

LEARN Every Day¹

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The mission of a quality curriculum should be a strengths-based approach, that is designed in a way that respects individual differences, honors every child's culture, and recognizes that family members are equal partners in a child's education.

- **Literacy, math, science, social studies, and creative arts in each unit**
- **Experiences that encourage exploration and discovery**
- **Activities designed for multisensory learning**
- **Research-based, developmentally appropriate methods**
- **Nurturing environments that support all learners**

Literacy

The ultimate goal of literacy instruction is to ensure that all children are successful when formal reading instruction begins. The literacy experiences in a quality curriculum are built into large group, small group, and learning center activities.

1. **Listening Skills**-Listening is the foundation for all literacy development. Research has shown that the more children are spoken to and listened to, the better listening skills they will develop. As children learn to listen for details, prioritize the information they hear, follow directions, listen to stories, and participate in conversations they further develop listening skills.
2. **Oral Language Development**-The key components of oral language are vocabulary and appropriate grammar. The size of a child's vocabulary is one of the best predictors of how successful a reader that child will become. Vocabulary-building opportunities incorporated daily during group discussion or while singing or listening to stories and poems enable teachers to provide intentional and purposeful instruction.
3. **Letter Knowledge and Recognition**-Letter knowledge involves the ability to recognize all 26 letters of the alphabet in both uppercase and lowercase forms and to understand that letters are the foundation of all words. As young children learn to see letters as independent components that can be organized in many ways, they become more fluent speakers and more active listeners.

4. **Print Awareness-**Print awareness evolves as children are exposed to print throughout their daily lives. As children develop the knowledge that printed words move from left to right and from top to bottom, and that print has many functions they build their print awareness skills. These functions include labeling items, creating lists, conveying information, telling stories based on books, and recognizing environmental print.

5. **Phonological Awareness-** Phonological awareness is sensitivity to sound. It includes recognition that sounds are the same and different, onomatopoeia words, match rhyming word pairs, and identifying the repetitive sound in an alliterative phrase or sentence.
 - a. **Alliteration** — Repetition of a consonant sound in a series of words, such as, “Terry Tiger treated Timothy Turtle to a tasty tidbit.” Children are able to hear the repetition of the /t/ sound, but do not necessarily need to identify that the sound is made by the letter *t*.
 - b. **Onomatopoeia** — Identifying words that sound like what they describe, for example, *pitter-patter, moo, quack, beep*, and so on.
 - c. **Rhyming words** — Recognizing words with the same ending sound.
 - d. **Segmentation** — Breaking words into their component sounds.
 - e. **Sound discrimination** — Hearing the similarities and differences in sounds.

6. **Comprehension-** As children have an opportunity to retell stories in their own words, act out stories, and listen to stories that are not accompanied by illustrations, they develop comprehension. Comprehension is enhanced as children use higher-level thinking skills, make applications, conduct analyses, experiment with synthesis, and make evaluations. In addition, understanding how authors describe settings, develop characters, and organize the storyline helps young children craft their own stories.

Math

The math activities focus on more than just numbers, operations, geometry, and measurement. In keeping with the recommendation of the National Council of Teachers of Mathematics (NCTM), algebra and data analysis are to be woven into all activities.

1. Algebra at the preschool level means children are developing skills that help them think and reason about relationships.
2. Activities such as manipulating pattern blocks, making their own patterns, arranging objects according to a rule, and recognizing patterns they observe in the environment help children learn to solve problems mathematically.
3. Emerging geometry skills are encouraged as children identify object attributes, develop their measurement skills, and create a foundation for data analysis.
4. As children collect and sort items by their attributes, they are learning a key component of the ability to represent, analyze, and interpret mathematical data.

Science

The science component in a quality curriculum should be designed to ensure that children entering kindergarten will have a working knowledge about the natural world, including understanding cause and effect; recognition of some of the differences between animate and inanimate objects; a basic knowledge of the ways in which people's beliefs, goals, and desires affect behavior; and a rudimentary understanding of substances and their properties.

The curriculum must include concepts that are related to

- physics
- biology
- psychology
- chemistry

Scientific elements introduced in a quality curriculum include the following:

- ✓ the scientific method
- ✓ a working knowledge that germs can transmit disease
- ✓ the life cycle of a plant
- ✓ how animals and people grow and develop across time
- ✓ opportunities to participate in simple, developmentally appropriate scientific experiments
- ✓ increasing opportunities to ask information seeking questions of adults

Social Studies

Social studies permeates the preschool classroom, from learning about celebrations and community helpers to exploring identity in terms of family, culture, and community. Preschoolers begin their social studies explorations as they examine themselves, their families, and their community.

The natural curiosity of preschool-age children is enhanced as they begin forming relationships outside of their own families and exploring the world around them. While social studies involves learning about the world and its people, it also leads to the development of a strong social–emotional center as children begin to take on the perspectives of others, while becoming active participants in the larger world in which they live.

The Creative Arts

The expected outcomes from children participating in the creative activities within the curriculum include:

- ✓ **developing the imagination while refining problem-solving and critical-thinking skills**
- ✓ **discovering a sense of craftsmanship, quality task performance, and goal setting—important skills for lifelong learning**
- ✓ **increasing self-confidence and self-discipline by imagining what might be**
- ✓ **accepting responsibility to complete tasks from start to finish**
- ✓ **the nurturing of values, including team-building skills and respecting alternative viewpoints.**

Research-Based, Developmentally Appropriate Methods

Principles outlined by the National Association for the Education of Young Children (NAEYC) as being crucial components of best practice.

These principles are summarized as follows:

- All domains (physical, social, emotional, and cognitive) are interconnected and impacted by what takes place in the others.
- Development moves toward a greater complexity, self-regulation, and symbolic or representational capacities.
- Consistent relationships with responsive adults and opportunities for positive interactions with peers help children reach their maximum potential.
- The role of culture influences learning.
- Because children learn in many different ways, a wide range of teaching methods is required.
- Play is important for developing social–emotional skills, language, and problem-solving strategies.
- The learning environment should be challenging because children learn best when they have multiple opportunities to practice what they learn.
- Hands-on learning is meaningful.
- The experiences children have shape their motivation, as well as their behavior.

