Cognitive Development

Mathematics is part of a child's natural environment. Children apply mathematical operations when sorting blocks by shape or color, building a fort in the block area, measuring water in a cooking activity, setting the table for meals, playing hopscotch, and crawling through a tunnel. Educators should use children's natural enthusiasm and curiosity to support the development of mathematical (math) concepts.

Take inventory of your various centers. Where are you including math? Where could you add in the use of math? The following are some suggestions on how to include math during daily routines and schedules:

- **Dramatic Play** – cash register to encourage counting, play money, calculator, telephone, assist the children with plate setting patterns, and a scale.
- **Block area** – various shape and colored blocks, soft and hard blocks, and accessories such as bridges, cars, trains, figures, and animals.
- **Art area** – rulers, number and shape cookie cutters, magazine number cut outs, number/shape stickers, and 3-D art (play dough, clay, wood work, etc.).
- **Sand and Water Play** – measuring cups, spoons, and tape measures.
- **Infant area** – solid and pattern blankets, soft blocks, and counting songs (Ten Little Monkeys, Five Green and Speckled Frogs, etc.)
- **Toddler area** – soft blocks, wooden number puzzles, and counting songs (Ten Little Monkeys, Five Green and Speckled Frogs, etc.)

Encourage children to assist and collect data. Pose a question such as, “Who likes green apples and who likes red apples?” Note the weather patterns for the week: rainy, cloudy, sunny, windy, etc. Create a graph or chart to demonstrate the results. Graphs will naturally lead to making comparisons: “Which group has more?” “Can you tell without counting?” “Did we have any rainy days?”

Create estimation jars using beans, small balls, crayons, etc. Estimations can also be made about the number of steps leading to the playground or the number of seeds in an orange. Invite children to estimate in group settings and record their results. Then count the items. Making an estimation and then counting the actual items is a great way to facilitate children's understanding of number and quantity.

Educators often struggle with finding time to include mathematics in daily activities. However, remember that mathematics is all around the environment and in daily activities. All children benefit from opportunities throughout the day to count, compare quantities, and solve problems involving numbers.
The Matching Game

What you need: A pot, lid, sock, shoe, brush, comb, fork, and spoon.

What you do: Provide an infant with the materials above and place the objects in random order. Then have the children sort out the objects that go together (sock and shoe, fork and spoon, etc.).

Skills learned: Infants are learning beginning skills of cognitive development, with a focus on matching. These early reasoning skills will develop into higher levels of math understanding later in their development.

Activity stretcher: Slowly start adding other objects for children to match. After they match all of the objects, have the children sort all of the objects by size as well.

Hide and Seek

What you need: Three different blankets and three different toys or objects such as a teddy bear, a cup, and a book.

What you do: Hide the three different toys or objects underneath three different blankets and have the babies find each one.

Skills learned: This game will allow children to develop their object permanence ability, and understand that objects still exist even when you can’t see them.

Activity stretcher: Place an object or toy inside a box, shake it to make a noise, and then place it far enough for the baby to crawl toward it and discover what is inside.

5 Little Speckled Frogs

What you need: A felt board, felt cutout pieces of frogs, a felt piece of a log, felt pieces of numbers one (1) through five (5). Song: “5 Little Speckled Frogs”

What you do: Use the felt board to tell a story about the speckled frogs using different shapes of frogs and using the numbers 1-5 within the story. Sing the song to the children as you motion using your fingers and/or the felt pieces on the felt story board.

Skills learned: This activity teaches infants and toddlers cognitive skills, specifically memorization by using singing as a tool to support cognitive development in infants and toddlers. You can help guide an infant to clap along to the rhythm of the song or help a toddler understand classification by using different colored frogs, or different sized frogs.

Activity stretcher: Use an old sock to create your own sock puppet as part of the music prop for singing “5 Little Speckled Frogs.”

Sources: http://www.ehow.com/list_6550972_math-games-infants.html
http://www.ehow.com/list_6897509_activities-brain-development-8_month_old.html,
http://www.learning4kids.net/2013/10/10/5-green-speckled-frogs-activity-ideas/
Socks

**What you need:** Pairs of socks

**What you do:** Collect various pairs of socks: solid colors, patterned, designs, adult size, child size, etc. Loosely place socks in a container, and children can pair up the socks, sort by size, or create patterns.

**Skills learned:** Children learn to sort, match, classify, and create patterns.

**Activity stretchers:** Use loose parts such as buttons or container lids to practice counting, creating pairs, classifying and sorting.

**Dramatic Play – Apple Stand**

**What you need:** Table, apples, bowl, cash register, play money, bags (paper), scale, and signs (paper, crayons/markers and tape).

**What you do:** Help children make signs for their apple stand like: Apple Stand, Apples, Welcome, etc. Count the apples for the store inventory. Encourage children to buy, sell, and pack the apples. The children can take turns being the cashier, packer or seller.

**Skills learned:** Children practice symbolic play, counting, language development, impulse control, and positive peer interaction.

**Activity stretcher:** Include a book about apples like: Johnny Apple Seed by Jodie Shepherd or How do Apples Grow? by Betsy Maestro. Change your dramatic play area every two weeks or monthly. Other themes can include: Veterinarian, Doctor, Beach Shop, Vegetable Stand, etc.

**Healthy Food**

**What you need:** Grocery ads, scissors, glue, and paper plates.

**What you do:** Have the children cut out various food items from grocery ads. Talk about how fruits, vegetables, dairy products, grains and meats help our bodies grow healthy and strong. Ask the children to make healthy dinner choices and glue those on their dinner plate.

**Skills learned:** Children learn about eating a healthy meal while classifying food items. Children practice using fine motor skills and language development.

**Activity stretcher:** Choose a new recipe and introduce a new vegetable or fruit each month. Recipes can be found through My Plate Cookbook.

**Sources:** [http://www.creative-preschool-teaching-themes.com/symbolic-play.html](http://www.creative-preschool-teaching-themes.com/symbolic-play.html)  
How Much is your Name Worth?

What you need: Pencil and paper.

What you do: Write your full name on a piece of paper, on a different piece of paper write the alphabet from A-Z and number the letters 1-26, each number representing a dollar amount (example: A=$1, B=$2, etc.).

Skills learned: The objective of the game is to add up the amount that each letter is worth, according to your name. Children are using their addition skills, and learning the value of an item.

Example: Sam Gray
S=$19, A=$1, M=$13, G=$7, R=$18, A=$1, Y=$25
The total is $84.00

Activity stretcher: To make the game a bit more challenging have each letter represent a different amount, by using pennies nickels, dimes, quarters, and one dollar.

Tray Toss

What you need: Ice tray, sharpie markers, pompoms, paper, and pencil.

What you do: Use a sharpie to write the numbers 0 through 10 randomly on the bottom of each compartment of the ice tray. It is okay if some numbers are shown more than once, as long as every compartment has a number at the bottom.

Pair children and give each a pencil, a piece of paper, and 6 pompoms. The first player tosses two pompoms into the tray. Then, have the child take the pompoms out of the compartments and identify each number. Have the children write down the numbers on the piece of paper in an equation format. For example, if the two numbers that the pompoms landed on are 2 and 6, the child would write down 2 + 6 =_. Encourage children to add the numbers together and write down the answer. Have the next player repeat the steps.

Skills learned: Children will be able to identify, recognize, and name different numbers. Children are working together and helping each other learn. This activity is a way to help build children’s vocabulary, knowledge and imagination.

Activity stretcher: This game can also be played with subtraction and multiplication!

Sources: www.education.com
365 Afterschool Activities, by: Ellison and Gray