



Data and Graphs

Review What You Know

1. Color a box on the graph for each fish.

2. Are there fewer  or  ?
Circle your answer.



3. How many fewer?

1 fewer or 2 fewer

Circle your answer.



Home-School Connection

Dear Family,

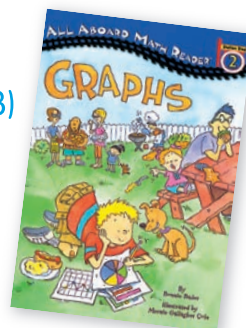
Today my class started Topic 17, **Data and Graphs**. I will learn how to use and make different kinds of graphs. Here are some of the new math words I will be learning and some things we can do to help me with my math.

Love,

Book to Read



Reading math stories reinforces concepts. Look for this title in your local library:

Graphs
by **Bonnie Bader**
(Grossett & Dunlap, 2003)



Home Activity

Give your child a number of forks and spoons. Ask him or her to make a graph to show how many forks and spoons there are.

 Forks					
 Spoons					

My New Math Words

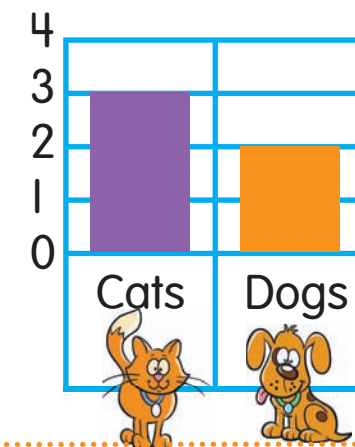
data

information you collect





bar graph

a graph that uses bars to show data



tally mark

marks that keep track of data

 Cats	
 Dogs	

There are 3 Cats and 2 Dogs.

Treasure Sort

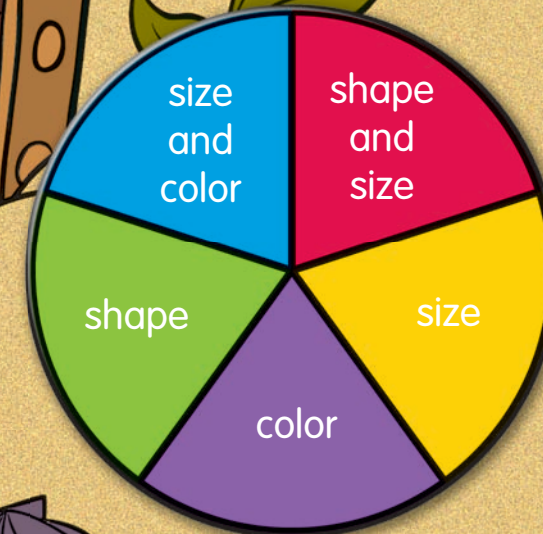
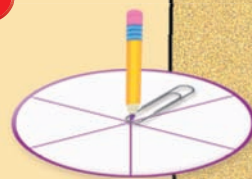
Number of players: 2

How to Play

1. Take turns. Spin and read the spinner. Say your sorting rule.
2. Put counters on the treasures that match your sorting rule. Your partner checks your sort.
3. Remove the counters. Repeat.

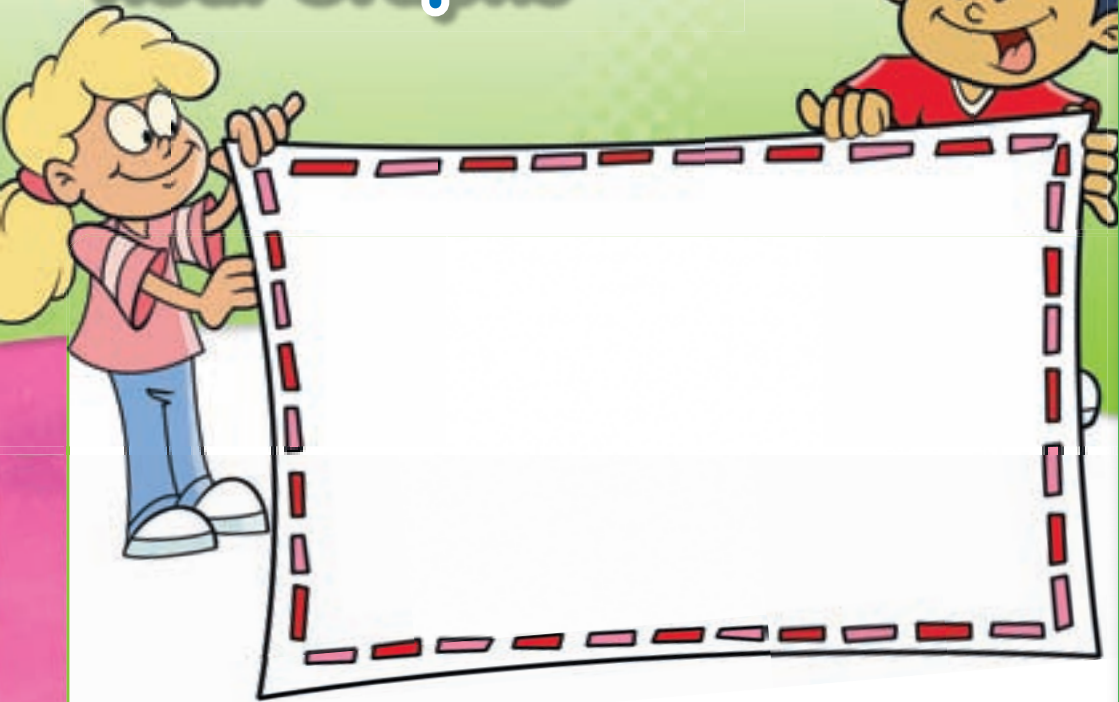
What you Need

18 counters 
paper clip 
pencil 



Name _____

Using Data from Real Graphs





1. Is there the same number of colors?

2. Which color has more?

3. Which color has fewer?

4. How many counters do not have a partner?



Home Connection Your child answered questions about information in a real-object graph.

Home Activity Give your child 7 pennies, or other coins. Arrange the pennies in the squares above so all the heads (side with the person) are in the yellow column and the tails (back of the coin) are in the red column. Ask: "Which has more? Which has fewer? How many do not have a partner?"

SDAP 1.2 Represent and compare data (e.g., largest, smallest, most often, least often) by using pictures, bar graphs, tally charts, and picture graphs. Also **SDAP 1.0.**

Which color has more?



These counters are hard to count.



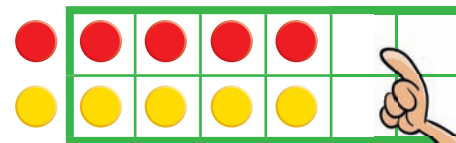
To see which has more, it is easier if the counters are in pairs.



Each counter has a partner.



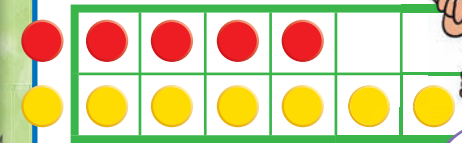
All the counters on the graph have a partner.



There are no more red counters.



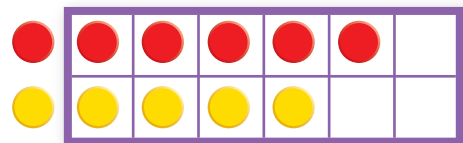
Two yellow counters do not have partners. There are more yellow counters than red counters.



The graph makes it easy to see which has more.

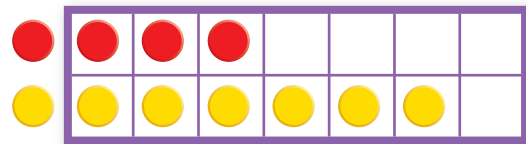
Guided Practice

Look at the graph. Circle the correct answers. Write the number.



