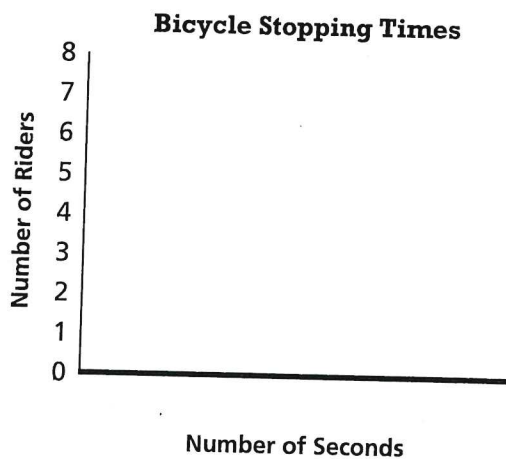
15, 25, 11, 8, 10, 21, 18, 23, 19, 9,  
14, 16, 24, 18, 10, 16, 24, 18, 9, 14

15. **Reasoning** Todd wants to know how many people took 20 seconds or more to stop a bike safely. Would a frequency table or a histogram be the better way to show this? Explain.

16. **Higher Order Thinking** When organizing the data, what interval should Todd use? Explain.

17. **Model with Math** Make a frequency table and histogram for the data.

Time (in seconds)	Tally	Frequency
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**Assessment Practice**

18. Use the data given to complete the histogram.

Lissa recorded the time, in minutes, it took her to complete her homework each night for one month. 6.SP.2.4

5, 7, 8, 10, 10, 11, 13, 14, 15, 15, 18, 19,  
20, 20, 25, 26, 29, 31, 33, 35, 38, 40, 40,  
42, 48, 50, 51, 55, 58, 71

