

Developmentally Appropriate Math Sequences (PreK-K)

MA1: Can Explore with Materials

Observing the colors, shapes, sizes, textures and other attributes of materials, as well as recognizing the naming the properties of discrete and continuous materials. *Discrete materials* are those that can be counting, such as blocks or cookies. *Continuous materials* are those that can be measured, such as water or sand.

Future applications: **Sorting and classifying:** identifying attributes
Problem solving and logical thinking: understanding and identifying attributes.

Sample Activity:

Water Exploration

Allow the children to explore the attributes of water, ice and snow in a water table or tub. Place different types and sizes of containers for exploration. Ask the children how many cups of water it would take to fill a certain container. Place different utensils in the center, such as slotted spoons, hand beaters, colanders, etc.

Block Exploration

Allow the children to explore with different types of manipulatives. When the child has been allowed to explore with the item, she is ready to listen when the teacher is teaching a skill using the items. She is ready for a new challenge.

MA2: Recognizes Spatial Relationships

Distinguishing objects by telling *where* they are in the space with knowledge of direction and position. “Do you mean the one in *front* or the one in *back*?”

Future applications: **Problem solving and logical thinking:** Understanding direction and position.
Patterning: Understanding direction and position.
Ordering: Arranging materials in specific order.
Geometry: Identifying plane (flat) and three-dimensional shapes.

Sample Activity:

Obstacle Course

Create an obstacle course inside the classroom or outside on the playground. Make sure that in the obstacle course there are opportunities for the children to work on positional words. The course should take the children over things, under, on top of, beside, in front of, etc. Have the observing children check to see if the child on the

course made the correct positional connection with each part of the course (example: “Did he go *over* the balance beam?”).

MA3: Classifies and Sorts by Attributes

Sorting and grouping objects based on the likenesses and differences of attributes.

Future application: **Patterning:** Arranging objects based on likenesses and differences.
Ordering: Making comparisons.
Place value: Identifying ones, tens and hundreds.
Geometry: Identifying plane and three-dimensional figures.
Numeration: Identifying odd and even numbers.
Fractions: Identifying whole numbers and fractional parts.

Sample Activity:

Magnet Sort

Allow the children to classify items with a magnet. Place several items on a tray making sure that some of the items will be picked up by the magnet. Let the children determine which items stick to the magnet and which items do not.

Color Sort

Sorting and recognizing colors of different items is a great way to support this skill.

MA4: Creates Patterns by Extending and Comparing

Recognizing, copying, extending and creating the repetition of specific items.

Future applications: **Numeration:** Counting, skip counting.
Multiplication: Recognizing patterns of increasing numbers, such as $3 \times 1 = 3$, $3 \times 2 = 6$, etc.
Counting: Adding on.
Algebra: Repetition in equations.

Sample Activity:

1. Block Patterns

The block center is a good place to work on repeating patterns. Help the children create repeating AB patterns (such as: red, blue, red, blue, etc.) using blocks. Begin with using two colors of blocks or two sizes of blocks. Create several repetitions with the

blocks and then ask the children what would come next in the pattern. Connecting blocks would be a good way for the pattern to hold together for picking up and observing.

MA5: Shows One-to One Correspondence and Recognizes the Manyness of Sets

Understanding one-to-one relationships while counting items. Matching objects to determine the size of a set (greater than, less than, equal to, etc.).

Future applications: **Graphing:** Interpreting data.
Geometry: Moving coordinates across an axis.
Numeration: Plotting positive and negative numbers on a number line.

Sample Activity:

Home to School Board

The Home to School Board is a great way to show children that they belong to a special group at school. Create two posters, one the shape of a school and the other the shape of a home. Attach Velcro strips to each poster. Take individual pictures of the children in the class. Attach Velcro to the back of each picture. When the children arrive at school, have them move their picture onto the “School” board (they are at school). When they leave school for the day, have each child move his/her picture to the “Home” board. Point out the one-to-one correspondence of having one picture for each child. Count the children and then count the pictures. Compare sets by asking, “Are there more children at school or at home?” This is also a great attendance record since the absent children’s pictures will still be on the “Home” board during school.

MA6: Understanding Ordering

Organizing materials and information in a specific order based on relationship. Order implies specific patterns (such as, the number s 0-9 or days of the week). Sequence implies what comes next.

Future Applications: **Fractions:** Comparing fractional parts.
Geometry: Comparing similar figures.
Measurement: Comparing objects.
Problem solving: Sequencing steps in story problems.

Sample Activity:

2. The Three Bears

Tell the story of the three bears. Provide flannel board figures for the language or reading center, if possible. Point out that Goldilocks goes from the smallest to the largest with each item. Have the children retell the story in the reading center, emphasizing the

smallest to largest concept. The Three Billy Goats Gruff could also be used from this activity.

MA7: Demonstrates Understanding and Recognition of Numerals 0-9

Understanding the “manyness” of a number and assigning a numeral (symbolic representation) to that number. Understanding that the symbol “5” means five objects.
***Do not confuse with the ability to rote count.*

Future Applications: **Life skills.**

Sample Activity:

Number Bags

The children should have had lots of practice in counting objects during the one-to-one correspondence section. Now they are ready to attach the numeral symbol to the counted objects. A good way to do this is with number bags. Using a permanent marker, draw a line vertically down the middle of a large ziplock bag. Write a number at the top of the line, such as a large “5.” Provide a tray of manipulatives and have the children practice counting five items and placing them in the bag. As the children become familiar with this activity, the teacher can begin to orally set up addition and subtraction scenarios. When a child brings the bag to the teacher, the adult can manipulate three items on one side of the line and two on the other side. The teacher will ask, “How many items are in the bag?” and “It looks like if we place two items and three items in the bag they will equal 5.”

MA8: Recognizes and Manipulates Basic Shapes

Recognizing geometric figures and their attributes (a child should have thorough knowledge of numeration prior to being asked to identify attributes, such as, “How many sides to this shape?”).

Future Applications: **Geometry:** Identifying plane and three dimensional shapes.
Trigonometry: Understanding the relationship between sides and angles of triangles.

Sample Activity:

Rectangle Blocks

Send the children to the block center to find rectangle blocks. Rectangle is the shape that occurs in the block center very often. As the children find rectangles, place them on the floor or table and talk about the attributes that make it a rectangle (two longer sides and two shorter sides, etc.) and how different each of the rectangles can also appear to be when you have different types of blocks.

MA9: Understands the Concept of Measurement

Identifying an attribute of an object in terms of a standard unit. Children can begin to measure with nonstandard or arbitrary units to build the concept of measuring. For example, “How many paper clips long is the book?” or “How many containers of water will fill the bucket?”

Future Applications: **Geometry:** Comparing similar figures.
Trigonometry: Measuring sides and angles of triangles.
Problem Solving: Estimating making comparisons.

Sample Activity:

How Tall is My Outline?

Trace the outline of a child on a piece of large butcher paper. Using large blocks, have other children lay blocks on the outline and count how many blocks are needed to measure the length of the child. The class could also see how many blocks it would take to fill in the entire outline.

Advanced Skills

Place Value

In order for children to understand numerals beyond 9, they must understand place value. Our numeration system is a base 10 system (probably because we have 10 fingers).

Fractions

Understanding that a whole can be divided into parts.

Time and Money

Understanding that time can be measured in units (seconds, minutes, hours, days, months, etc.) and money can also be measured in units (penny, nickel, etc.).