1. Which color has more?
red yellow

2. How many counters do not have a partner? _____



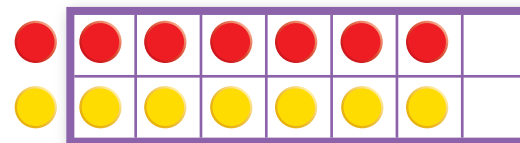
3. Which color has fewer?
red yellow

4. How many counters do not have a partner? _____

Do you understand? A graph has 4 red and 7 yellow counters. Which color has a longer row? Why?

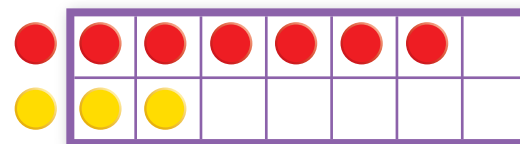
Independent Practice

Look at the graph. Circle the correct answer. Write the number.



5. Is there the same number of colors? yes no

6. How many counters do not have a partner? _____



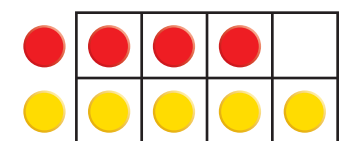
7. Is there the same number of colors? yes no

8. Which color has more?
red yellow

9. How many counters do not have a partner? _____

Spatial Thinking Look at the graph.

10. How many more yellow counters than red counters? _____



Problem Solving

Solve the problems below.

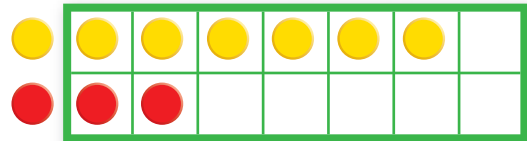
11.



Read the story. Then answer the questions.

Jack has stamps with trees and stamps with animals. He made this graph. Can you tell from the graph if Jack has more tree stamps than animal stamps? What does the graph show?

12. What does the graph show?



There is 1 more red.

There are 2 more red.

There are more yellow.

The colors have the same amount.

13.  **Journal** Write a question about the real graph in Exercise 12. Then write the answer.

Name _____

Using Data from Picture Graphs



Favorite Fruit					
Strawberry					
Pear					
Apple					

1.



2.



3.



Home Connection Your child used information in picture graphs to answer questions.

Home Activity Have family members or friends add pictures or drawings to the graph to show which of the three fruits they prefer. Ask your child what the graph shows about favorite and least favorite fruits.

SDAP 1.2 Represent and compare data (e.g., largest, smallest, most often, least often) by using pictures, bar graphs, tally charts, and picture graphs. Also **SDAP 1.0**.

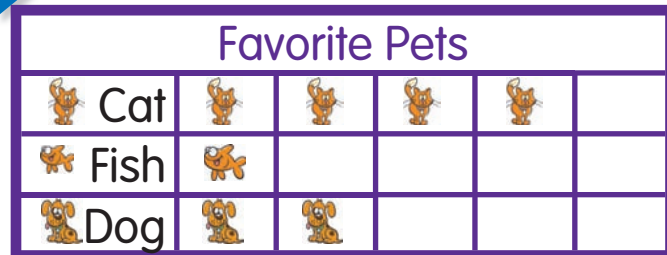
Look at the **picture graph**.
How many children chose Cat
as their favorite pet?



Four children
chose Cat.



How many children chose
Dog as their favorite pet?



Each stands for
one vote. Two children
chose Dog.



How many more children
chose Dog than chose
Fish?



One more child
chose Dog.



How many children in all
voted for a favorite pet?



Count all the pictures.
Seven children voted.



Guided Practice

Use the graph to answer the questions.



1. Which sport is the favorite?

soccer

2. Which sport is the least favorite?

3. Which sport was chosen by 6 children?

Do you understand? What is the picture graph about?

Independent Practice

Use the graph to answer the questions.

4. What is this graph about?

5. How many children chose
Sneakers?

6. Which two shoes were chosen by
the same number of children?

7. How many more children chose
Sneakers than Sandals?

Spatial Thinking

8. How many children voted in all? _____

Word Bank
picture graph



Problem Solving

Use the graph to answer the questions below.

9. How do most children get to school?

10. How many children ride the bus?

11. How many more children walk than come by car?



12. What is the graph about?

Buses



Cars




Walking



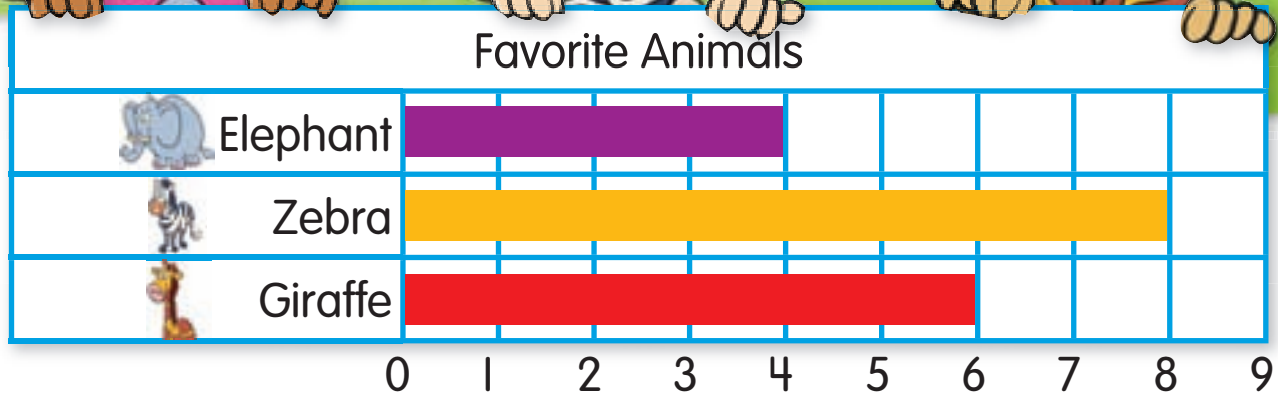
Ways to Get to School



13.  **Journal** Write a question about something else you could count with a picture graph.

Name _____

Using Data from Bar Graphs



1. Elephant _____
2. Zebra _____
3. Giraffe _____
4. Favorite Animal _____
5. Least Favorite Animal _____

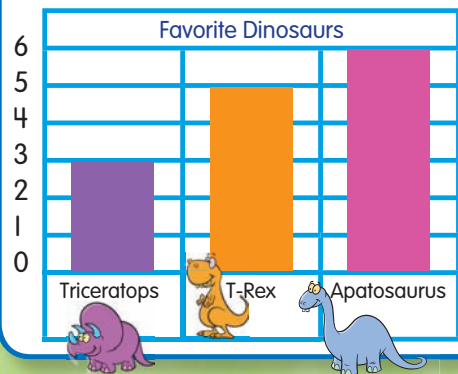


Home Connection Your child answered questions about a bar graph.

Home Activity Have family members color squares in the graph to show which animals are their favorites. Ask your child to tell how many chose each animal, and which is the most and least favorite animal.

SDAP 1.2 Represent and compare data (e.g., largest, smallest, most often, least often) by using pictures, bar graphs, tally charts, and picture graphs. Also **SDAP 1.0**.

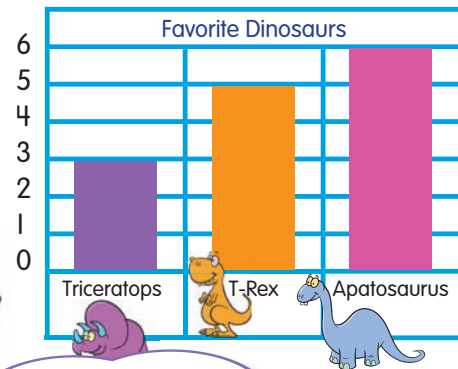
Look at the **bar graph**. Which dinosaur is the favorite?



