

Mathematics

More or Less: T-Chart

Skills Objective

Use measuring instruments or nonstandard measurement tools to compare objects.

A **T-Chart** is a useful tool for making comparisons between two objects. In the following activity, students use a T-chart to record the relative weights of classroom objects.

1. Display two objects, such as a softball and a ruler. Ask students: *How could I figure out which object weighs more?* Students might suggest guessing, picking up the two objects to compare them, or using a balance scale.
2. Demonstrate how to use a balance scale to compare the weight of the two objects. Point out that the item that is lower on the scale is the heavier item.
3. Ask students: *How can I remember which item was heavier?* Lead students to understand that writing the information will help them remember it. Make a T-chart on the board with the column headings *More* and *Less*. Draw the item that weighs more (*softball*) in the first column and the item that weighs less (*ruler*) in the second column.
4. Place the balance scale in the science center along with objects students can weigh, such as blocks, pennies, and books.
5. Give students a copy of the **More or Less reproducible** (page 10). Invite them to work in pairs to weigh the objects, and then record their results on the T-chart.

Materials

More or Less reproducible

balance scale

small objects (softball, ruler, block, pennies, book)

Name _____ Date _____

More or Less

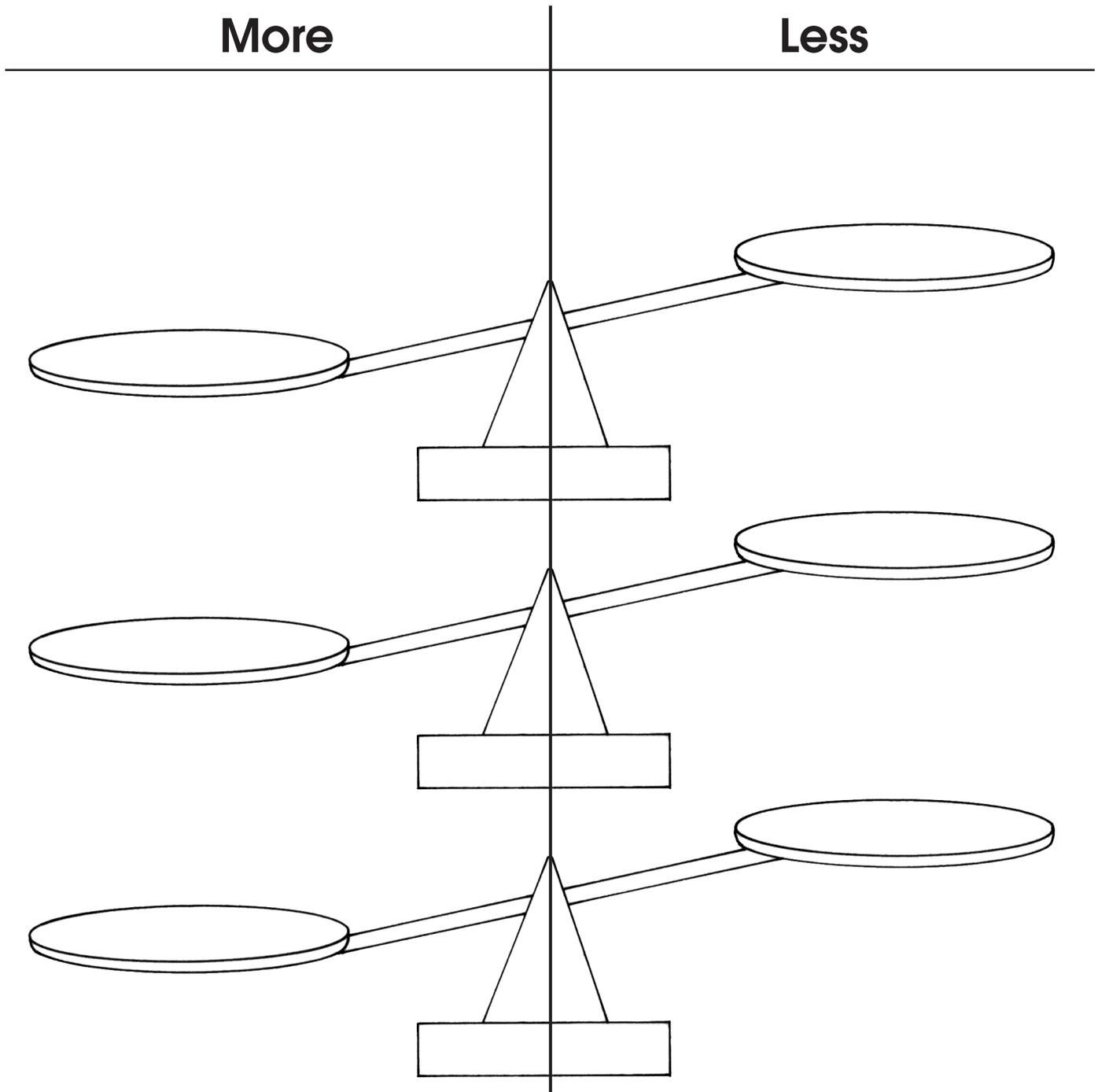
Directions: Put the items on the scale. Draw the item that weighs more in the **More** column. Draw the item that weighs less in the **Less** column.

More	Less

10 Engage the Brain: Graphic Organizers and Other Visual Strategies • Kindergarten Reproducible 978-1-4129-5224-8 • © Corwin Press

More or Less

Directions: Put the items on the scale. Draw the item that weighs more in the **More** column. Draw the item that weighs less in the **Less** column.



Picture the Problem: Drawing

Skills Objective

Draw pictures to represent mathematical problems.

Drawing is a useful strategy for developing number sense. By creating pictures, students can graphically represent their understanding of mathematical concepts. In this activity, students draw pictures that demonstrate their understanding of numbers and patterns.