Nurturing Environments that Support All Learners

Special Needs

Children with special needs learn best in settings with their typically developing peers

Dual Language Learners (DLLs)

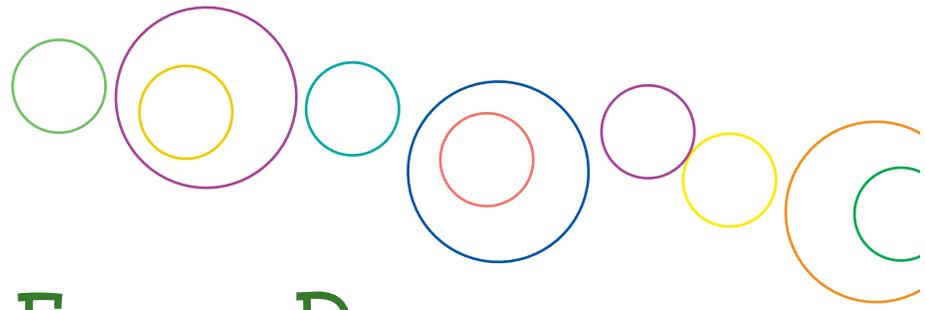
Opportunities exist for children who do not speak English as their native language.

Response to Intervention (RTI)

Response to Intervention (RTI) is a strategy used to provide learning opportunities for students who are at risk for academic failure. This is especially important in terms of early literacy, as research indicates literacy is the strongest single predictor of success in academics as well as social development. For students in your classroom who are not meeting early literacy milestones, the *Nemours BrightStart! The Complete Program for Early Literacy Success* is a recommended companion for any curriculum.

Extended Learning

Enrichment and other tips for enhancing the learning for children who need a more challenging environment.



Unit 9

Learn Every Day about Numbers

Unit Overview: The children will experiment with and discover the many ways people use numbers in their daily lives. They will understand that whole things can be divided into parts and then reassembled into the whole again. They will learn how to make and interpret simple bar graphs.

Vocabulary

- sort
- count
- set
- more
- fewer
- part
- whole
- half
- equal
- same



Objectives for This Unit

Domains	The child will
Arts & Creativity	<ul style="list-style-type: none"> ○ Show growing creativity and imagination in using materials and in dramatic play situations.
Cognitive Skills	<ul style="list-style-type: none"> ○ Seek multiple solutions to solve a problem; ○ Use past knowledge to build new knowledge.
Communication	<ul style="list-style-type: none"> ○ Use vocabulary related to numbers, size, and so forth.
Literacy	<ul style="list-style-type: none"> ○ Identify his name in print; ○ Identify the letters in his name.
Mathematics	<ul style="list-style-type: none"> ○ Recognize number and quantity in everyday environments; ○ Use a variety of strategies related to numbers such as comparisons, sets, and graphs; ○ Combine items based on similar attributes; ○ Be introduced to the concept of fractions.
Personal Health & Development	<ul style="list-style-type: none"> ○ Continue to participate in active outdoor games involving running, skipping, hopping, and jumping.
Science Constructs	<ul style="list-style-type: none"> ○ Observe and discuss common properties.
Social & Emotional Skills	<ul style="list-style-type: none"> ○ Work cooperatively in groups.
Social Studies	<ul style="list-style-type: none"> ○ Develop a growing understanding of position in space, geographical location, and direction.

DLL Tip

Keep in mind that dual language learners can be most successful if they learn and confirm basic concepts in their home languages, to build on prior knowledge. The names of numbers and other vocabulary in English can come later. Studies show that once a concept is learned well in one language, children are generally successful in transferring the knowledge to the new language. Use your knowledge of the other language to help you make sure the child can show she understands the needed math concepts before moving to English.

Resources for the Teacher

Books

Learn Every Day about Numbers edited by Kathy Charner

Math in Minutes: Easy Activities for Children 4–8 by Sharon MacDonald

Books to Read to Children

Corduroy by Don Freeman

Graphs by Bonnie Bader. This book is advanced for four-year-olds, but it will give you several good ideas for things to graph.

Pie in the Sky by Lois Ehlert

Use Your Eye, Let's Classify! by Kelly Doudna

The Very Lonely Firefly by Eric Carle

Music

“Crayon Song,” *Learn Every Day* music CD by Sharon MacDonald

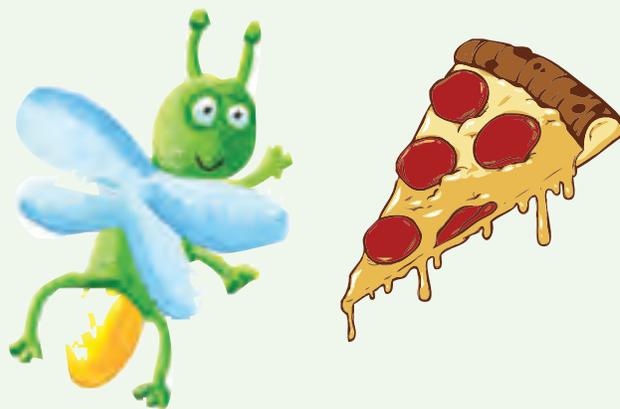
“Five Round Pizzas,” *Learn Every Day* music CD by Sharon MacDonald

Websites

Create free online graphs here:

<http://nces.ed.gov/nceskids/createagraph/default.aspx>

Teaching with Collections in Your Classroom. Smithsonian Center for Education and Museum Studies. Available at http://www.smithsonianeducation.org/educators/lesson_plans/collections/smithsonian_siyc_spring08.pdf



Special Needs Adaptations

Special Need

Adaptation

- | | |
|----------------------------|--|
| Visual Impairments | ○ To help the child understand the purpose behind the activity, write out several names on a piece of paper attached to a tabletop easel. Ask the child to point to the longest name and the shortest name. (See Lesson 3, Literacy Center.) |
| Hearing Impairments | ○ Before inviting the child to compare the length of his name with a peer, model the activity once for him using your name. Use gestures to point out the longest name. (See Lesson 3, Literacy Center.) |
| Cognitive Delays | ○ Demonstrate for the child what you mean by <i>long</i> and <i>short</i> . Encourage the child to show things in the classroom that are longer than or shorter than other objects. Talk about the differences. |
| Motor Delays | ○ Instead of Scrabble™ letters, which may be too difficult for the child to manipulate, use large magnetic letters and a cookie sheet. Tell the child to invite a friend, so the two of them can compare their names with the magnetic letters on the cookie sheet to see which one is longer. (See Lesson 3, Literacy Center and Lesson 5, Graphing.) |
| Speech/Language Delays | ○ Demonstrate for the child how to compare the number of letters in her name with those in her friend's name. Encourage the child to count aloud the number of letters in her name. If necessary, review the concepts of <i>long</i> and <i>short</i> with the child before she begins the activity. |
| Emotional/ Behavior Issues | ○ Working collaboratively with a peer can be very challenging. Before asking the child to work with a peer, review the rules of cooperative work. For example, say, "Take a turn, wait for your friend to have a turn, be kind, speak softly..." and so forth. |

