

LESSON 7

Objective

Use tallies to collect data and construct a pictograph.

Common Core State Standards

- **3.MD.3** Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step “how many more” and “how many less” problems using information presented in scaled bar graphs. *For example, draw a bar graph in which each square in the bar graph might represent 5 pets.*

Measurement and Data

Pictographs

Students need regular opportunities to perform investigations in which they collect, analyze, display, and interpret data. They should also explore different ways of displaying this data, such as creating pictographs.

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

Talk About It

Discuss the Try It! activity.

- **Ask:** *During which week were the most teddy bears collected? The least? How can you tell?* Students should recognize that they can compare the number of teddy bears collected each week by identifying the rows with the greatest and least number of Baby Bear™ Counters.
- **Ask:** *What if 8 teddy bears, not 5, were collected during Week 1? How could you show that?* Students should conclude that they could draw one full Bear Counter and a partial Bear Counter to represent 8 teddy bears.

Solve It

With students, reread the problem. Have students write out directions to Miss Roberts’s class, telling the class how to show the number of teddy bears collected during each week of the toy drive on a pictograph. Then have students use Graphing Grids (BLM 4) to draw pictographs to show the data.

More Ideas

For other ways to teach about collecting data and constructing a pictograph—

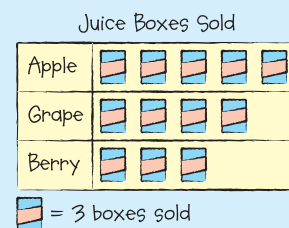
- Provide students with the following data about a school doughnut sale: Class A sold 39 doughnuts, Class B sold 36, and Class C sold 42. Have groups create pictographs using Pattern Blocks, where 1 hexagon equals 6 doughnuts sold. Have students trace the hexagons and color their graphs. Tell students to use $\frac{1}{2}$ or $\frac{1}{4}$ hexagons to show amounts of doughnuts smaller than 6.
- Divide the class into four groups and assign each group a number. Poll groups to find how many books the students in the group read altogether during a week. Display the data in a tally chart, and have individuals use it to make pictographs using Color Tiles. Tell students to make a key, such as 1 tile equals 3 books read, before they begin.

Formative Assessment

Have students try the following problem.

How many apple juice boxes were sold during lunch?

- A. 5
- B. 9
- C. 12
- D. 15



Try It! 30 minutes | Groups of 4

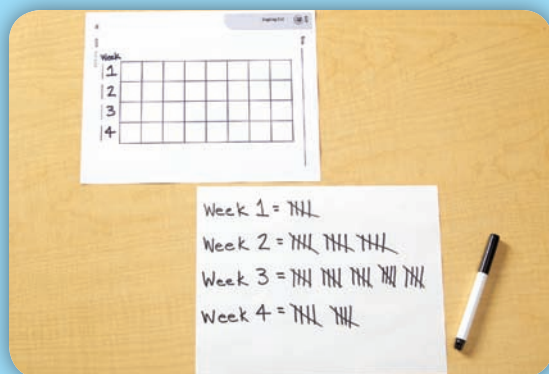
Here is a problem about collecting data and constructing a pictograph.

Miss Roberts's class had a month-long toy drive. Students collected 5 teddy bears during the first week, 15 during the second week, 25 during the third week, and 10 during the fourth week. How can Miss Roberts's students make a pictograph to show how many teddy bears were collected each week?

Introduce the problem. Then have students do the activity to solve the problem. Distribute Graphing Grid (BLM 4) and Baby Bear Counters to groups.

