Objective

Present data in both a histogram and a circle graph.

Common Core State Standards

- **6.SP.4** Display numerical data in plots on a number line, including dot plots, histograms, and box plots.
- **6.SP.5a** Summarize numerical data sets in relation to their context, such as by reporting the number of observations.

Statistics and Probability

Graphical Representation: Histograms and Circle Graphs

Students have already worked with numerous bar graphs, histograms, and circle graphs in their previous study of mathematics, science, and social studies. It is important for them to understand how circle graphs are created. In this activity, the creation of a circle graph is directly related to a histogram that presents the same data.

Try It! *Perform the Try It! activity on the next page.*

Talk About It

Discuss the Try It! activity.

- **Ask:** *What does each cube in the histogram represent?*
- **Ask:** *What can you say about the heights of the people at the picnic?*
- **Ask:** *Which graph do you find easier to read? Explain.*

Solve It

Reread the problem with students. Have them create a histogram from the data given. When they have finished, ask them to create a circle graph using the same data.

More Ideas

For another way to teach about histograms and circle graphs—

- Have students repeat the activity by collecting data regarding each student's shoe size. Ask students to create a histogram, using a range of two whole shoe sizes. Have them convert their histograms to circle graphs.

Formative Assessment

Have students try the following problem.

Favorite Color	Red	Green	Blue	Yellow	Orange	Purple
Number of Votes	10	30	20	10	10	20

Which graph represents the data above?

A. B. C. D.
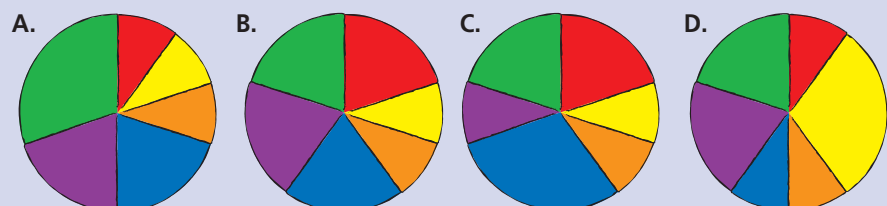
Try It! 30 minutes | Groups of 4

Here is a problem about representing data in histograms and circle graphs.

Merlene collected data about the heights of the people at a father-daughter picnic. Her results are shown below:

Heights (cm)	120–129.9	130–139.9	140–149.9	150–159.9	160–169.9	170–179.9	180–189.9
Number of Picnickers	6	12	9	12	6	18	9

Merlene would like to display her findings in two formats. Help Merlene create a histogram of her data. Then use the histogram to create a circle graph.

Introduce the problem. Then have students do the activity to solve the problem. Distribute Centimeter Cubes, Deluxe Rainbow Fraction Circles, and Centimeter Grid Paper (BLM 10) to students.
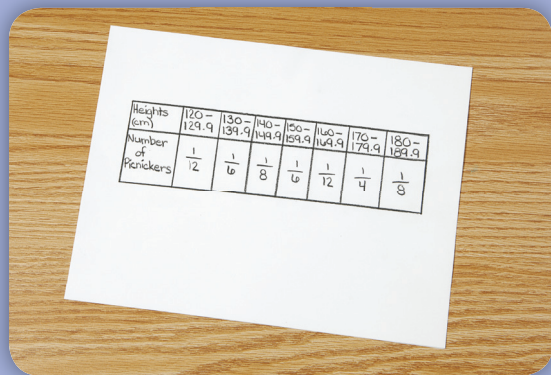
Materials
- Centimeter Cubes
- Deluxe Rainbow Fraction® Circles
- Centimeter Grid Paper (BLM 10; 1 per group)
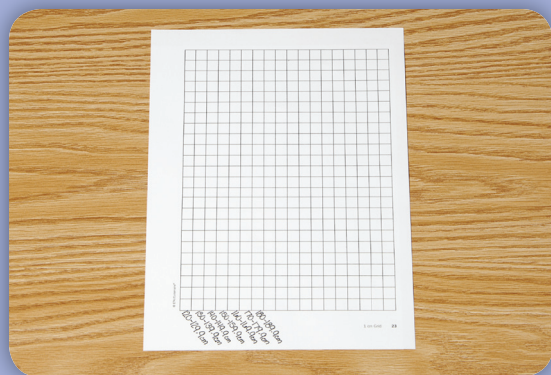
1. Have students label columns on their grid paper with the ranges of heights shown in Merlene's data table.