Lesson 1

Counting



Things to Prepare

- Gather 10 clipart fireflies per child, laminated
- Gather 11 index cards per child
- Gather 55 cherry-sized red circles per child
- Make ant hats (if desired)
- Collect buttons for Corduroy in the home living center
- Collect home living items
- Make sets of matching number cards 1 to 5
- Find pictures of items that come in sets of 2, 5, 8, 10, and 12 (socks, shoes, buns, eggs, fingers, toes, etc.)
- Provide materials for set of counting ants (children make in art)

Materials Needed

- ▶ Black circles (30 per child)
- ▶ Black construction paper
- ▶ Cardboard squares
- ▶ Cherry-sized red circles (55 per child)
- ▶ Clipart fireflies (10 per child, laminated)
- ▶ Craft sticks (10 per child)
- ▶ Envelopes or zippered plastic bags (one per child)
- ▶ Index cards (11 per child)
- ▶ Leaves
- ▶ Medium-sized sticks for mobiles
- ▶ Straws, seeds, stones, etc.
- ▶ String
- ▶ Stuffed bear (Corduroy)

Featured Book(s)

- ▶ *Corduroy* by Don Freeman
- ▶ *Pie in the Sky* by Lois Ehlert
- ▶ *The Very Lonely Firefly* by Eric Carle

Featured Song(s)

- ▶ “The Ants Go Marching”

Large Group

As the children gather for large group, say (in a very excited voice), “How many of you can count to 10? Let’s count to 10 together!” Continue with different objects and quantities: “How many fingers do we have? Let’s count together! Let’s count the number of windows we see!” When the children feel comfortable, begin to introduce simple addition. “Let’s count the fingers on one hand! Good, there are five! Now if we wanted to hold up eight fingers, how many more would we need?” Or, “This morning, my mommy gave me three kisses, but I wanted six kisses. How many more do I need to get?” After practicing, ask the children if they can think of objects that come in sets of 10 (fingers, toes, hot dogs). Do they know of any objects that come in twos (socks, gloves), eights (hamburger buns, hot dog buns), or by the dozen (eggs, donuts)? Show pictures of the items as the children mention them (it’s hard to predict the things the children will think of, so have a lot of different pictures on hand).

Transition Tip

Number the children one through five (modify for the number of centers), and dismiss them by number, starting with number five.

Small Group

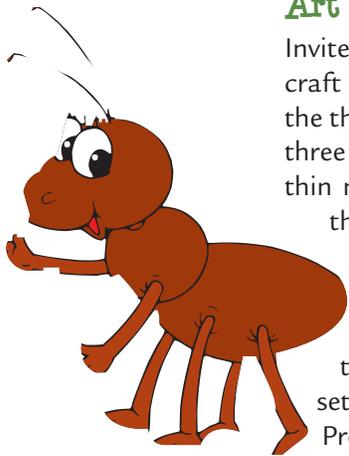
Read a book about fireflies, such as *The Very Lonely Firefly* by Eric Carle. Find clipart of fireflies and print 10 fireflies for each child in the class. Laminate and store the fireflies in an envelope or zippered plastic bag. Give each child a bag of fireflies and a sheet of black construction paper (to represent the night sky). Ask the children to

make sets of varying numbers of fireflies per your instruction. Remind them to make their sets on the black paper. Ask them to make a set of one, then two, then three, then four, and then five fireflies. When they have five fireflies in their sets, ask them to add two more fireflies and tell you how many are in the set now. Continue adding fireflies until all 10 are in the set. Ask the children to count to be sure they have all their fireflies. Finally, ask the children to show you a set of zero fireflies on the black paper. The children should remove all of their fireflies, leaving the paper empty.



Center Time

Art Center



Invite the children to make 10 ants to use for singing and counting. Provide 10 craft sticks per child. Provide a detailed picture of an ant, and show the children the three body parts (head, thorax, and abdomen). Encourage the children to glue three black circles onto their craft sticks to represent the ant's body. Let them use thin markers to create faces on the top section of each ant. Number the ants 1 through 10. Store the ants in individual plastic bags and encourage the children to use them when singing and counting to the "Ants Go Marching" song.

Take a walk outside to collect leaves. Ask the children to count their individual collections, and then add the totals together to get a group total. Ask the children to sort their leaves and create sets of similar shapes. Compare the sets. Encourage the children to classify them by color. Compare the sets again. Provide medium-size sticks, cardboard squares, glue, and string. Invite the children to glue their sets of leaves onto the cardboard squares, then use the string and stick to create a mobile. They could classify their sets by shape, texture, color, size, or similarity. **Note: For children with acute allergies, use artificial leaves.**

Home Living Center

Ask the children to find a certain numbers of items as they naturally play in the center. For example, have them find four spoons, four forks, four plates, and four cups to set the table. Count the number of baby dolls and ask the children to find enough bottles so each baby doll can have one. How many do they need to find? Make simple addition problems by saying, "We have two bananas, but we need four. How many more do we need to find?"

Provide a stuffed Corduroy toy in the center. Read *Corduroy* by Don Freeman. As you read, point out how Corduroy has a missing button. Say, "Corduroy should have two buttons, but he has only one. How many buttons does he need to find?" Provide a single die and have the children roll it and count the number of dots on the side that lands on top. Invite the children to use double-sided tape to add that many buttons to the stuffed Corduroy's overalls.

Literacy Center

Make sets of matching number cards of the numbers 1 through 5. Encourage the children to match the numbers, read the number, trace it with their finger, and say the number out loud.



Read *Pie in the Sky* by Lois Ehlert. Provide 55 red, cherry-sized paper circles for each child, along with 11 index cards. Help the children print their names on one index card to serve as a cover for the book. Turn to the first card and have the children trace the number 1 at the bottom and glue on one paper cherry. On the next card, they should trace the number 2 and glue on two paper cherries, and so on, until they have 10 cherries on the last card. If the children want, they can glue a picture of a cherry pie on the front cover, or they can draw their own pie. Bind the cards together into books, and read the books together.

Math Center

Give the children sets of straws, seeds, stones, or any material available in the room. Ask questions such as the following:

How many red straws are there in the bundle? blue straws? Which set of straws has more? How can you find out?

How many watermelon seeds are there? how many bean seeds? Which has fewer, the watermelon or the beans? Which has more?

How many toy horses are there? how many toy cows? Which set has more? Which has fewer?

How many sets are big in number, and how many are small in number?

Remind the children that they can always count the items in the sets to find the answers to the questions.