Materials

- Three Bear Family® Counters (15 Baby Bear™ Counters per group)
- Graphing Grid (BLM 4; 1 per group)
- paper (1 sheet per group)
- pencils (1 per group)



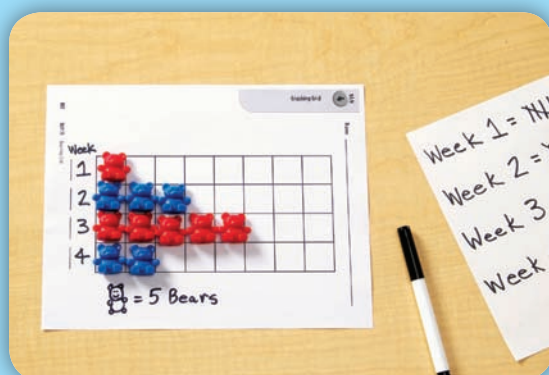
1. Instruct students to make a tally sheet to show how many teddy bears were collected during each week. Tell students that they will use Bear Counters to construct a pictograph horizontally on the Graphing Grid. Students should label four rows on the grid with the week numbers.



2. Explain that pictographs use pictures to represent data. Have students study their tally sheets to see that the teddy bear collection numbers are already grouped into 5s. **Say:** *Let's use 1 Bear Counter to represent every 5 bears collected in the toy drive.* Have students make a key for their pictograph to show that each Bear Counter represents 5 bears collected in the toy drive. **Ask:** *How many Bear Counters should go in the first row of the pictograph?* Have students complete the first row of the pictograph. Then they should place the appropriate number of Bear Counters in each row.

Look Out!

Watch for students who think that 1 Bear Counter equals 1 teddy bear from the toy drive. Remind students that they created a key to show that each Bear Counter represents 5 teddy bears. Reinforce by having students compare their completed pictographs with their tally sheets.

















3. Point out that the color of the Bear Counters isn't important in this pictograph, only that there is 1 Bear Counter to represent every 5 teddy bears collected. Instruct students to complete their pictographs by filling in all of the rows.




Use Three Bear Family Counters to model the pictograph.
Make a tally chart from which the pictograph was made.

(Check students' work.)

1. Week

1								
2								
3								
4								

 = 4 Cars

Week 1	16 tally marks
Week 2	4 tally marks
Week 3	12 tally marks
Week 4	24 tally marks

Using Three Bear Family Counters, model a pictograph using the data in the tally chart. Sketch your graph below. Write the number of bears for each week.

(Check students' models.)

2.

Week 1	
Week 2	
Week 3	
Week 4	

 = 5 Runs Scored

Number of bears for Week:

1 3 Bears 2 1 Bear 3 5 Bears 4 2 Bears

Make a pictograph for each set of data. W stands for Week.


3. W1: 3, W2: 9, W3: 12, W4: 21

		Week 1: 1 Bear	
		Week 2: 3 Bears	
		Week 3: 4 Bears	
		Week 4: 7 Bears	

 = 3 Flowers

4. W1: 10, W2: 20, W3: 5, W4: 15

		Week 1: 2 Bears	
		Week 2: 4 Bears	
		Week 3: 1 Bear	
		Week 4: 3 Bears	

 = 5 Baseball Cards

Answer Key















Challenge! Explain how to decide the number that each bear will represent.


Challenge: (Sample) Find a common factor for the numbers given for each week.

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**Use Three Bear Family Counters to model the pictograph.
Make a tally chart from which the pictograph was made.**

1. Week

1								
2								
3								
4								

 = 4 Cars

Week 1	
Week 2	
Week 3	
Week 4	

**Using Three Bear Family Counters, model a pictograph using
the data in the tally chart. Sketch your graph below. Write
the number of bears for each week.**

2.

Week 1	
Week 2	
Week 3	
Week 4	


 = ____ Runs Scored

Number of bears for Week:


1 _____ 2 _____ 3 _____ 4 _____

Make a pictograph for each set of data. W stands for Week.

3. W1: 3, W2: 9, W3: 12, W4: 21

 = ____ Flowers

4. W1: 10, W2: 20, W3: 5, W4: 15

 = ____ Baseball Cards

Name _____

Challenge! Explain how to decide the number that each bear will represent.

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Name _____