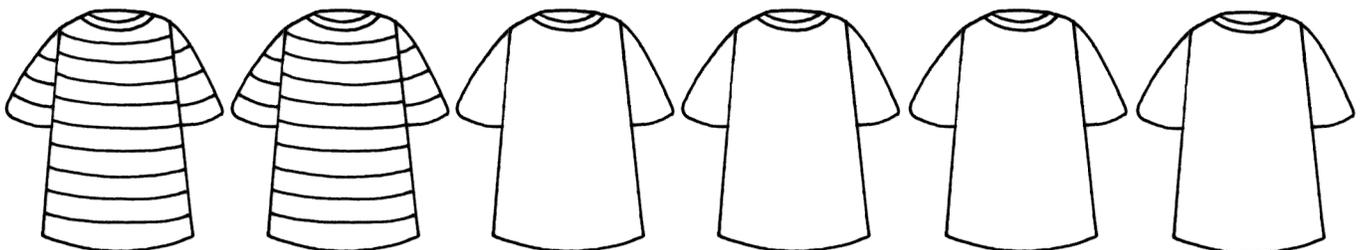
Materials

Picture the Problem
reproducible
crayons or markers

1. Write a sentence such as the following on the board: *May had six shirts. Some were plain and some had stripes.*
2. Read the problem aloud. Tell students that one way to better understand this problem is to draw a picture. You will reread the sentence for clues about what to draw. Think aloud as you point out the clue six shirts, and draw six shirts on the board. Reread the sentence, *Some were plain and some had stripes.* Explain that this means at least one shirt was plain and at least one had stripes. Add stripes to one shirt and leave one plain. Add stripes to as many others as you wish.
3. Ask students to suggest other ways of representing this sentence, such as two plain shirts and four striped, or three plain shirts and three striped. Invite volunteers to draw their suggestions on the board.
4. Give students a copy of the **Picture the Problem reproducible (page 14)**. Write another problem on the board. Have students use the graphic organizer to draw pictures that represent the problem.
5. Invite students to compare their drawings in small groups and discuss the different ways in which they represented the information.

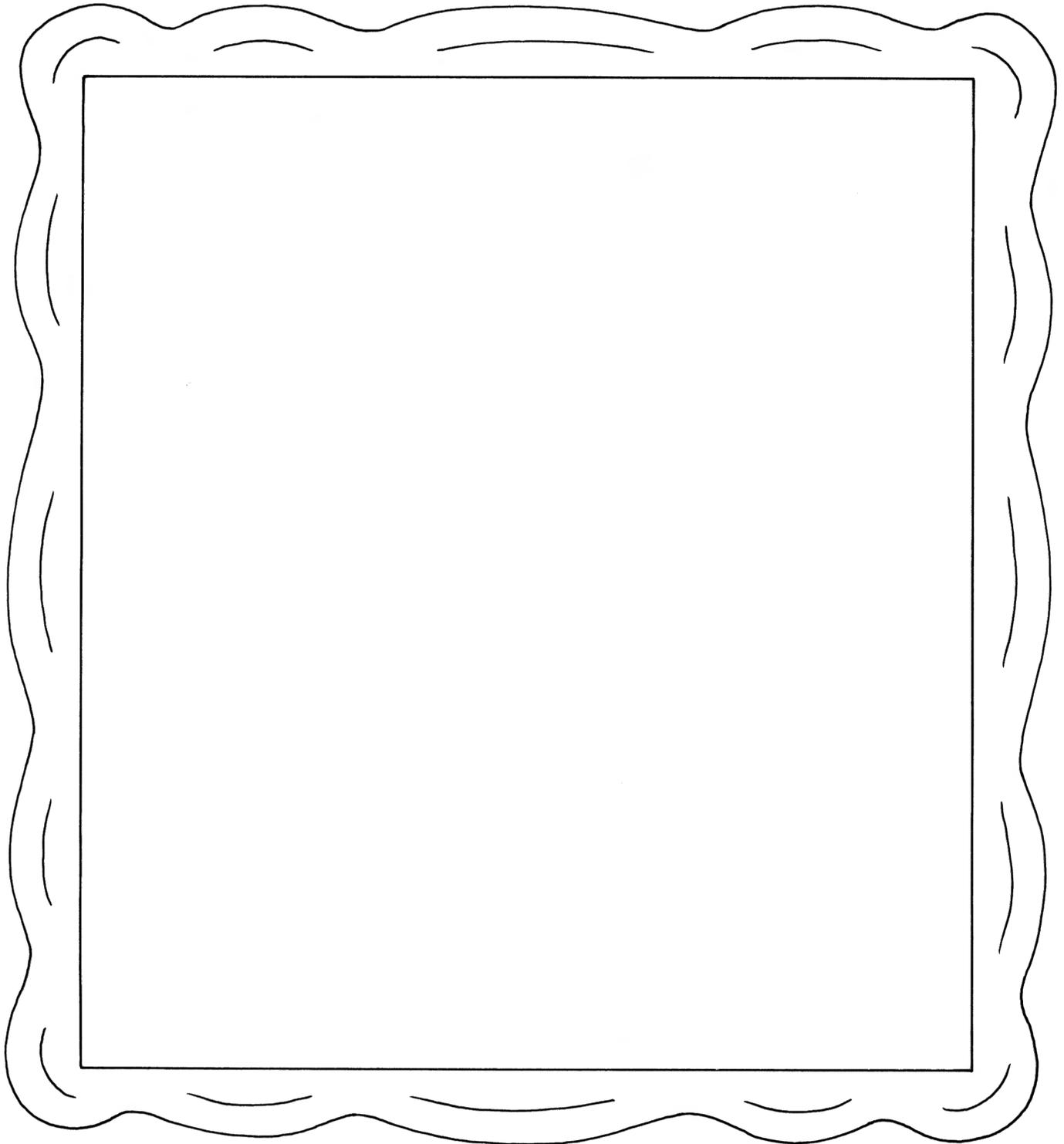
Extended Learning

- Have students draw pictures to represent simple addition and subtraction problems.
- Invite students to draw pictures and then write or dictate number stories that interpret their drawings.



Picture the Problem

Directions: Draw a picture to show the math problem.



Shouting for Shapes: Venn Diagram

Skills Objective

Sort shapes according to attributes.

A **Venn Diagram** is a concrete sorting tool that allows students to visualize similarities and differences. Sorting items according to attributes is an essential skill for young learners. In this activity, students sort geometric shapes according to attributes such as shape and color.