Use the ant counters from the art center activity to engage the children in additional math activities. Ask the following questions, and encourage the children to find the answers:

If 10 ants march in, then five ants march out, how many ants will be left?

Three ants join five ants. How many ants are there?

Seven ants march in. Three more ants join them. How many ants are there?

Invite the children to make up their own math sentences and stories.

Music Center

Play a movement game to the song, "The Ants Go Marching." Create ant hats by adding black antennae (chenille stems) to black painter's caps. Encourage the children to act out the song by marching in a circle according to the number (one by one, two by two, three by three, and so forth).

Closing Circle

Ask the children to count by rote to 10, count up to 10 objects, and answer a simple addition word problem, such as: "I have two quarters, but the toy I want to buy costs six quarters. How many more quarters do I need?"

Home Stretch

Ask the families to help the children count items around the home. How many beds are in your house? How many cars does your family have? How many chairs are at the dining room table?

Lesson 2

Sets and Classifying

Things to Prepare

- Collect crayon holders to decorate
- Create index cards (numbers 1 to 12)
- Gather manipulatives or objects for counting

Large Group

Call the children to large group by clearly definable criteria. Say, “I need all the girls—only the girls—to come to large group.” After the girls have gathered, say, “Now, I need the boys—all boys please come to large group.” After the boys have gathered, keep the children separated by having them sit in small groups: boys on one side and girls on the other. Say, “Usually, we all sit in a big circle at large group, but today, you are sitting in sets. A set is a group or collection of things that belong together or resemble each other. Can you tell me how these two sets (indicate the boys and girls) belong together?” If the children do not think of it, lead them to the conclusion that the one set is all girls while the other is all boys. Say, “When we divide or sort things by what they have in common, we are *classifying* them. That means we arrange them according to a shared quality—something they have in common. This set (point to the girls) is made up of girls; that is what they have in common. This set (point to the boys) is made up of boys; that is what they have in common. Now, let’s classify our sets by something else, like a color in your shirts.”

Have everyone stand up, and ask them to look at their shirts to determine the colors. Choose two colors that are prevalent in the children’s clothing. Place a color marker (a sheet of construction paper) on the floor on either side of the large group area. Say, “If your shirt has some red in it, please go stand by the red paper. If your shirt has some blue in it, please go stand by the blue paper.” Assist the children in determining to which set they belong. If some of the children have both colors in their shirts, choose the most outstanding color. Ask, “How did this way of classifying change our sets? Yes, now there are boys and girls in both sets and the sets are different sizes. When we sort and classify in different ways, we end up with different sets. What other ways could we classify the group to end up in different sets?” Encourage the children to brainstorm ways to sort the group. Try out any ideas they think of, such as classifying by shoe type, shorts versus long pants, hair color, and eye color.

Materials Needed

- ▶ Chart paper and marker
- ▶ Collections of similar items (blocks, counters, crayons)
- ▶ Index cards
- ▶ Music instruments
- ▶ Paper plates
- ▶ Small paper lunch bags

Featured Song(s)

- ▶ “Down By the Music Center”
- ▶ *Learn Every Day* music CD, “Crayon Song,” Track 7



Transition Tip

Send the children to centers by sets according to certain criteria, for example: “All children with black tennis shoes can go to centers.” Older children may be able to respond to being asked for two criteria, such as “all girls with black tennis shoes” or “all people with brown hair who are wearing black tennis shoes.”

Small Group

Introduce the “Crayon Song” (Track 7) from the *Learn Every Day* music CD.

Crayons

by Sharon MacDonald



*Oh I wish I had a little red jug
To put my crayons in.
I'd take them out, go scribble, scribble,
scribble,
And put them back again.
Oh, I wish I had a little purple car
To put my crayons in.
I'd take them out and draw a line,
And put them back again.
Oh, I wish I had a little yellow sun
To put my crayons in.
I'd take them out, draw 'round and 'round,
And put them back again.*

*Oh, I wish I had a little blue cloud
To put my crayons in.
I'd take them out, go dot, dot, dot,
And put them back again.
Oh, I wish I had a little orange ball
To put my crayons in.
I'd take them out, go bounce, bounce,
bounce,
And put them back again.
Oh, I've got myself a little green box
To put my crayons in.
I'll take them out and count them all,
And put them back again.*

Six items are mentioned in the song. Play each verse separately, then help the children make a list of all six items. Play the song again, and invite the children to name all the colors they hear mentioned in the song.



Center Time

Literacy Center

Place a variety of crayons, counters, and small colored blocks in the literacy center. Invite children to first sort them by color, then by category (blocks of the same color in one pile, crayons of the same color in another pile, and so on). Extend the learning by inviting the children to see how many items in each group they can count.

Art Center

Play the “Crayon Song” again, and invite children to draw one of the crayon holders they heard about in the song. If possible provide some three-dimensional crayon holders for them to decorate, such as a box, a clear plastic jar, a plastic bowl, and so forth.

Music Center

Encourage the children to sort the musical instruments by varying criteria: color, size, shape, the type of sound they produce, or how you play it. Sing this sorting song to the tune of “Down by the Station.”



*Down by the music center, early in the morning,
Let's put the round instruments all in a row.*

*It doesn't matter what it is, as long as it is round.
Shake, shake, strum, strum, off we go!*

Down by the music center, early in the morning,

Let's put the percussion instruments all in a row.

*It doesn't matter what it is, as long as you hit or shake it.
Bang, bang, boom, boom, off we go!*



Math Center

Provide counters or small blocks for the children to use as manipulatives. Take 12 index cards and write a number on each one, 1 through 12. Shuffle the index cards and turn them upside down. Invite a child to select a card, turn it over, and then place counters on it to correspond to the number.

Outdoor Activities Center

Label small paper lunch bags with the children's names, and hand the bags out. Ask the children to collect a set of objects from the playground. Tell them they can collect anything they want, as long as it is a set. Remind them that items in a set all have something in common. Tell them they can collect sets of unusual stones, odd-shaped bark, dried weeds, fallen leaves, seedpods, and so on. Invite children to take their time and explore the playground. Remind them that everyone is looking, and if they see more than one of a particular item, to please leave some for the other children. Children love the “treasure hunt” atmosphere and are excited over each “find.” As children discover items, talk to them about their finds.

Encourage them to name and describe the things they find. After your collection walk, sit together in a sunny area to do a sorting activity.

Working individually, have the children sort their objects onto paper plates or into separate piles. First, set up a category. For example, ask children to sort all the big things on one plate and small things on another. Place one of each type on the plates as a guide. As children sort, help them talk about their sorting choices. Ask them to share why they are putting something on a certain plate.