It's Apatosaurus! Look for the tallest bar.



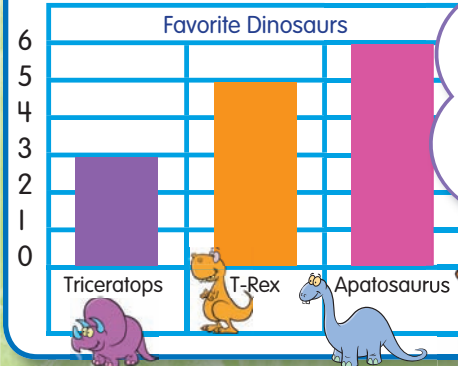
Which dinosaur is the least favorite?



The least favorite is Triceratops. Look for the shortest bar.



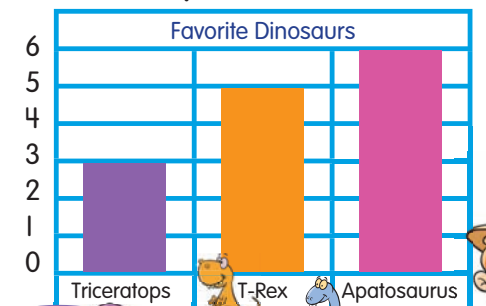
How many children chose the T-Rex?



T-Rex got 5 votes. Find the number that is even with the top of the orange bar.



How many children voted?



Add up the numbers at the top of all three bars. That makes 14 votes!



Guided Practice

Use the graph to answer the questions.

- Which kind of book was checked out by 5 people?

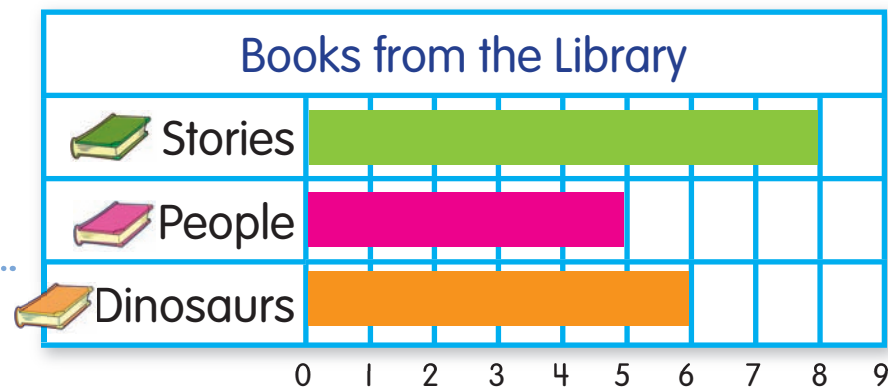
People

- Which kind of book did the most people check out?

- How many people checked out books about Dinosaurs?

- Which kind of book did the fewest people check out?

Do you understand? What is the bar graph about?



Independent Practice

Use the graph to answer the questions.

- Dan made a graph of the foods he ate one day. Which food did Dan eat the most of?

- Which food did Dan have two times?

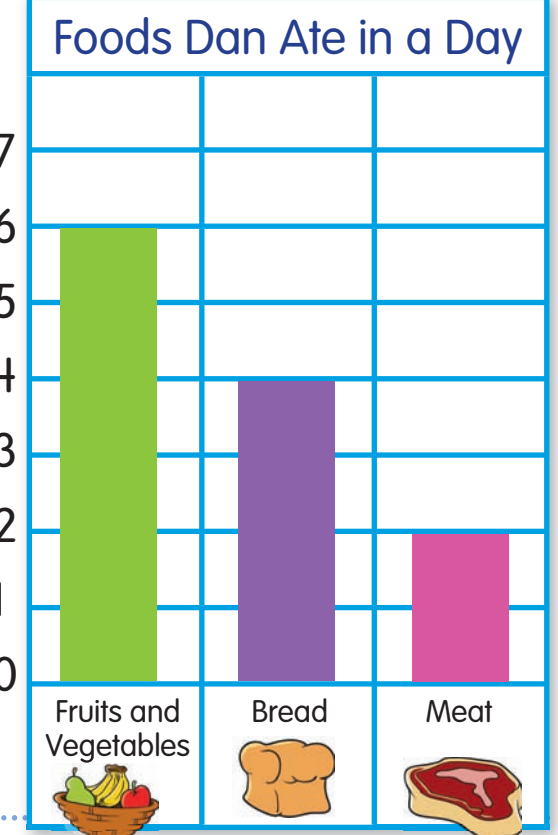
- How many times did Dan eat Bread?

- Which food did Dan eat the least?

Spatial Thinking Use the graph above to answer the question.

- Doctors often say you should eat plenty of fruit, vegetables, bread, milk, and meat. Which kind of food did Dan not put in his bar graph?

Word Bank bar graph

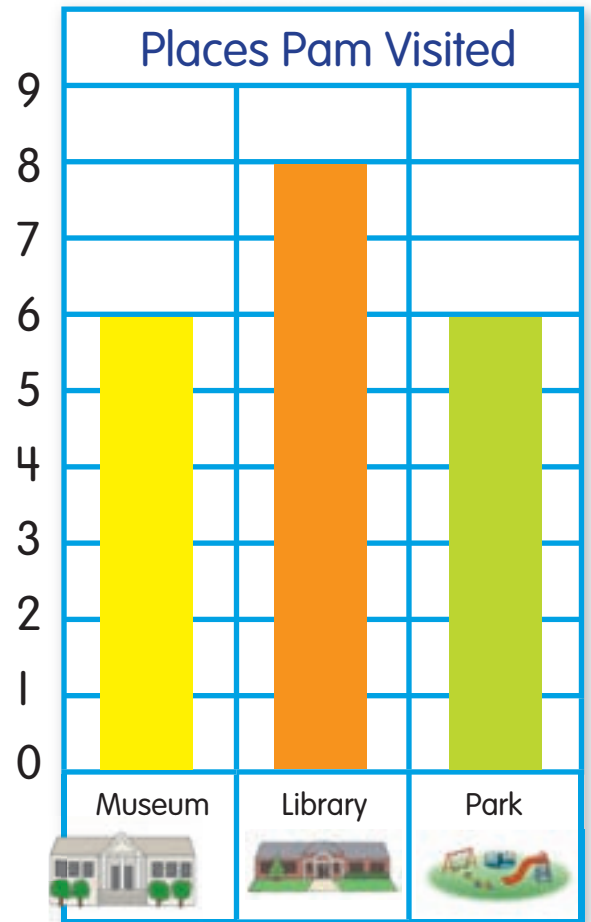


Problem Solving

Use the bar graph to answer the questions below.

Last summer, Pam visited places with her grandma. She made a bar graph to show how often she went to her favorite places.

10. Which place did Pam go most often? _____
11. How many times did she visit the Museum? _____
-
12. Which two places did Pam visit the same number of times?