1. Place two plastic hoops side by side on the floor, and ask students to watch as you place a paper triangle in one hoop and two paper squares in the other. Think aloud and explain what you are doing using the words *triangle* and *square*.
2. Have students suggest a label for each circle. With their help, use sticky notes to label the two hoops.
3. Have volunteers continue sorting the remaining shapes. Ask them to think aloud and explain why they placed each shape in a particular hoop.
4. Show students the house shape and ask them to determine in which hoop it belongs. Establish that this shape is both a square and a triangle. Ask them to brainstorm solutions.
5. Overlap the two hoops to form a Venn diagram. Demonstrate how the house shape fits into the middle section. Ask students to suggest a label for this section.
6. Give students a copy of the **Shouting for Shapes reproducible (page 16)** and a set of paper shapes (triangles, squares, house). Invite students to think aloud as they sort the shapes. Circulate among students to check for understanding and offer assistance as needed.
7. Have students glue the sorted shapes in place on their Venn diagrams and write a label below each section.

Extended Learning

Provide copies of the Shouting for Shapes reproducible and shape manipulatives in a learning center for independent practice.

Materials

Shouting for Shapes reproducible
large plastic hoops
paper shapes (triangles and squares)
house shape (square with triangle roof)
sticky notes
glue

Shouting for Shapes
Directions: Sort the shapes. Label the circles. Glue the shapes in the circles.

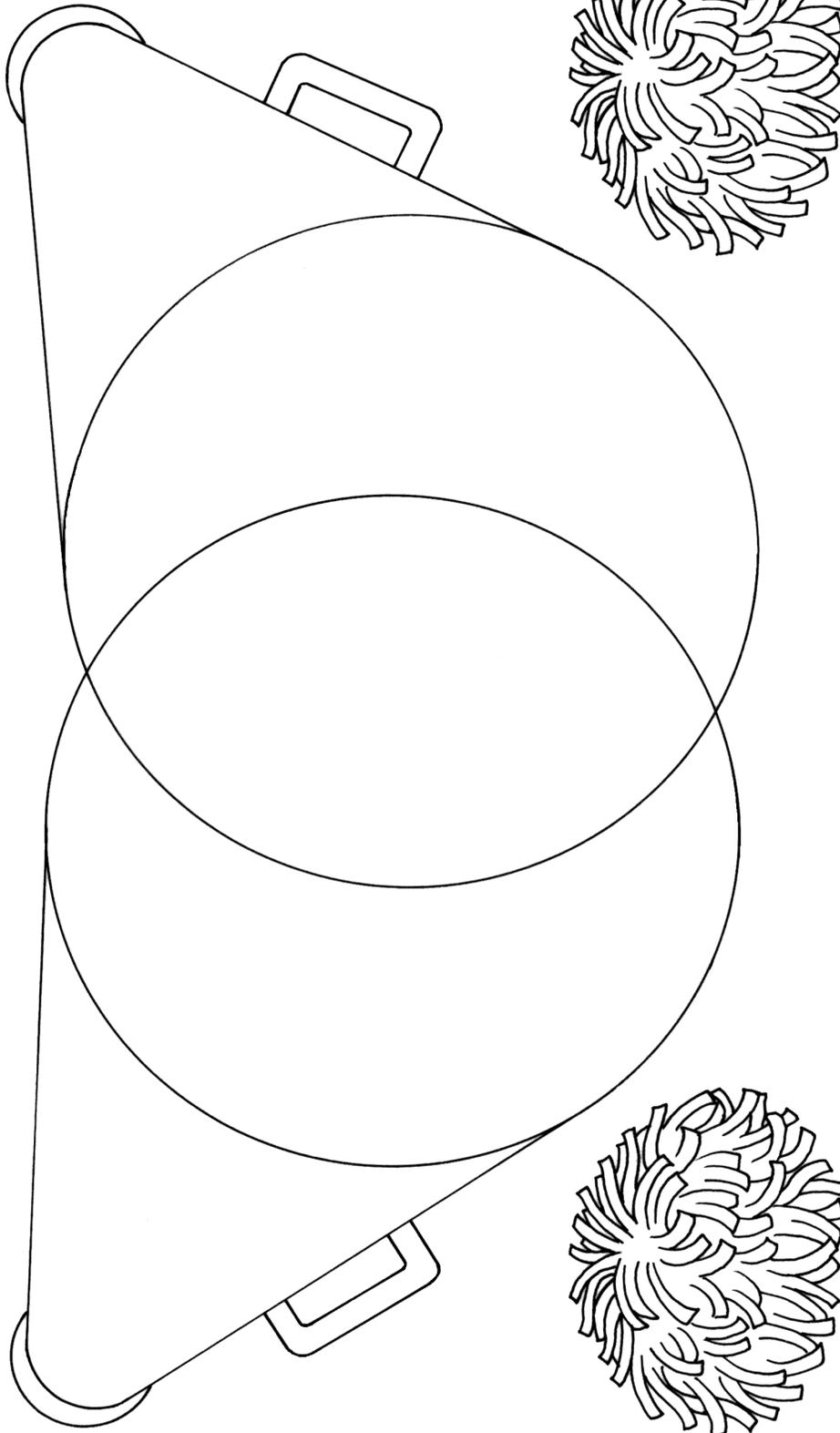
triangles both squares

Name _____
Date _____

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Shouting for Shapes

Directions: Sort the shapes. Label the circles. Glue the shapes in the circles.



Here Comes the Pattern Train: Pattern Mat

Skills Objective

Identify and create ABAB patterns.

Recognizing and creating patterns helps students make sense of mathematics. In this activity, students use a **Pattern Mat** to create an ABAB pattern with manipulatives.

1. Invite four students to stand in front of the class in an ABAB pattern (boy, girl, boy, girl). Ask the class to identify the pattern. Explain that this is an ABAB pattern. Give each student in the “pattern” an *A* or *B* letter card to hold in front of them.
2. Explore other ways of creating ABAB patterns with students. They might choose to create patterns using shoe type or hair color. Use the *A* and *B* letter cards to label each pattern.
3. Make a transparency of the **Pattern Trains reproducible (page 18)**, and give students a photocopy. Demonstrate how to arrange the manipulatives in an ABAB color pattern. Model how to color the train cars on the pattern mat in the corresponding colors. Label the train *ABAB*.
4. Give students counters in various colors. Invite them to create ABAB patterns and then color and label their pattern trains. If students need assistance, begin a pattern and have them complete it.
5. Encourage students to share their pattern trains with the class and “read” each pattern (*red, blue, red, blue*) aloud.