Finally, put all the objects in one big pile and sort them using other categories, such as color or texture. Keep changing your sorting categories as long as the children are interested. Some children may be reluctant to give up their collections; do not force them to, but encourage them to donate a few items to the larger collection.



Take the children on a collection walk during which they collect items of one color, such as green. Remind them about being gentle with plants and trees. There is more than one shade of green in our world, and this activity will certainly help children see many different shades. Upon returning from the walk, ask the children to sort the items onto paper plates. Set up the categories so there is an obvious choice—for example, dark and light green. Then from there, ask the children to break down their items into piles of smaller groups of shades. Together, they can practice counting skills as they count the number in each group. Later, use the collected items in green collages on green paper.

Home Stretch

Ask the children to look in their homes for a collection of favorite toys. Invite them to ask family members if they have any collections, too.

Closing Circle

Using collections of similar items from the classroom (blocks, counters, crayons), ask the children to work in pairs or small groups to sort 10 items by two criteria: color and size.

Lesson 3

Comparing



Things to Prepare

- Acquire stickers, beans, seeds, and shells for activities
- Gather chairs for musical chairs
- Write children's names on index cards

Large Group

Explain that we compare two given sets by counting their elements. One set usually has either more or fewer elements than the other. Start by comparing sets of children. Say, "Who remembers the sets we made yesterday during large group? You were in the sets!" Guide the children in remembering the sets of boys and girls. Ask the children to arrange themselves in the same sets again, girls on one side of the large group area and boys on the other. When the children have arranged themselves, say, "Now let's compare the sets. The first comparison is obvious! This set (point to the group of boys) has fewer girls than this set (point to the group of girls) and this set (point to the girls again) has fewer boys than this set (point to the boys)." Say, "Can you think of any other ways to compare these two sets?" Help the children compare the sets by another criterion, such as number. Which set has more? Which set has fewer? Tell the children that they will have many opportunities to compare sets throughout the day.

Materials Needed

- ▶ Three to eight items each (Legos™, Duplo™, Lincoln Logs™, cubes)
- ▶ Blank sentence strips
- ▶ Chairs
- ▶ Play paper money
- ▶ Real or plastic coins
- ▶ Scrabble™ letters or alphabet letter tiles
- ▶ Stickers (stars, hearts, apples, etc.)
- ▶ Small collections of beans, seeds, shells
- ▶ Tweezers or tongs

Featured Song(s)

- ▶ Mr. Al's *Math in Motion*
- ▶ *Learn Every Day* music CD, "Five Round Pizzas," Track 6

Transition Tip

Sort the children into sets by the number of buttons on their shirts. Say, "The set with the most in it may choose a center." Continue in the same manner, comparing each subsequent set by number until all children have gone to centers.

Small Group

Tell the children that they are going to see which child has the longest name and which child has the shortest name. Print the children's names on index cards and ask them to count the letters. Ask questions such as, "Which child has the longest name? Which child has the shortest name? How many letters must a name have to consider it a long name?" (Let the children decide.)

Give the children blank sentence strips and sheets of stickers (stars, hearts, and apples). Ask the children to follow your directions. Say, "Make a set of four star stickers on your strip." Offer assistance as needed to help the children complete the task. Say, "Make a set of five heart stickers on another strip, followed by a set of three apple stickers on another strip." Ask the children to compare their sets. Which has more? Which has fewer?

Center Time

Discovery Science Center

Place several small collections, such as beans, seeds, and shells, in the center. Encourage the children to sort and compare the sets. Which collection has the most items? Which has the fewest? How are they similar? How are they different?

Fine Motor Activities Center

Place a variety of fine motor toys on a table. Don't put out the whole set, just three to eight items from each. Invite the children to sort the toys into sets by type. Let them discover for themselves which sets have more or fewer objects. For example: three Legos™ are more than two waffle blocks; five unit blocks are less than eight 1-inch cubes; and eight Lincoln Logs™ are more than five unit blocks.

Encourage the children to sort and compare either real or plastic coins. Add more challenge to the game by providing a pair of plastic tweezers or tongs that the children can use to pick up the coins as they are sorting them. Compare the sets of coins the children make. How did they decide on the sets: size? color? pictures?



When children have opportunities to make choices, they develop positive feelings about and confidence in themselves and their ability to make decisions.

Literacy Center

Give the children Scrabble™ letters or alphabet letters. Help them spell their names and compare the lengths of their names to friends' names. See if the children want to invent another game using the letters.*

Print the children's names on index cards. Ask the children to sort and compare the cards. Can they sort them by first letter? Encourage the children to sound out their classmates' names as they work.

Math Center

Place several small sets of items on a table. Say, "Show me a set that has fewer than nine items." Encourage the children to count the items to determine which sets have fewer than nine. Remind the children that it does not matter how many items the set they chose has, as long as it has fewer than nine. Play a few more rounds, asking for sets that are more or fewer than a number of your choosing.

Explain that money can be divided into sets, and the sets can be compared to each other. Provide play paper money that resembles real money. Give the children time to closely examine the different denominations. Point out and identify the portraits on each bill. Encourage the children to sort the money by the portrait featured. Explain that the larger set (all of the money) can be sorted into smaller sets by the person featured in the portrait. Compare the sets by number. Challenge the children to find other ways to sort, classify, and compare money.

*Adapted from *Inclusive Literacy Lessons for Early Childhood* by Pam Schiller and Clarissa Willis, with permission from Gryphon House, Inc., Lewisville, NC, USA

Music Center

Play musical chairs. Arrange chairs (one for each child) in a row back to back. Say, “Here is a set of chairs (indicate chairs), and here is a set of children (indicate children). Which set has more?” Lead the children to the conclusion that the sets are the same or equal. Invite the children to sit down. Play some math-themed music, such as Mr. Al’s *Math in Motion*. Remove one chair as the children walk around in a circle. Stop the music, and encourage the children to find a seat. What happened? Ask the children to compare the sets again. They should come to the conclusion that the set of children is now larger than the set of chairs. Start the music again and invite all of the children to walk around the chairs again (no one gets put out in this game). Remove two chairs as they walk. Stop the music and have the children find a seat. Three children will now be left without a chair. Compare the sets again. Which has more? Which has fewer? Start the music again. Add four chairs as the children walk. Stop the music and have all the children sit down. Point out the empty chair and ask what happened. Have the children count to compare the sets again and come to the conclusion that the set of chairs now has more items than the set of children. Play a few more rounds, removing or adding chairs to change the numbers in the sets, until the children seem to grasp the concept that you can always compare sets by counting.