Museum
and Library



Museum
and Park




Library
and Park



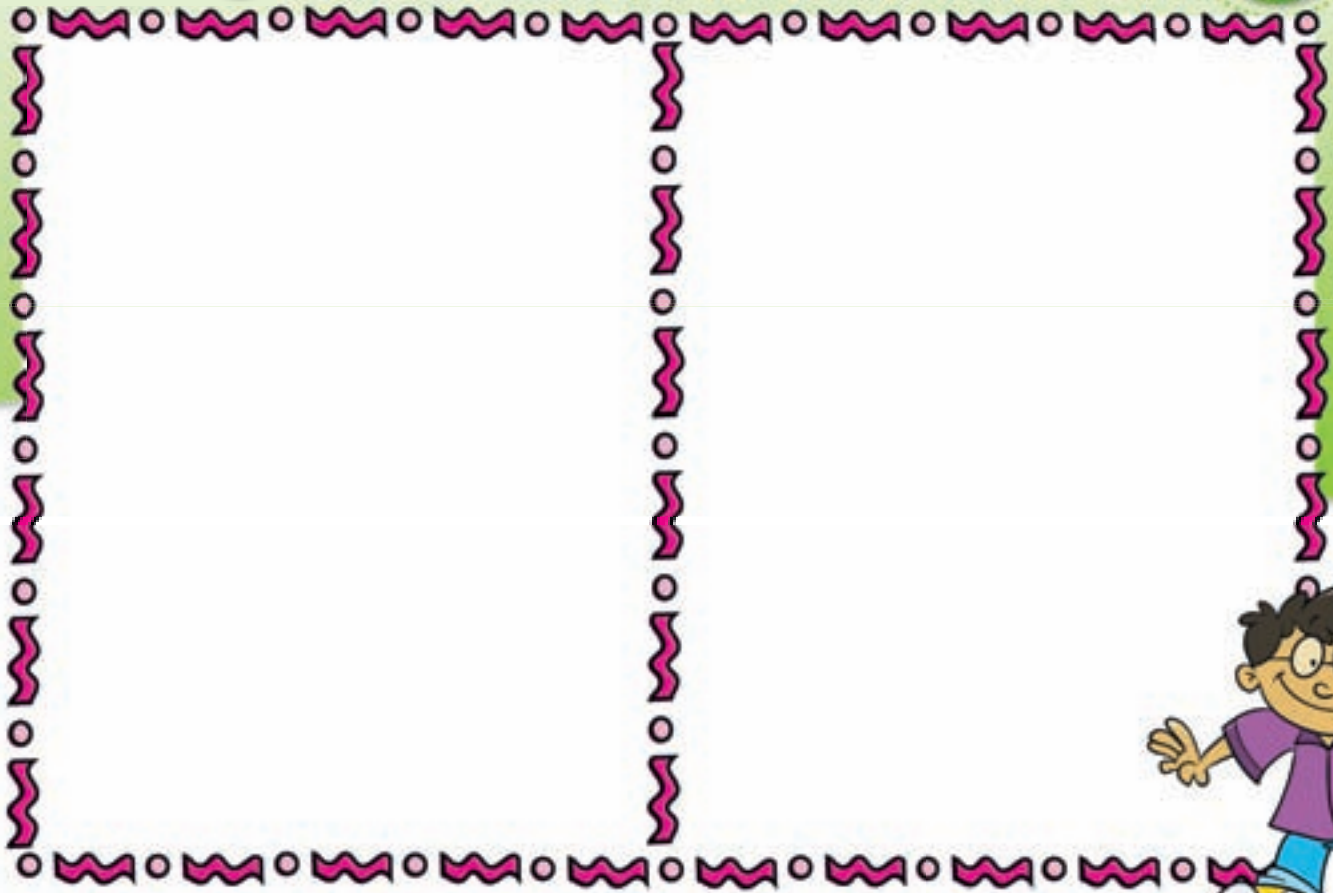
Library and
Grandma's House



13.  **Journal** Explain how you got your answer for Exercise 12.

Name _____

Sorting



1. Sort by large and small buttons. _____ large _____ small

2. Sort by buttons with 3 holes and buttons with 4 holes. _____ 3 holes _____ 4 holes

3. Sort by buttons with 2 holes and buttons with 4 holes. _____ 2 holes _____ 4 holes

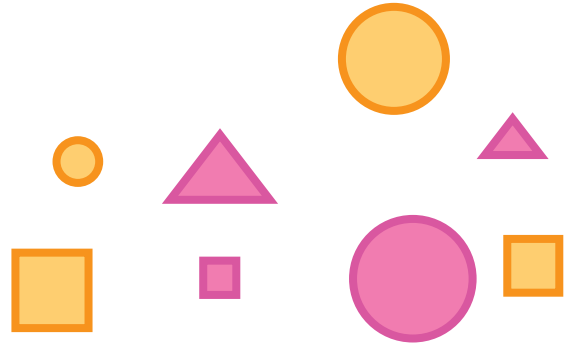


Home Connection Your child sorted buttons of different sizes and numbers of holes, and wrote about what he or she did.

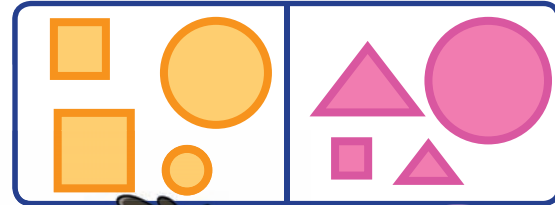
Home Activity Work with your child to find one or more sets of related items, such as leaves of different colors and sizes. Let your child choose a way to sort the leaves, such as by size. Together, sort the items by that characteristic. Then pick items based on other characteristics, such as color, pattern, size, shape, or use.

SDAP I.1 Sort objects and data by common attributes and describe the categories.

Look at the blocks.
How could you sort them?



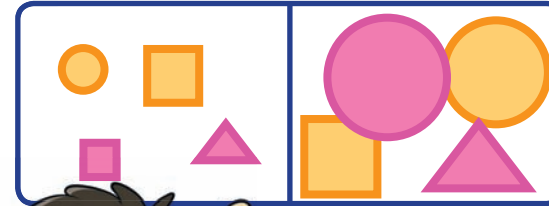
How are the blocks sorted?



These blocks are sorted by color.



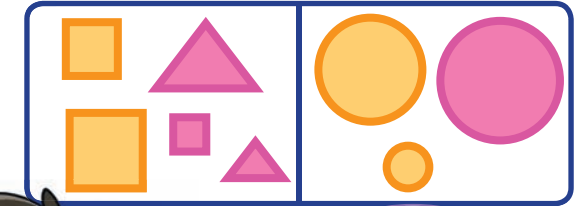
How are the blocks sorted now?



These blocks are sorted by size.



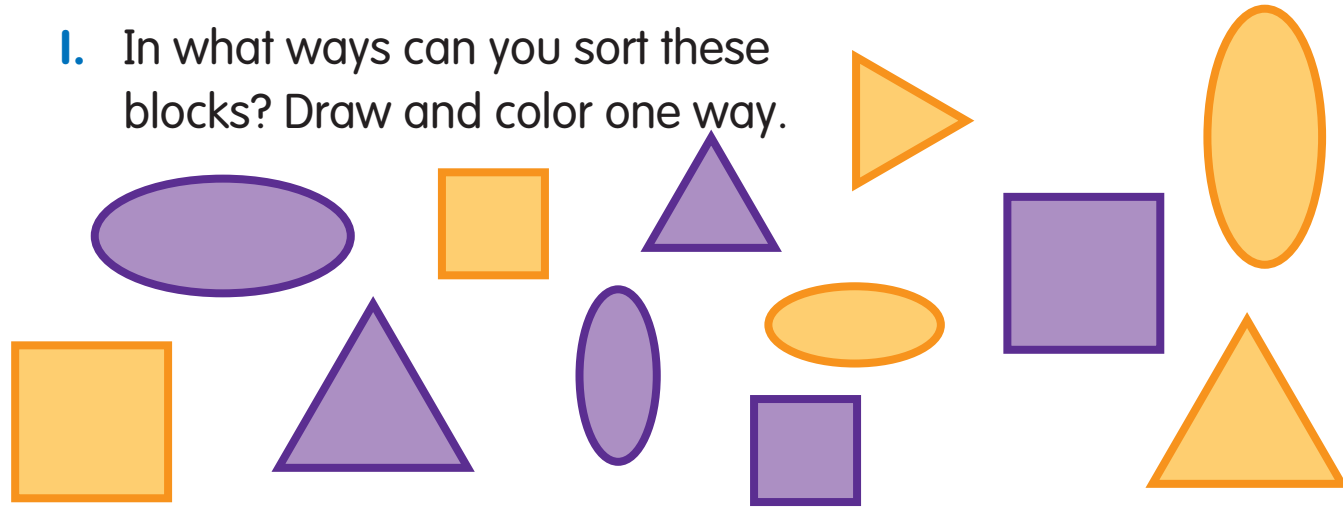
Now how are the blocks sorted?