Materials

Pattern Trains
reproducible

letter cards (2 *A*
cards, 2 *B* cards)

overhead projector
manipulatives

different colored
counters

crayons or markers

Extended Learning

Once students have mastered ABAB patterns, have them use the Pattern Trains reproducible to create ABCABC and AABB patterns.

18 Teaching with a Mountain of Manipulatives and More
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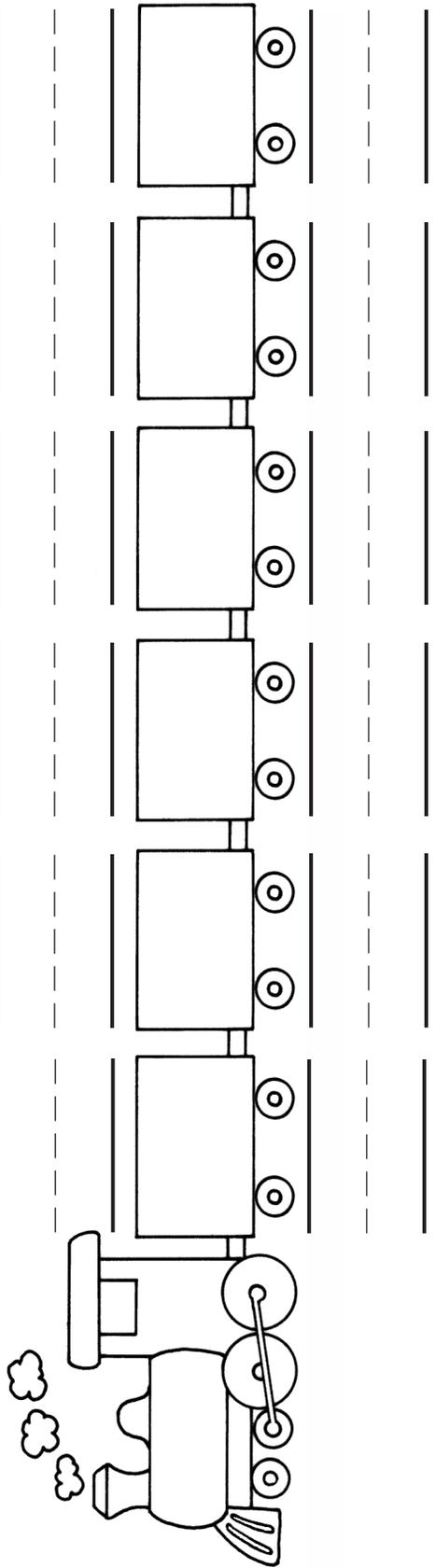
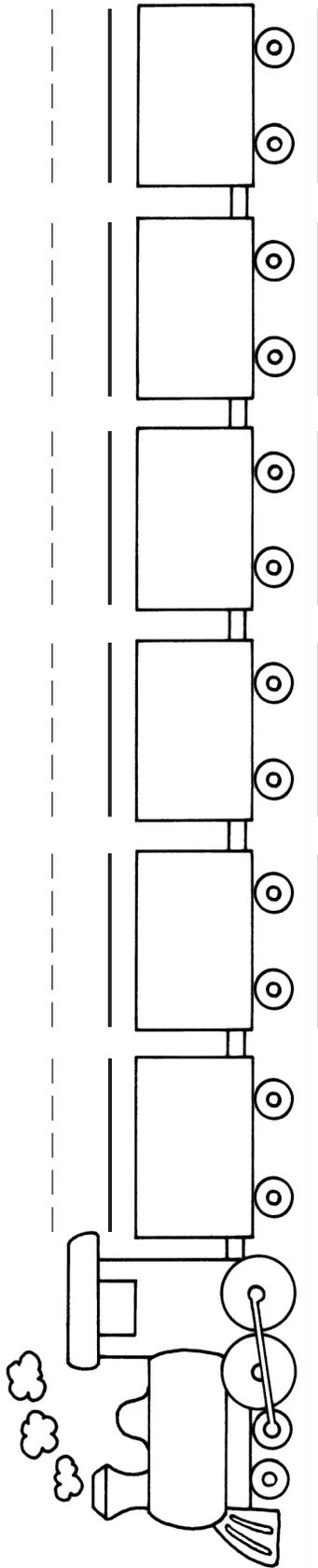
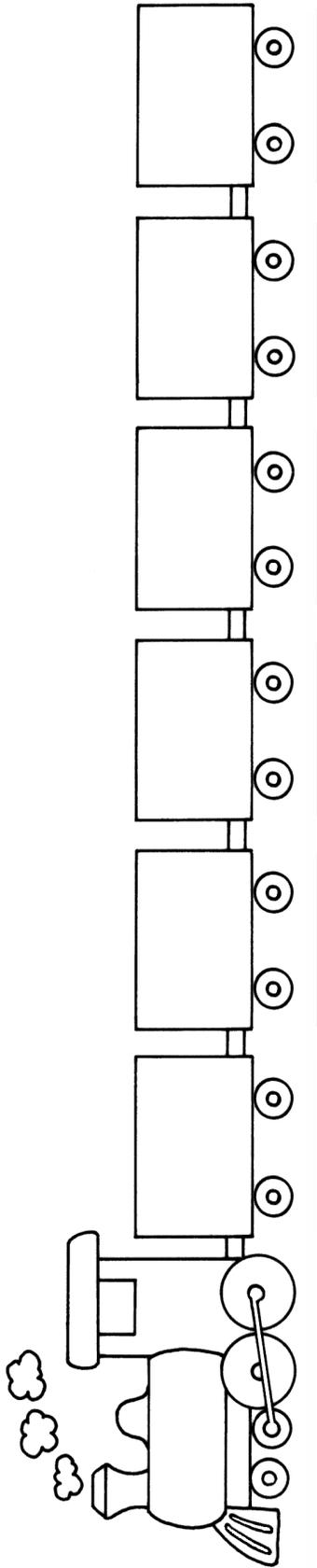
Pattern Trains

Directions: Use counters to make an ABAB pattern on each train. Color the boxes the same color as the counters. Label each box *A* or *B*.