Home Stretch

Ask families to help the children notice sets of items in the home—for example, utensils, pots and pans, silverware, towels, dishcloths, and so on.

Closing Circle

Play the song “Five Round Pizzas” (Track 6) on the *Learn Every Day* music CD. This song was first introduced in the unit on shapes. Invite children to sing along with the song.



Lesson 4

Parts and Wholes

Things to Prepare

- Fill buckets of water
- Fill clear jar with river stones
- Gather felt pizza pieces
- Mark square of grass with yarn or rope
- Place river stones in dry, empty sand table
- Create sample ladybug puppet
- Gather slips of paper for children's estimations

Materials Needed

- ▶ Buckets of water and sponges (two to four)
- ▶ Black dot stickers
- ▶ Black pipe cleaners or chenille sticks
- ▶ Chart paper and marker or dry-erase board
- ▶ Clear jar and decorative river stones
- ▶ Construction paper (red, black, and white)
- ▶ Magazines and food coupon flyers
- ▶ Magnifying glass
- ▶ Measuring cup
- ▶ Metal brads or fasteners
- ▶ Paper lunch bags
- ▶ Paper plates (small and large)
- ▶ Pictures of pizzas
- ▶ Scissors (child friendly)
- ▶ Slips of paper

Featured Book(s)

- ▶ *The Grouchy Ladybug* by Eric Carle

Featured Song(s)

- ▶ *Learn Every Day* music CD, "Five Round Pizzas," Track 6

Large Group

Show the children a clear plastic jar filled with decorative river stones. Say, "Today, we are going to learn about parts and wholes. Here we have a whole jar of river stones." Pass the jar around the circle and allow the children to examine it closely. Ask, "How many river stones do you think are in the jar?" Pass around slips of paper and help the children print their names and their estimates on them. Adult helpers should offer assistance as needed. Tell the children that you need their help in counting the stones. Have the children come forward and take a handful of stones. They should find a comfortable place to sit and count the stones they have. Tell them that you need them to make one set of five stones. If they have



stones left over, they should return them to the jar so someone who does not have enough stones can use them. When the children have completed their sets, tally the results. Write "sets of 5" across the top of a dry-erase board. Make a tick mark for each set of five in the room. Say, "Sally has a set of five (make a tick mark), Molly has a set of five (make a tick mark), Jamaal has a set of five (make a tick mark) . . ." Continue until you have made a tick mark for all the sets of five. Ask the children to count the tick marks with you. Print that number at the end of the tick-mark line.

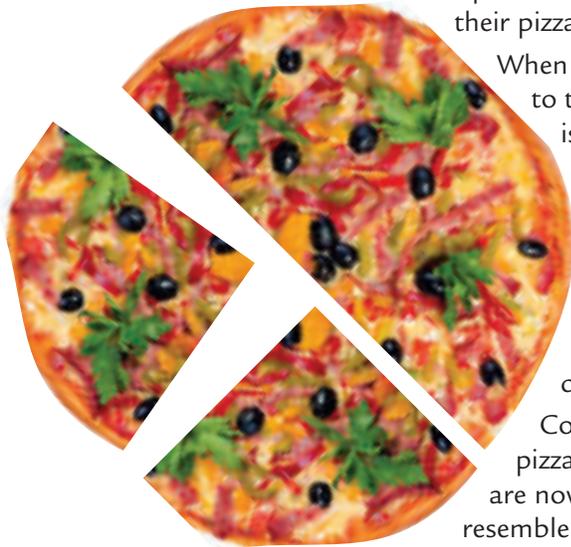
Transition Tip

Count the number of children present and do some quick math in your head (or on a calculator) to send the children to centers in parts of a whole. For example, send one-eighth of the class to the block center, one-eighth to the art center, and so on. Tell the children how you are dividing up the whole group into parts.

Small Group

Play the song “Five Round Pizzas” (Track 6) from the *Learn Every Day* music CD. Tell children that today you will use pretend pizza.

Have the children cut pictures of pizza out of food ads or food magazines. Try to find pictures that show the whole pizza. Tell the children that you are very hungry, but you are not hungry enough to eat a whole pizza, so you are going to cut your pizza into two pieces. Provide safety scissors for the children and encourage them to cut their pizzas also.



When cut, say, “There, now my pizza is cut in half!” Pretend to begin to take a bite of one half, but then tell the children that half a pizza is still too much to eat at once; therefore, you are going to cut it again.

Cut the halves in half and encourage the children to do the same. Say, “Now my pizza is cut in quarters. I have four pieces of my whole pizza.” Assemble the pizza like a puzzle and challenge the children to do the same. Say, “I think I should cut it into equal sections one more time!” Cut each quarter in half to create eight pieces. Encourage the children to do the same.

Count the pieces with the children and emphasize that the whole pizza is now cut in eight equal parts. Tell the children that their pizzas are now cut in eighths. Hold up one of the eighths (which should now resemble a regular pizza slice) and say, “I’m too hungry to cut this pizza up any more. I’m going to eat it now!” Pretend to gobble up the pizza and encourage the children to do the same. Watch carefully to make sure they do not really put the paper in their mouths.

Center Time

Art Center

Give the children paper plates and crayons. Remind them of what they learned in large group, and point out that the plate is a whole plate. Ask the children to draw a line down the middle of the plate. Assist them as needed to create two equal halves. Ask them to color one half of the plate green, but to only color half, not the whole plate. Emphasize the word *half* and point out when the children are done that their whole plate is now half colored green and half not colored. Ask the children to draw a line dividing the uncolored portion of the plate in half again. Ask them to color the resulting areas red and yellow. When they have finished, point out that their whole plate is now half green, one quarter yellow, and one quarter red. Point out the sections on a sample plate as you name them.

Invite the children to draw or paint half of a ladybug on a large piece of paper; then, fold the paper in half and press hard on it to create the symmetrical “other half” of the insect.

Fine Motor Activities Center

Have the children cut the plates they made in the art center activity into pieces defined by the three colors to create a puzzle. Encourage them to reassemble the plate and name the sections: one half, one quarter, and whole.

Have the children cut pictures of popular snacks, such as apples, bananas, oranges, popsicles, cookies, and pretzels from magazines. Say, "If you were having this for snack and wanted to share it with one other child, what would you have to do?" Lead the children to the conclusion that they would have to cut or divide the snack into two halves. Have the children cut the picture in half. Explain that the whole snack is now two halves, but it is still only one snack. This is easiest to demonstrate with the fruit, such as the apple or banana. Repeat the activity with another snack picture.



For children who seem to be understanding the concept, extend the learning by asking them what they would do if three children wanted to share one snack. What if four children needed to share? To extend the learning, help them cut other snack pictures apart to help them learn that three equal parts is *thirds* and four equal parts is *quarters* or *fourths*.