These blocks are sorted by straight sides and curves.

Guided Practice

1. In what ways can you sort these blocks? Draw and color one way.

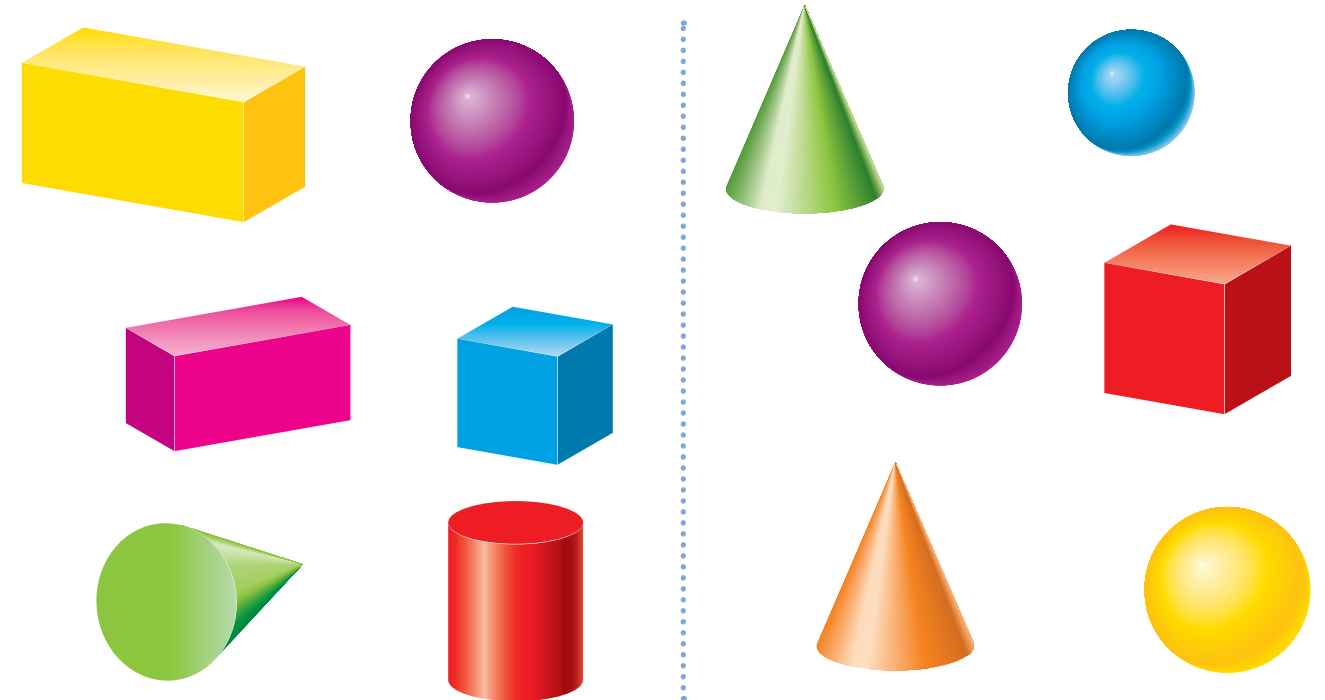


--	--

Do you understand? In what ways could the blocks be sorted?

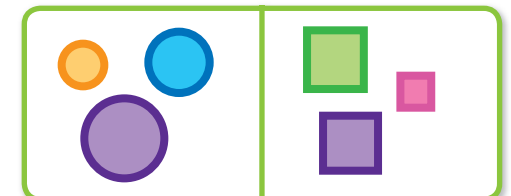
Independent Practice

2. Circle the shape that does not belong.



Reasoning Look at the two groups of shapes.

3. Put the into a group. Tell your sorting rule.



Problem Solving

Solve the problems below.

4. Jim is putting away his toys.
How are the toys sorted?

He has one more toy to put
in a bin. Which bin should
Jim put his toy in?




5. Which are not in Jim's groups of toys?

toys that are
for sports

toys that
have wheels

toys that
have wings

toys
that roll

6.  **Journal** Draw some other kinds of toys you could sort the way
Jim is sorting his.

Name _____

Collecting Data Using Tally Marks



<p>Color _____</p> <p>1. _____</p> <p>2. _____</p> <p>3. _____</p> <p>4. _____</p> <p>5. _____</p> <p>Tally Marks</p>	<p>Color _____</p> <p>1. _____</p> <p>2. _____</p> <p>3. _____</p> <p>4. _____</p> <p>5. _____</p> <p>Tally Marks</p>
--	--



Home Connection Your child found examples of things that are a specific color in our classroom. Then your child recorded the information using tallies.

Home Activity Help your child find things that are the same color. Make a tally mark for each one you find together.

SDAP 1.2 Represent and compare data (e.g., largest, smallest, most often, least often) by using pictures, bar graphs, tally charts, and picture graphs. Also **SDAP 1.0**.

How many **tally marks**?

There are 3 tally marks.



Each tally mark stands for 1 piece of information.

Count the tally marks by 5s.

There are 20.



Each **||||** stands for five pieces of information.

m a t h e m a t i c s

Make tally marks to show how many letters are red.



There are 5 red letters.




Keeping a tally makes it easy to count the **data**.

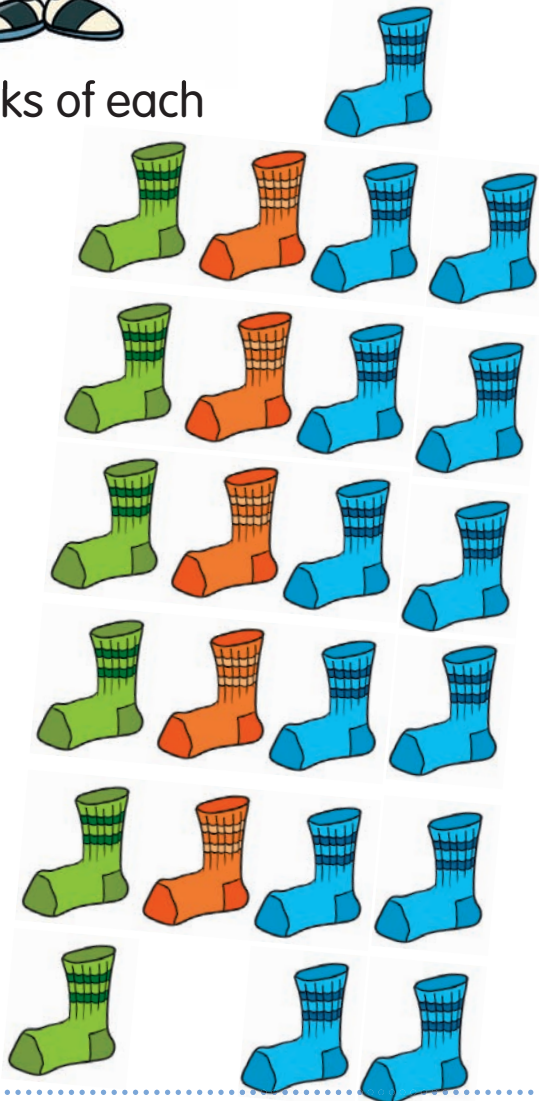


Count by 5s. Then count on by 1s.

Guided Practice

Make tally marks to show how many socks of each color there are. Then write each total.