Name _____
Date _____

Pattern Trains

Directions: Use counters to make an ABAB pattern on each train. Color the boxes the same color as the counters. Label each box **A** or **B**.



My Monthly Calendar: Calendar

Skills Objective

Recognize, write, and name cardinal numbers to 31.

Calendar activities develop students' sense of time and reinforce counting and number recognition skills. The class calendar is an important part of the daily routine in many kindergarten classrooms. This activity gives students the opportunity to create their own calendar using a graphic organizer.

1. Before reproducing the **My Monthly Calendar reproducible (page 20)**, fill in the name of the month and write the dates in the boxes. (Later in the year, leave the calendar blank before reproducing to allow children to fill in the boxes themselves.) Make a calendar folder for each student by stapling a calendar inside a file folder.
2. On the first day of the month, give each student a prepared calendar folder. Read the name of the month together. Help students locate the square for the first day of the month and trace (or write) the number in that square.
3. Each day, have students open their calendar folder, trace or write the number in that day's square, and color the square. On Mondays, have students fill in the dates from the previous weekend. Count the days together.
4. At the end of the month, students can take home their calendar folders to share with their families.

Materials

My Monthly Calendar reproducible
file folders
crayons or markers

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My Monthly Calendar

Month: September Year: 2008

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1	2	3	4	5	6
7	8					

Name _____
Date _____

Name _____ Date _____

My Monthly Calendar

Month: _____ Year: _____

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday

Me Tree: Glyph

Skills Objectives

Create a glyph that communicates personal information.
Read and interpret glyphs.

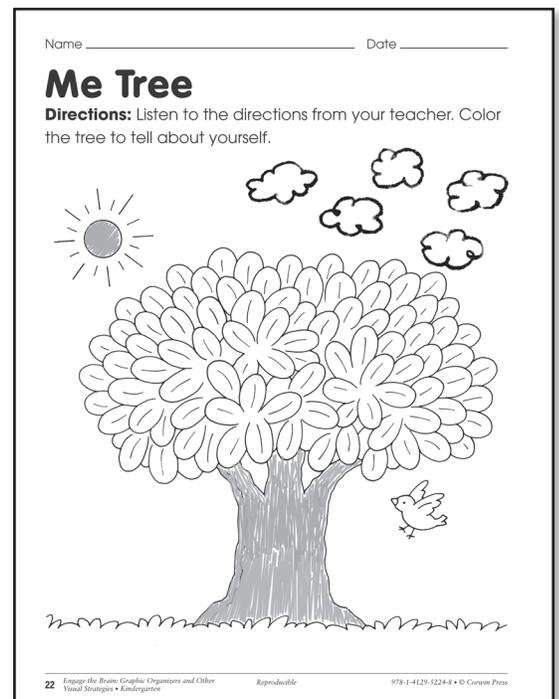
A **Glyph** is a method of representing data pictorially. Each symbol in a glyph communicates a different piece of information. In this activity, students create a tree glyph that provides personal information about them.

1. Draw an outline of a tree on chart paper. Give each student a copy of the **Me Tree reproducible (page 22)** and some crayons.
2. Explain to students that you are going to make a tree picture that shows information about you, and they will make a tree picture that shows information about them.
3. Ask students to listen closely as you read the following instructions. Model the activity using your tree outline. Pause to allow time for students to complete their own page. Check progress after each step.
 - *If you're a boy, color your tree trunk brown. If you're a girl, color your tree trunk red.*
 - *If you're five years old, draw five clouds in the sky. If you're six years old, draw six clouds in the sky.*
 - *If you like spring better than fall, color the leaves green. If fall is your favorite, color the leaves orange.*
 - *If you have brothers or sisters, color the sun yellow. If you do not have brothers or sisters, color the sun orange.*
 - *If you have a pet, color the bird blue. If you do not have a pet, color the bird pink.*

4. Display completed glyphs. Create a key to remind students what each symbol means. Discuss the results.
 - *How many students in our class are boys? How many are girls?*
 - *How many students have brothers or sisters?*
 - *If you want to know how many students have pets, how can you tell by looking at the glyphs?*
 - *How could you help someone learn to read a glyph?*