Math Center

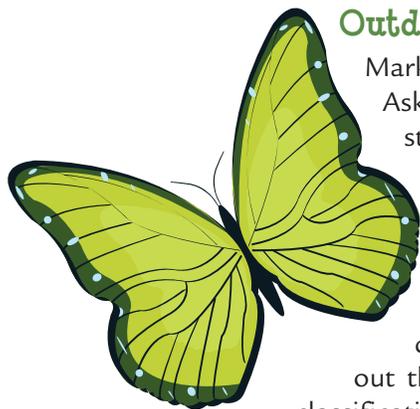
Create a ladybug by taping half a small paper plate to the edge of a large paper plate. Cut another large plate in half and affix the halves to the top of the large plate with a single brad to open like a real ladybug's wings. Color the ladybug appropriate colors and place three black dots (round stickers) on each half of the shell. Print the number 6 on the whole paper plate so it is hidden



when the ladybug's wings are closed but revealed when they are open. Decorate the ladybug's head appropriately and add black chenille antennae if you would like.

Read a book about ladybugs, such as *The Grouchy Ladybug* by Eric Carle. Begin a discussion about ladybugs' dots. Ask, "Do all ladybugs have the same number of dots? Are the dots always the same on each side of their outer shell?" Show the children some ladybug pictures to help them see the different looks of a ladybug. Tell the children, "We are going to make ladybugs that have the same number of dots on the two sides of their outer shells. If they have two dots on one side, they will have two dots on the other side. Try to place the dots in the same place on both sides." Show the children the sample ladybug with six dots. Have students count the dots and show the number 6 underneath.

Distribute the ladybug materials for each of the children. Ask them to place a few black dots (seven or fewer) on one of the halves of the large paper plate with a crayon or self-sticking dots. Then they make the same number of dots on the other half. Talk about symmetry (same design on each side). When they have finished, they can count the total number of dots and write that number on the whole large plate. Encourage them to decorate the ladybugs' heads and assemble their ladybugs.



Outdoor Activities Center

Mark a square of grass and dirt with yarn or rope. Ask the children to estimate how many bugs, stones, leaves, and sticks they will find in the area in five minutes. Record their estimations on an experience chart. Give the children paper lunch bags to collect their items in, set a timer or start a stopwatch, and put them to work. At the end of five minutes, have them stop collecting. Give the children paper plates or white construction paper and have them dump out their collections. Encourage them to sort the collections into the classifications discussed (bugs, stones, leaves, and sticks). Walk among them and ask questions about their sets. Which has more? Which has fewer? How did they find out?



Arrange the children into teams of four or five. (If one team has fewer members than the others, some children on that team will participate more often than those on the other teams.) Draw a start line for each team. Set a bucket of water and a dry sponge at each start line. Set up an empty bucket about 50 feet from the start line. (Vary the distance depending on the children's abilities.) Blow a whistle to signal the start of the sponge relay race. The first child in line dips the team's sponge into the bucket of water. He or she pulls out the soaking sponge, runs to the bucket that has been set up 50 feet away, and squeezes the water out of the sponge. Then the child runs back to the team and passes the sponge to the next classmate in line. The game continues until time is up. At the end of the game, use 1-cup measuring cups to determine how much water each team transferred. Ask, "Were you able to transfer the whole bucket of water? No, you only had enough time to transfer part of the water." Exact measurements of how much water was transferred are not needed in this game. Vary the game by having the children run backward.

Sand and Water Center

Place the river stones from the large group activity in a dry, empty sand table. Encourage the children to examine and explore the stones. Provide a magnifying glass so they can see the pattern of colors in the stones. Ask them which stones are similar. Which are different from the rest? Encourage, but do not require, them to classify the stones into sets by color, size, and weight.

Invite the children to fill a 1-cup measuring cup with stones. Have them count the stones in the cup. Ask them to estimate how many stones will fit into $\frac{1}{2}$ -cup and $\frac{1}{4}$ -cup measuring cups. Encourage them to experiment to discover if their estimations were right.

Home Stretch

Encourage families to have pizza for dinner and to talk about whole, halves, thirds, and fourths!

Closing Circle

Show the children a felt pizza from the home living center. Ask them to identify it when left whole (one pizza, a whole pizza), divided in half, or in quarters.

Lesson 5

Graphing

Things to Prepare

- Post “Bath” and “Shower” signs in room
- Create book reading graph
- Create several simple graphs with five columns each on chart paper
- Gather eggshells
- Gather grass seed
- Create grass growth graph
- Create laminated, floating graph
- Gather samples of noncarbonated, sugar-free fruit drinks
- Create weather graph

Large Group

Ahead of time, create several simple graphs with five columns each on chart paper. Be sure to leave room for headers or footers (depending on where you prefer to put the information being garnered). Explain that when you need to find out something about a set, graphing can be a fun and easy way to do so. Begin by talking about things the children like. Say, “Here (indicate the children) we have a set of children. Now we need to find out how many in this set like ice cream. So, let’s label our first graph, ‘Do you like ice cream?’ and we’ll label the columns ‘yes’ and ‘no.’” Ask the children to come forward one at a time to answer if they like ice cream, then to print their name or the first letter of their name in the “yes” or “no” column. Keep in mind that at this point invented spelling is acceptable. When done, ask the children to look at the graph and try to interpret or explain its meaning. They will most likely draw the conclusion that all of the children in the set like ice cream. Repeat the activity at least two more times, posing different questions. Be sure to include a question that will garner some negative responses, such as “Do you like scary movies?” Post the graphs where the children will be able to see them as they move through centers.



Materials Needed

- ▶ Book reading graph
- ▶ Chart paper and markers
- ▶ Crayons
- ▶ Dirt
- ▶ Egg carton
- ▶ Empty eggshells
- ▶ Graphs
- ▶ Grass seed
- ▶ Items that sink and float
- ▶ Mirror
- ▶ Paper
- ▶ Pencils
- ▶ Small boats of different colors
- ▶ Sticky notes
- ▶ Stuffed dogs and cats

Transition Tip

As children go to centers, create a bar graph showing their initial choices.

Small Group

Create a simple bar graph of the children’s eye colors. Have the children use a mirror to identify their eye color, and then draw a picture of their eye and cut it out. They

can then affix the eye cutout to the appropriate column on a bar graph titled “Our Eyes Are Different Colors.” When the graph is finished, ask the children to answer several questions. Which eye color has the most? Which has the fewest? Is there the same number of any eye color (are any columns equal)?