2. Ask students to build a histogram representing this data using Centimeter Cubes.

3. Have students calculate the fraction of people in each of the ranges. **Ask:** *How many people were at the picnic? What fraction of them falls into each range?*
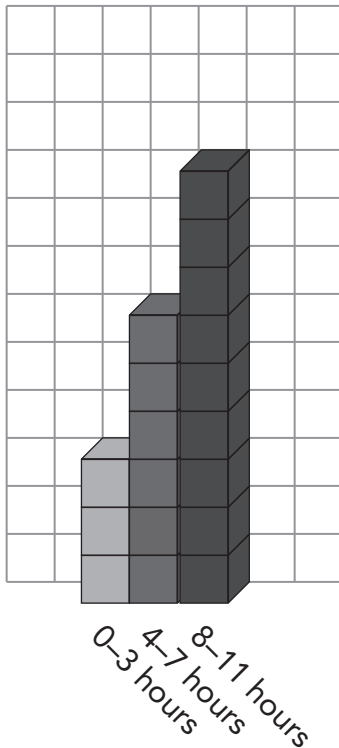

4. Have students use the Fraction Circles and the fractions they found for each range to create a circle graph.
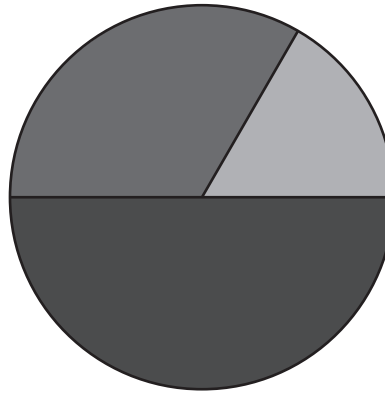
Use Centimeter Cubes to make a histogram. Use Fraction Circles to make a circle graph of the same data. Complete the table.

1.

(Check students' work.)

Number of Hours Slept Each Night by People Surveyed
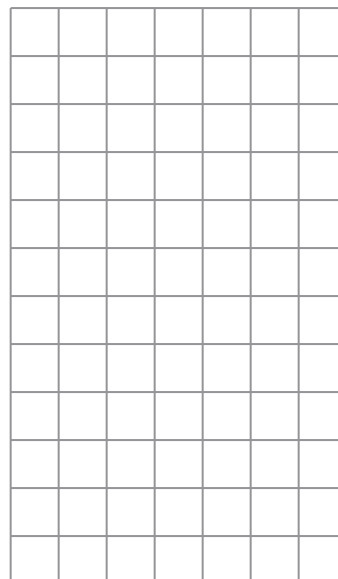
How many people were surveyed?

18

Number of Hours	Fraction of People
0–3	$\frac{1}{6}$
4–7	$\frac{1}{3}$
8–11	$\frac{1}{2}$

0–3 hours
4–7 hours
8–11 hours

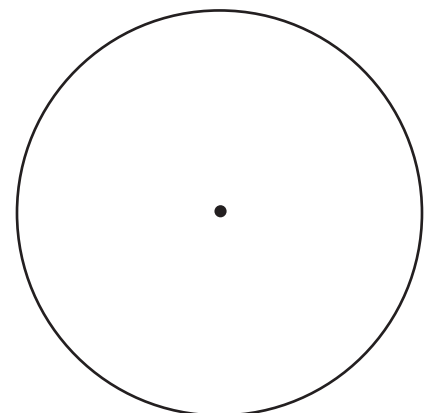**Using Centimeter Cubes and Fraction Circles, make a histogram and circle graph for the data in the table. Sketch the graphs. Complete the table.**

2.

Number of Pets	Number of People	Fraction of People
0–1	10	$\frac{5}{12}$
2–3	9	$\frac{3}{8}$
4–5	3	$\frac{1}{8}$
6 or more	2	$\frac{1}{12}$

Check students' graphs.

Download student pages at hand2mind.com/hosstudent.