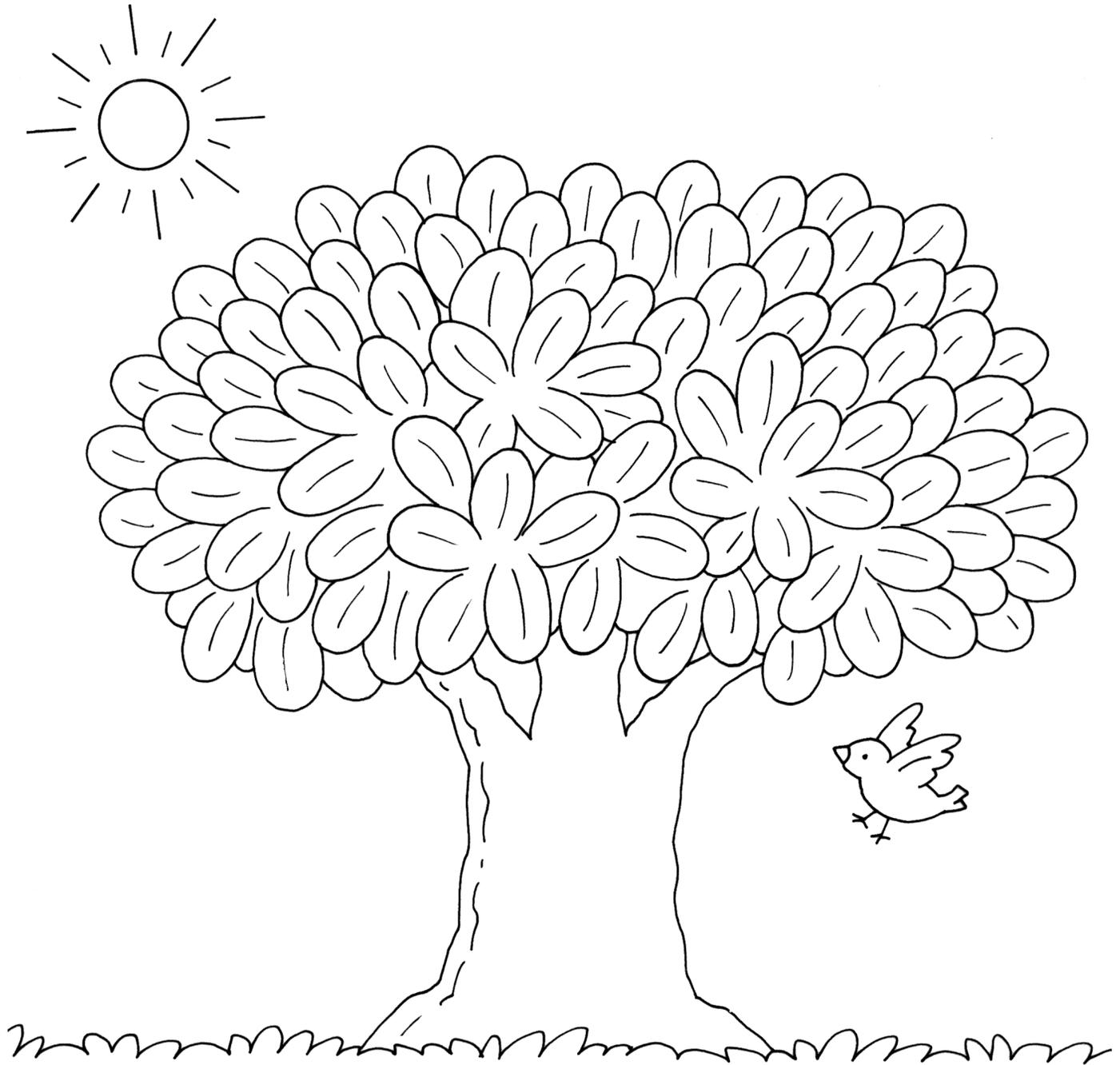
Materials

Me Tree reproducible
chart paper
crayons or markers



Me Tree

Directions: Listen to the directions from your teacher. Color the tree to tell about yourself.



Count a Handful: Picture Chart

Skills Objective

Estimate and count the number of items a student can grab in one hand.

A **Picture Chart** provides a visual representation of data. Prediction is one skill that students develop through repeated practice. In this activity, students predict how many items they can grab in one hand and then test their prediction by counting the items.

1. Display a tub of small items. Talk with students about what it means to grab a handful of something. Ask students to predict how many items from the tub they think you can grab in one handful.
2. Write their predictions on the board. Grab a handful of the items. Ask students: *How can we find out how many items I grabbed?* Count the items together.
3. Discuss the actual number of items and compare this number to students' predictions.
4. Give each student a **Count a Handful reproducible (page 24)** and a supply of small objects to count. Model the following steps:
 - a. Predict how many items can be grabbed in a handful.
 - b. Write and draw this number on the left hand of the reproducible.
 - c. Grab a handful of items.
 - d. Count the items.
 - e. Write and draw this number on the right hand on the reproducible.
5. Have students discuss the results in small groups. Talk about why the numbers varied.

Extended Learning

- Repeat this activity with a variety of items. Ask students to explain why the number of items they can pick up changes.
- Once students are familiar with this activity, have them grab, count, and compare two handfuls.

Materials

Count a Handful reproducible
tub of small items (packing peanuts, math counters)
crayons

Count a Handful

Directions: Predict how many items you can grab in one hand. Write and draw the number on **Hand 1**. Grab a handful. Count the items. Write and draw the number on **Hand 2**.

1. I think I can grab

2. I can grab

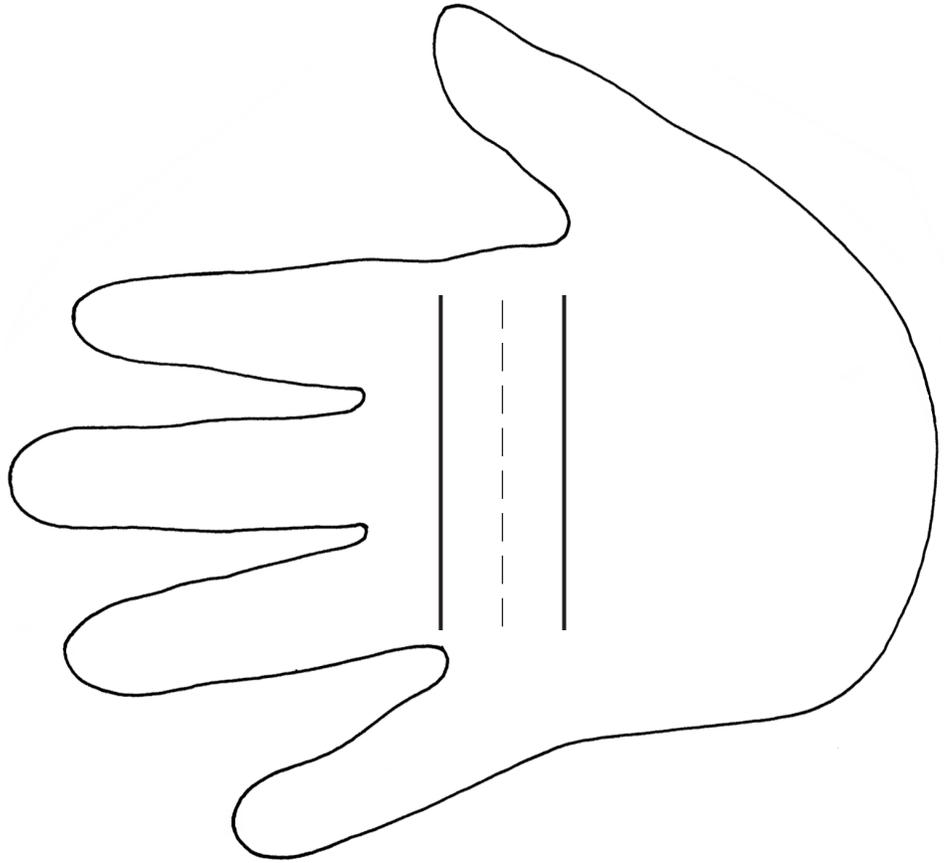
24 Teaching and Learning Goals, Experiences and Outcomes
Reproducible
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Name _____
Date _____