		Total
 Green		6
 Orange		
 Blue		



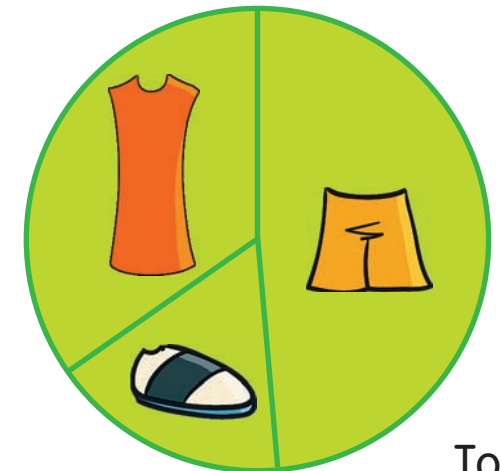
Use your tally to answer the questions.




- Which color has the most? _____
- How many more Blue socks than Orange socks are there? _____
- How many Green and Orange socks are there in all? _____

Do you understand? How did your tally help you answer the questions?

Independent Practice

- Make a spinner on the circle using a pencil and a paper clip. Spin the spinner 20 times. Make a tally mark for each spin. Then write each total.



		Total
 Shirt		
 Shorts		
 Shoe		

Reasoning Use your tally to answer the questions.

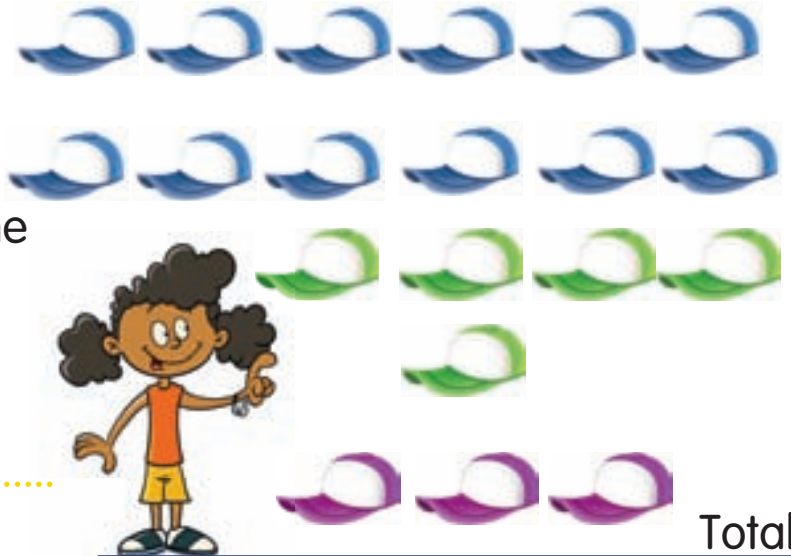
- Which item did you spin most often? _____
- Which part of the spinner is the largest? _____

Word Bank
tally mark
data

Problem Solving




Solve the problems below.

8. Beth wants to know how many of each color cap she and her brothers have. Help her by making a tally for the picture.



Use your tally to answer the questions below.

9. Which color cap do they have the least of? _____
10. How many more Blue caps than Green are there? _____
11. Which color or colors is there the most of?


	Total
 Blue	
 Green	
 Purple	

Blue



Green




Purple

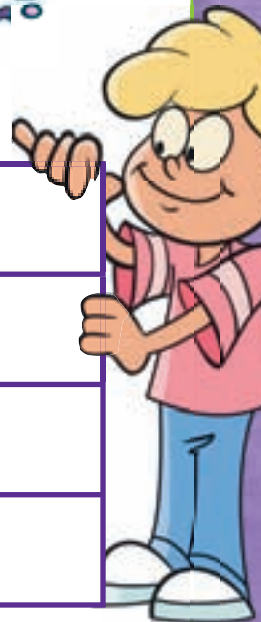
Green and Purple

12.  **Journal** Write and answer your own question about the tally chart above.

Making Real Graphs

 Orange	I	6
 Purple		3
 Yellow	II	7

 Orange									
 Purple									
 Yellow									



Home Connection Your child used connecting cubes to make a real-object graph.

Home Activity Help your child make collections of three different objects, such as bottle caps, nickels, and stickers. Have your child sort the objects by kind. Then arrange the objects in rows together. Ask: "How many? Which has the most? Which has the fewest?"

SDAP 1.2 Represent and compare data (e.g., largest, smallest, most often, least often) by using pictures, bar graphs, tally charts, and picture graphs. Also **MR 1.2, SDAP 1.0.**

Erika has some leaves. Does she have more red or green leaves?



If Erika makes a real graph, she can find out.



Erika has 2 groups of leaves. So she draws 2 rows.

Erika's Leaves									
Red Leaves									
Green Leaves									

Erika puts one kind of leaf in each row.

Erika's Leaves									
Red Leaves									
Green Leaves									

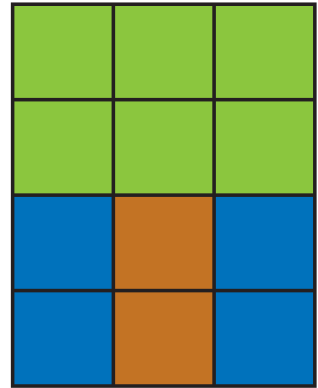
There are more Green Leaves.

A graph makes it easy to see which has more.



Guided Practice

Use the tally chart to make a graph with cubes.



1. Connecting Cubes Tree—Tally Chart

Green	 I	6
Brown		2
Blue		4

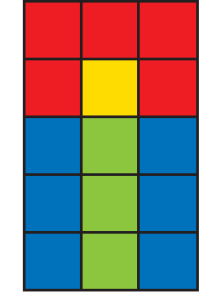
2. Connecting Cubes Tree—Real Graph

Green						
Brown						
Blue						

Do you understand? Think of a sandwich made with white cubes for bread, brown cubes for peanut butter, and red cubes for jelly. How many rows would you need to graph the colors? What would be in the left column?

Independent Practice

Use the tally chart to make a graph with cubes.



3. Connecting Cubes Flower—Tally Chart

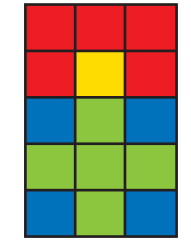
Red	 I	5
Green		3
Yellow	I	1
Blue	 I	6

4. Connecting Cubes Flower—Real Graph

Red						
Green						
Yellow						
Blue						

Spatial Thinking

5. If you added 2 green leaves to the side of the stem, how many blue cubes would there be?





Problem Solving



Use the data to solve the problems below.














6. Eric made a cube dog. Count the white and black cubes. Then make a tally to show them.

Connecting Cubes Dog—Tally Chart		
 Black		
 White		

7. Use your tally chart to make a graph with cubes.

Connecting Cubes Dog—Real Graph						
 Black						
 White						

8. Which is not true about the Flowers graph?

Flowers						
 Yellow						
 Red						

six Yellow flowers,
three Red flowers

more Yellow flowers
than red flowers

ten flowers
in all

three fewer Red flowers
than Yellow flowers

9.  **Journal** Draw a tally chart for the Flowers graph.

Name _____

Making Picture Graphs



Favorite Recess Game									
Jacks									
Hopscotch									
Jump Rope									

1. Which game is the favorite?

2. Which game is the least favorite?



Home Connection Your child surveyed classmates about their favorite recess games. First your child made a tally chart. Then he or she made a picture graph and answered questions.

Home Activity Let your child survey family members and a few friends to find out what game they would choose to play. Have your child write down and add the tallies, and then draw a picture for each tally for each game.

SDAP 1.2 Represent and compare data (e.g., largest, smallest, most often, least often) by using pictures, bar graphs, tally charts, and picture graphs. Also **MR 1.2, SDAP 1.0.**

Mark asks 9 friends a survey question.

Which is your favorite sport to play? Basketball, Soccer, or Baseball?



Mark makes one tally mark to show what each friend says.