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Answer Key

Challenge!   Explain how the tallest bar in a histogram is related to the sections of the corresponding circle graph.

> Challenge: (Sample) The tallest bar represents the greater number, so the range with the tallest bar will also be in the largest section of the circle graph.
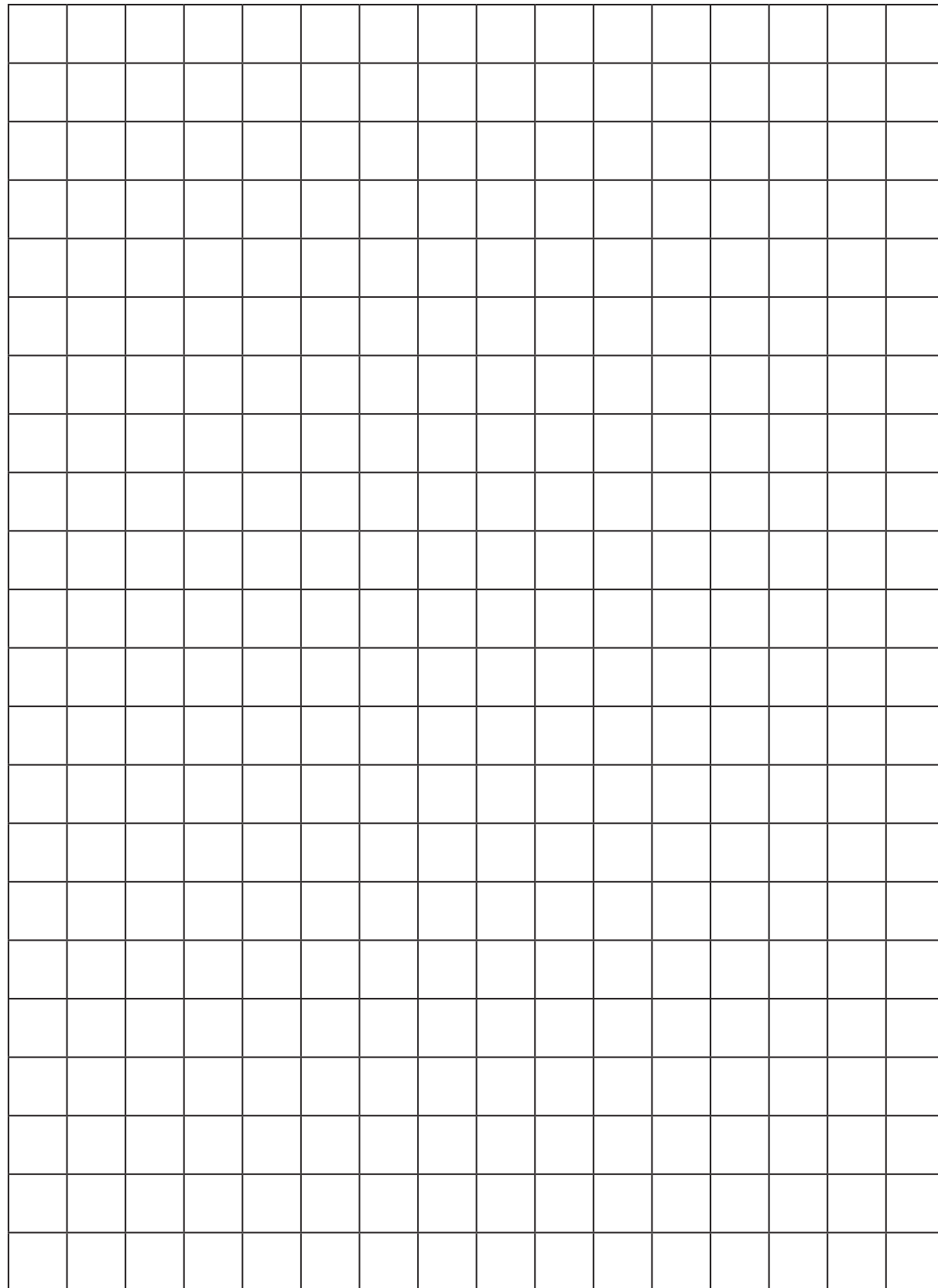
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