Explain that a way to graph without paper is for the children to simply move their bodies. Say, “Let’s make a graph about how we keep our bodies clean!” Post a sign that says “bath” and one that says “shower” on opposite sides of the large group area. Ask the children if they took a bath or a shower last night. Have them move to stand under the appropriate sign. When everyone has responded to the question, say, “This graph is harder to interpret because the information is not lined up like it is on a piece of graph paper. Let’s look at the two sets and estimate which one has more people in it.” After the children estimate, have them help you count to be sure of the right answer. Which set has more? Which set has fewer? Tell the children they will have many more opportunities to experiment with graphs during center time.

Center Time

Discovery Science Center

Provide small samples of a noncarbonated, sugar-free fruit drink. Ask the children to taste it and say whether they like it or not. Display the results on a simple yes-no graph.

Grow grass in eggshells or a cup, and have the children keep track of the growth using a bar graph. Create a column for each child. Along the left-hand side, draw or attach a ruler. Each day, have the children measure their grass and color the column green up to the appropriate number of inches. After a few weeks, have the children interpret the results. Whose grass grew the most? Whose grew the least?

Dramatic Play Center

Put several stuffed dogs, cats, and other types of pets in the area. Post several yes-no graphs on the wall: “Do you like dogs?” “Do you like cats?” “Do you like birds?” Encourage the children to complete the graphs by putting an X or check mark in the appropriate column. Ask the children to interpret the graphs. Which type of pet is the most popular? Which is the least popular?

Do you like dogs? 		Do you like cats? 		Do you like birds? 	
Yes	No	Yes	No	Yes	No
X		X			X
X			X		X
X		X		X	

Create a graph that shows the children's favorite foods. If you are adventurous, you can make a pie chart, but the results are harder for young children to interpret than a bar graph. Interview the children about their favorite foods and record their responses on the graph. Which type of food is most popular? Which is least popular? Revisit your unit of study on nutrition and classify the favorite foods according to the My Plate diagram.

Literacy Center

Graph the number of letters in each child's name. Print each name on a sentence strip and have the children cut it apart into individual letters. Place the letters on a bar graph with enough columns to accommodate the child with the longest name. When all children have pasted their letters in place, compare the length of the rows. This is a bit different than interpreting the heights of the columns, and it may take a few moments for the children to "get it."

Create a three-column bar graph to show how often teachers read to children. Label the columns "Large Group," "Small Group," and "Individually." Each time a teacher reads, place a sticky note in the appropriate column to mark the event.

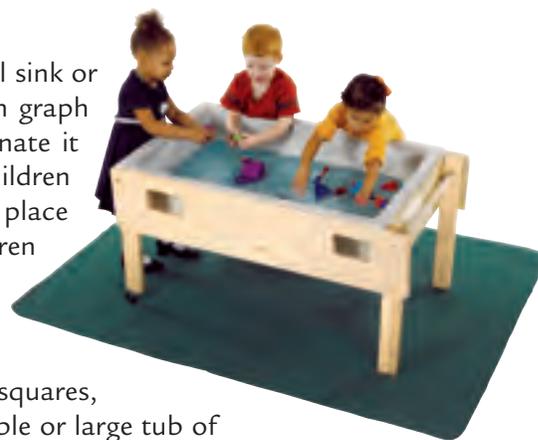
Outdoor Activities Center

Post a thermometer in a sunny place, and have the children keep track of the daily temperatures for a week using a graph. As an alternative, they can also keep track of weather each day: sunny, cloudy, rainy, windy, and so on.

Sand and Water Center

Graph whether or not a variety of items will sink or float in water. Create a simple two-column graph with the headers "sink" and "float." Laminate it since it will be used near water. Have the children experiment with a variety of materials and place the actual item on the graph. Ask the children to interpret the results when done. Did more items sink or float?

Challenge the children to create a floating graph. Laminate a simple grid of fairly large squares, and place it on the bottom of the water table or large tub of water. Put a small amount of water in the container, just enough to allow a toy boat to float. Provide several boats in different colors: red, yellow, and blue. Challenge the children to line the boats up by color, using the grid paper as a guide. Which color has the most boats? Which has the fewest boats?

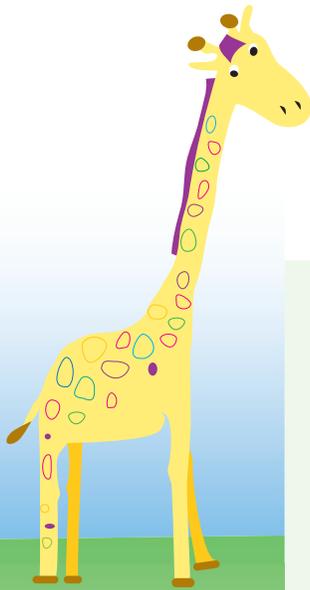
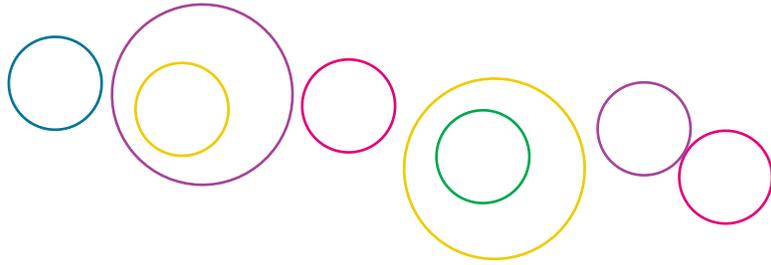
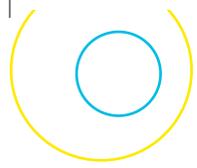


Home Stretch

Send a personal bar graph home with each child and ask them to graph the colors of their family's eyes.

Closing Circle

Ask the children to interpret the meaning of the reading graph in the literacy center. Are children read to more in large groups, small groups, or individually?



Extend the Learning

Count Around the Circle

Materials

Individual cushions or place mats (optional)

What to Do

1. Sit in a circle with the children and ask them, “How many people are here today? Let’s count!”
2. Look into the eyes of the child on your right and say, “one.” He should turn his head, look at the child to his right, and say “two.”
3. Continue around the circle and at the end, ask, “How many people are here today?” The children should respond with the correct number.
4. Another variation is to ask each child to say the number plus her name when it is her turn.

Teacher-to-Teacher Tips

- Ask the children to pass a soft toy around as they say their number.
- Consider adding an element of excitement by using an electronic timer to check the duration of the count. See if the children can count around the circle faster on second and third attempts.

—Patrick Mitchell, Yagoto, Nagoya, Japan

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