Favorite Sport	
Basketball	III
Soccer	
Baseball	I

Mark uses the data in the tally to make a picture graph.

Favorite Sport	
Basketball	
Soccer	
Baseball	

The pictures help me remember what the graph is about.



Guided Practice

Favorite Things to Do After School	Tally Marks	Totals
Sports	III	8
Skate	III	3
Jump Rope		5

- Use the information in the tally chart. Draw pictures to make a picture graph.

Favorite Things to Do After School									
Sports									
Skate									
Jump Rope									

Do you understand? What do the most children like to do after school?

Independent Practice

Favorite Rainy Day Activity	
Games	II
Paint	III
Read	I

- Use the information in the tally chart. Draw pictures to make a picture graph.

Favorite Rainy Day Activity		
Games	Paint	Read

- Which activity is the favorite?

- Which activity is the least favorite? _____
- Write the Rainy Day Activities in order from least favored to most favored.

_____ least favored _____ most favored



Spatial Thinking Compare the activities.

- Why are some of the columns of pictures taller than others?



Problem Solving

Make a graph to solve the problems below.

7. Gina makes a tally to show the favorite music of her friends.

Favorite Music		
	Guitar	
	Drum	
	Flute	

Use her data to make a picture graph.

Favorite Music									
	Guitar								
	Drum								
	Flute								

Use the picture graph to answer the question.


8. Which kind of music is the favorite?

Guitar

Piano

Flute





Drum

9.  **Journal** Write and answer a question about the picture graph you used.





Problem Solving

Make a Graph



Science Subjects		
 Plants	IIII	4
 Animals	IIII II	7
 Rocks	II	2
 Seasons	IIII	4



Science Subjects										
 Plants										
 Animals										
 Rocks										
 Seasons										
	0	1	2	3	4	5	6	7	8	9

1. What is the favorite subject? _____

2. Which subjects got the same number of votes? _____
and _____

3. What is the least favorite subject? _____







Home Connection Your child made a bar graph from data in a tally chart and answered questions about the bar graph.

Home Activity With your child, choose a few things at home, such as forks, knives, and spoons. Divide them by type and make a bar graph. Count each and ask questions such as "Which do you have the most of?"

SDAP 1.2 Represent and compare data (e.g., largest, smallest, most often, least often) by using pictures, bar graphs, tally charts, and picture graphs. Also **MR 1.2**.

Read and Understand





Rosalie made a table about things that live in a forest. How can she show the information in a graph?

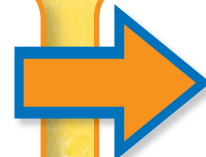
Animal Legs		
	Birds	2
	Spiders	8
	Insects	6
	Fish	0



Plan

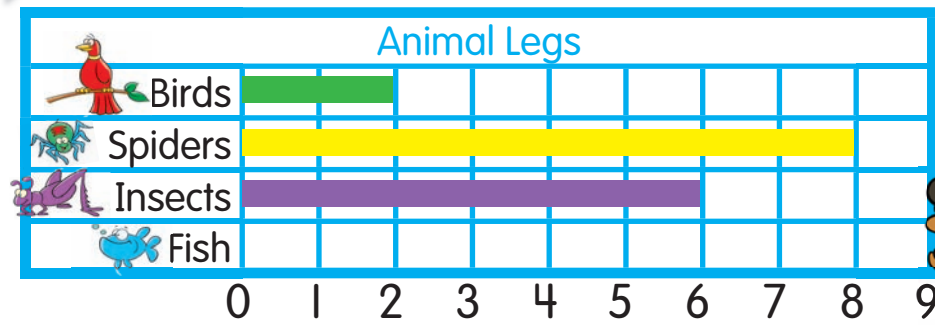
Rosalie could use a bar graph. Color boxes to show the number of each type of animal.

Animal Legs		
	Birds	
	Spiders	
	Insects	
	Fish	



Solve, Look Back, and Check

Compare the graph to the table.



The colored boxes match the numbers in the table.

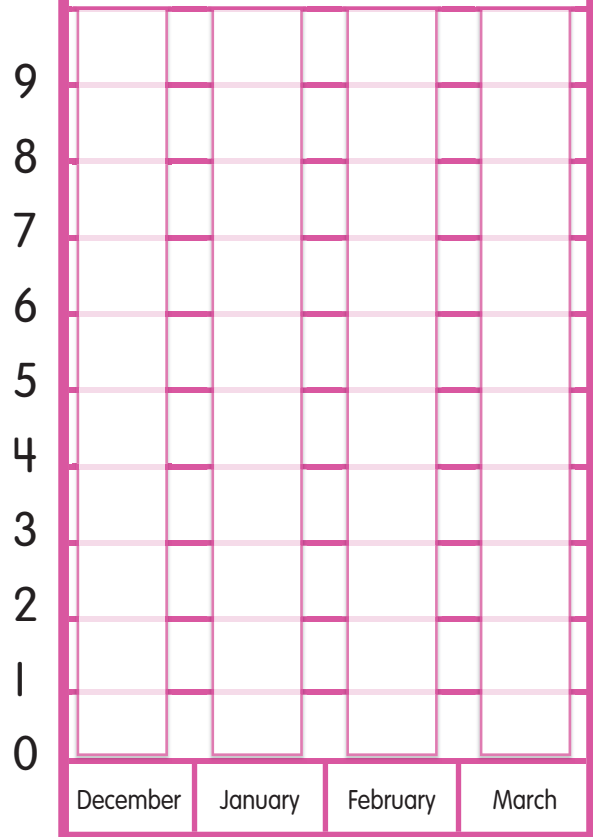


Guided Practice

Alec counted the days it snowed. He wanted to compare snow days by month. Make a bar graph to answer the questions.

Days of Snow by Month	
December	5
January	9
February	6
March	2

Days of Snow by Month



- Which month had the most snow days? _____
- Write the months in order from most to fewest snow days.

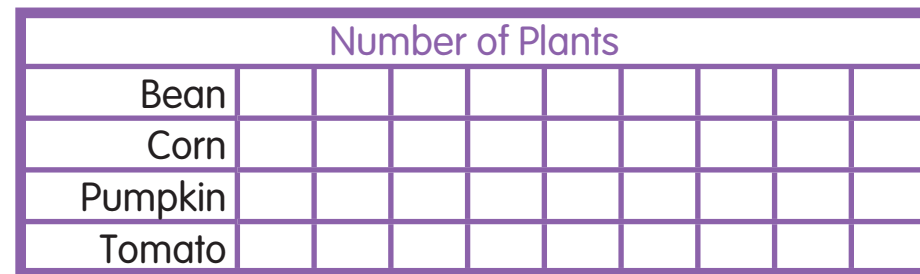
_____ most days _____ fewest days

Do you understand? In the graph, how did you know how tall to make the bar for each month?

Independent Practice

Marta has a garden. She counted her plants. Make a real graph to answer the questions.

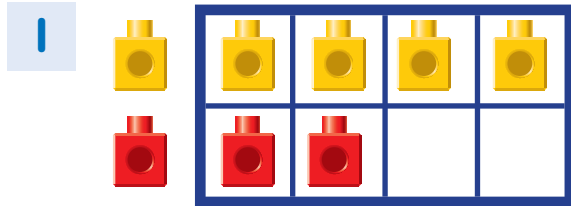
Number of Plants	
Bean	4
Corn	7
Pumpkin	2
Tomato	3



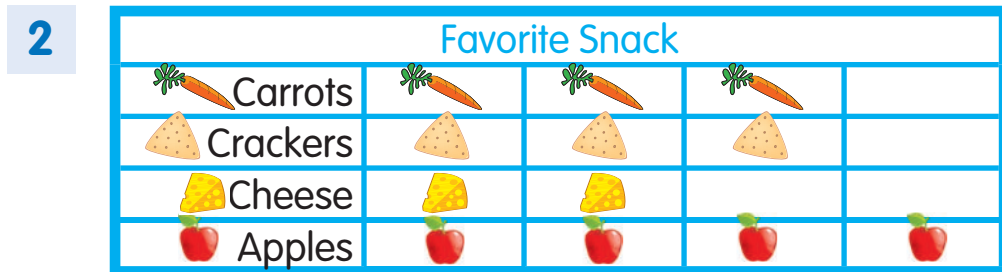
- Which plant does Marta have the most of?