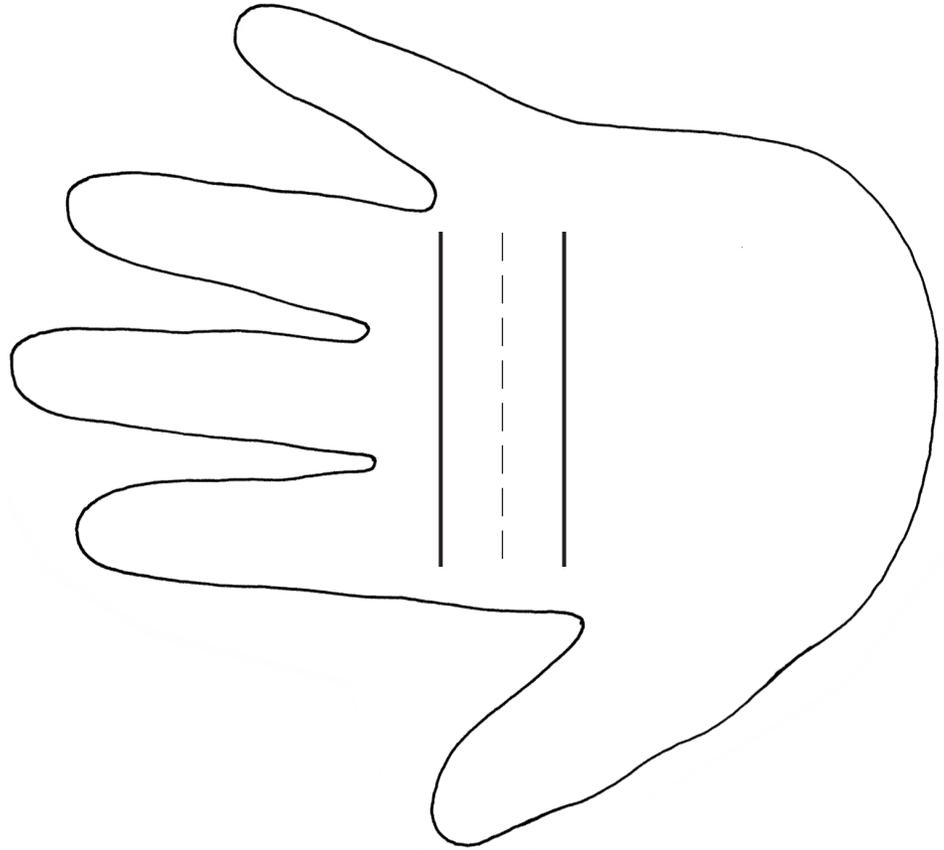
Count a Handful

Directions: Predict how many items you can grab in one hand. Write and draw the number on **Hand 1**. Grab a handful. Count the items. Write and draw the number on **Hand 2**.

1. I **think** I can grab



2. I **can** grab



Laces or Not? Floor Graph

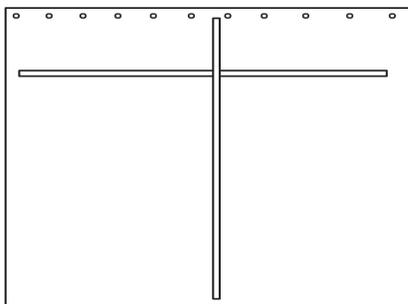
Skills Objective

Graph tangible items.

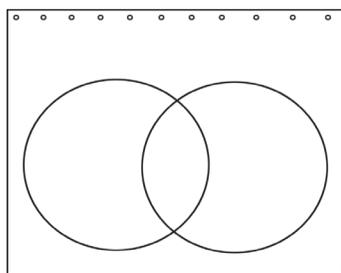
Floor Graphs enable students to graph using tangible objects and are ideal for first graphing activities. You can purchase a floor graph mat commercially or make your own from a shower curtain.

Making the Mat

1. Spread out a shower curtain on the floor. Use black vinyl tape or a permanent marker to draw a T-chart on one side of the shower curtain.



2. Turn over the shower curtain. Use a plastic hoop as a guide to draw two interlocking circles on this side.



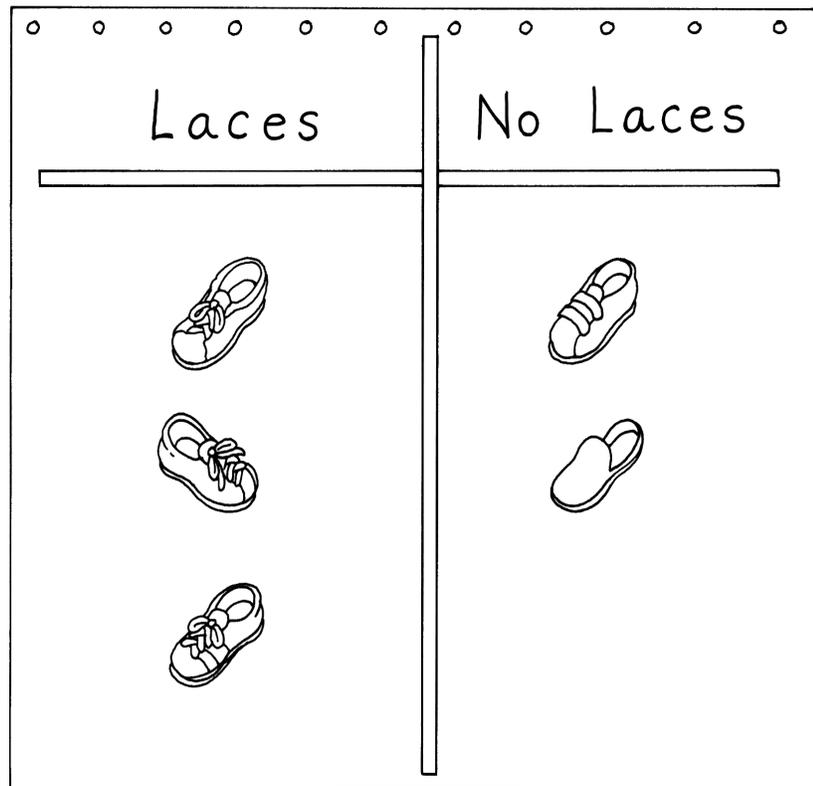
Using the Mat

1. Lead students in a discussion about their shoes. Talk about the different kinds of shoe fastenings. Then ask: *Do you think most of the shoes we are wearing have laces or don't have laces? How can we find out?* Guide students to conclude that they could use a graph.
2. Spread the graph mat on the floor. Using an erasable pen or a large sticky note, label the two columns *Laces* and *No Laces*.