- Which plant does Marta have the least of?

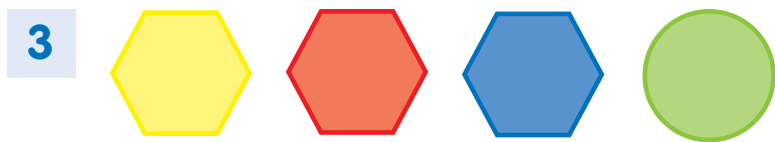
- Which does Marta have more of, Tomato plants or Bean plants?



- 0 1 2 3



- 1 2 3 4



-

Oral Directions Say: Mark the correct answer. 1. Reza made a graph to show his cubes. How many fewer red cubes than yellow cubes does he have? 2. Look at the picture graph. How many children chose cheese as their favorite snack? 3. Which shape does not belong in the group?

Name _____

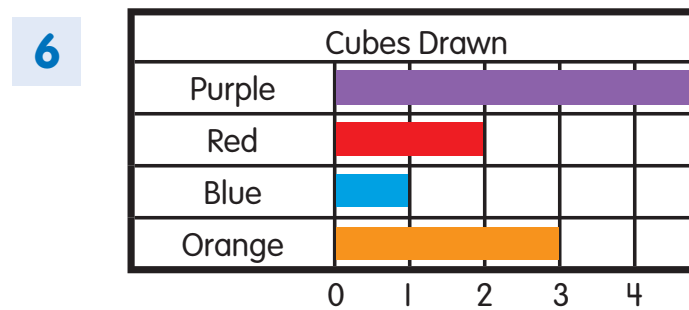
4

Tulip	
Daisy	

- 6 8 10 12



- 11 1111 11111 111111



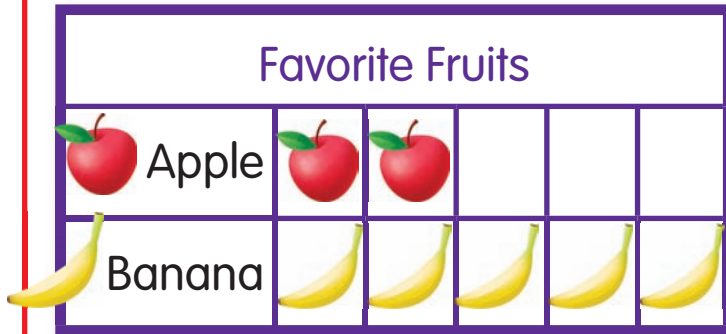
- 5 4 3 1

- 7 7 8 11

Oral Directions Say: Mark the correct answer. 4. Mara went on a walk. She made a tally to show how many tulips and daisies she saw. How many tulips did she see? 5. Which group of tally marks show the number of caps in the picture graph? 6. Paula draws cubes from a bag. The bag has purple, red, blue, and orange cubes. The bar graph shows the cubes she draws. How many more purple cubes than blue cubes did Paula draw from the bag? 7. How many cubes did Paula draw in all?

Set A

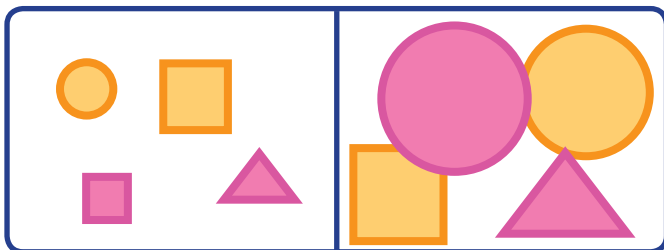
You can use a picture graph to show data.



5 children chose Banana.

Set B

You can sort by size, shape, or color.



These blocks are sorted by size.

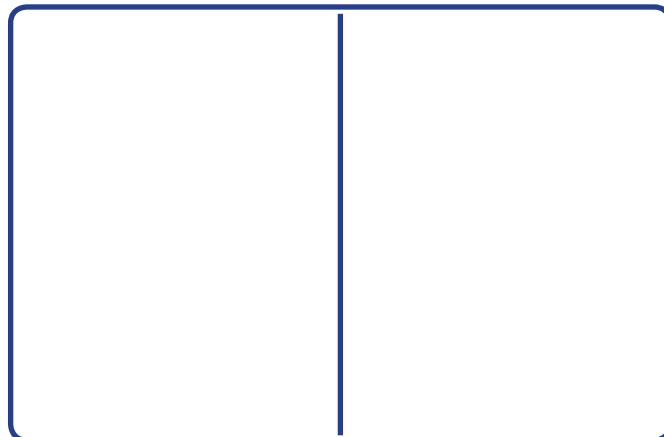
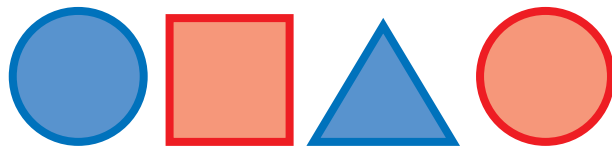
Use the graph to answer the question.



1 How many more Penguins are there than Bears at the zoo?

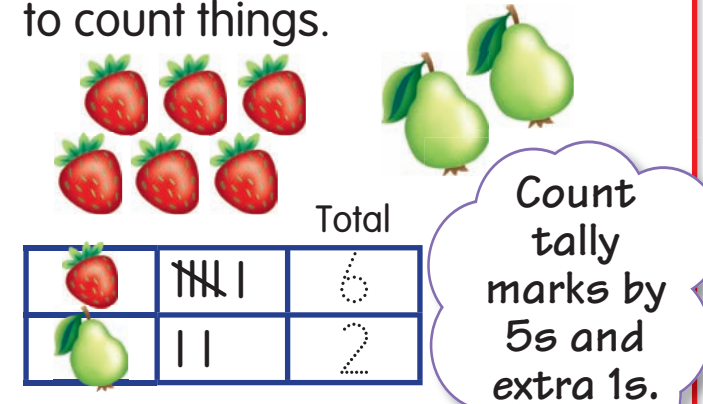
_____ more Penguins

2 Sort these shapes by color.



Set C

You can make tally marks to count things.



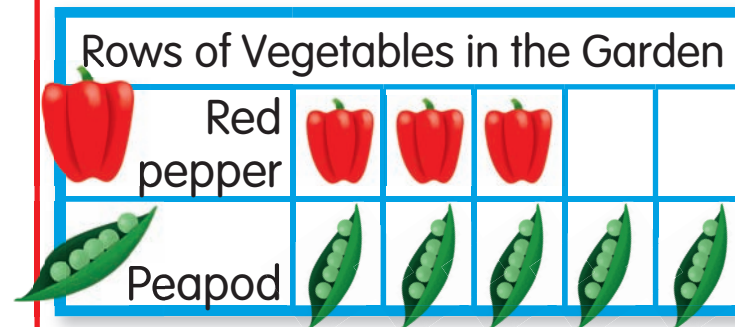
There is one tally mark for each piece of fruit. Each |||| stands for 5.

Count tally marks by 5s and extra 1s.



Set D

You can make a picture graph to show data.



The graph shows 3 rows of peppers in the Garden.

3 Make tally marks to show how many of each ball there are.



Football		
Soccer ball		

Make a picture graph to show the data.

4 Birds in the Park

Blue bird	
Red bird	