Materials

solid color vinyl
shower curtain
black vinyl tape
permanent marker
plastic hoop
erasable pen or large
sticky note

3. Ask students to remove one shoe and place it in the appropriate column on the mat. Encourage students to think aloud as they sort and explain why they sorted their shoes as they did.
4. After all students have sorted their shoes, ask them: *Which column has more shoes? How can we tell?* Confirm the prediction by counting the shoes. Discuss how the graph helped students see the solution to the problem.



Extended Learning

Sort the shoes again using the Venn diagram side of the mat. Place shoes with laces in one circle, shoes with Velcro in the other circle, and shoes with both in the middle circle. Place shoes with neither laces nor Velcro outside the mat. Discuss the differences between this graph and the T-chart graph.

Measure This: Bar Graph

Skills Objective

Compare the length of classroom items.

A **Bar Graph** presents facts in a visual form that makes reading and comparing data easier. In this activity, students use lengths of yarn or ribbon to measure classroom objects, and then use the yarn or ribbon to create bars on a graph.

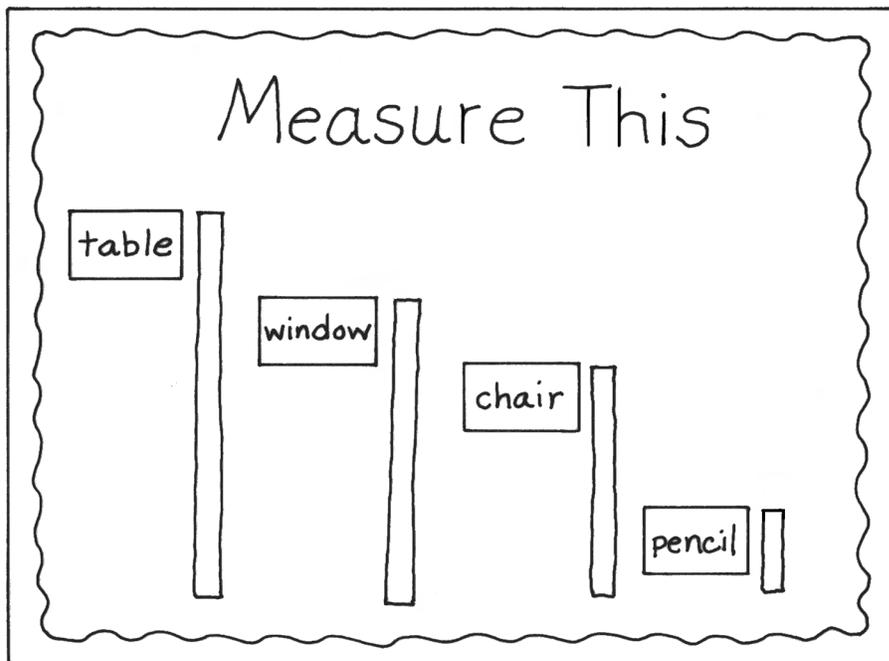
1. Draw students' attention to a classroom item, such as a table. Ask students: *How long do you think this table is? How can we find out?* Guide students to conclude that you can measure the table.
2. With the help of a volunteer, cut a piece of yarn or ribbon the length of the table. Write the word *table* on an index card, and tape it to the yarn or ribbon.
3. Invite students to work in pairs to measure different items in the classroom, using yarn or ribbon to show the length and labeling the items with index cards.
4. Help students sort the yarn lengths from shortest to longest, and arrange them on a bulletin board. Label the items to create a simple bar graph.

Materials

yarn or ribbon

index cards

tape



Extended Learning

Use 1" graph paper as a background for the bulletin board, and have students count and color the squares.

100 Days Hooray! Tally Chart

Materials

paper shapes

tagboard

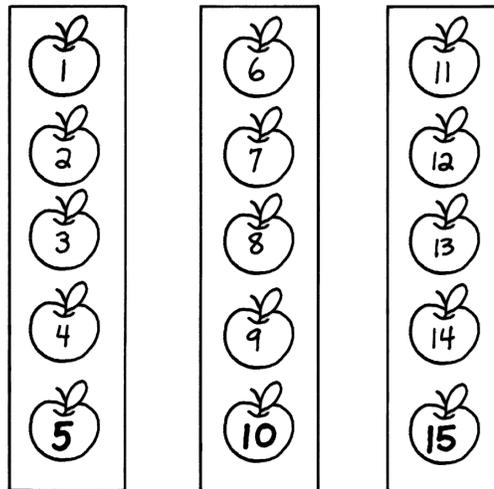
black, red, and
green pens

Skills Objective

Count to 100.

A **Tally Chart** allows students to keep track of data easily. Counting the days of school is a tradition in many kindergarten classrooms. A tally of days provides students with a visual guide of how our number system works.

1. On the first day of school, introduce the Count-Up Calendar. Print the numeral 1 on a paper shape. Attach the paper shape to a strip of tagboard, and place it on the wall of your classroom. The next school day, add a paper shape with the numeral 2 printed on it. Continue adding a shape for each school day.
2. Once five days have passed, begin with a new strip of tagboard. Use black ink for numbers 1–4, red ink for each multiple of 5, and green ink for each multiple of 10 to reinforce number concepts.



3. Continue counting each school day up to 100. Use the Count-Up Calendar for counting activities throughout the year.
4. Hold a classroom celebration on the 100th day of school. Students might choose to make collages with 100 items, take a walk of 100 steps, or collect 100 cans of food for a food drive.

Extended Learning

Purchase a 100-piece jigsaw puzzle. Solve the puzzle beforehand. Number the pieces from 1 to 100 beginning with the corner and outside edge pieces, and moving inward. Reassemble the puzzle with your students by adding one numbered piece to the puzzle each day.