Math for All and All for Math!

Answers to Common Questions about Teaching Preschool Math

Dr. Carrie Cutler, University of Houston

Question	Suggestion/Answer	Math Activity or Resource
Who is a math person?	No math gene. Strong support, good teaching/curriculum, effort! Everyone is a math person.	Jo Boaler video--TedxStanford Build math-positive mindsets with engaging problems, productive struggle, and positive feedback.
What should I be teaching?	Texas PreK Guidelines	I like Connect4Learning for curriculum.
How much time should my kids be doing math each day?	Aim for 40 minutes in a full-day program.	Use blend of workstations, whole-group activities, story books, etc.
What is a competent counter?	Competent counters must know the number sequence, match a number to each item counted, keep track of what's been counted, and recognize that the final number said is the total number in the set.	Count objects as often as possible and in real-kid-world contexts. Try *Hole Punch of Fun Counting Game.* (instructions below)
How high should my kids count?	PreK: count to 30 Kinder: count to 100	Count while washing hands, walking to recess, climbing stairs. Practice the counting sequence while rolling a ball back and forth or tossing a scarf in the air.
Why do kids skip numbers?	This is part of normal development and not a huge worry. Kids will get it with time and practice.	Help children develop one-to-one correspondence by having them pick up and move items to the other side of the table, counting each as they do so. Gently put your hand on children's hands and help them point and count slowly. Then have children do it again by themselves, touching each item as they count aloud.
How can I help kids match digits to their value?	Use games and centers.	Try *Lose a Tooth Counting Game* (instructions below).
What is subitizing?	The ability to know the number of items in a small set (usually up to five items) without counting.	Play dice and domino games to practice conceptual subitizing by quickly recognizing the number of pips instead of counting them individually.
Besides counting, what else should kids do with number?	Simple, story-based addition and subtraction and fair sharing.	Act out scenarios with costumes and puppets. Read books with math scenarios.
Why should I display a hundreds chart?	Algebraic reasoning, recognizing patterns in base ten system. Chart does not have to be built all the way to 100. Start at 20	*Hundred Chart Puzzles* (cut apart chart and reassemble). *Hundred Chart Hunt* (hide numbers around the room, have child find and place in correct spot)
Why do kids write numbers backwards?	Writing the numbers requires coordination of the hand, fingers, and brain. Writing digits backward, especially 2 and 5, is common	Post problematic digits such as 2 and 5 or 9 and 6 in prominent places around the classroom. Draw attention to how the digit is formed by placing a dot at the spot

	among young children and a normal part of development.	where they would first place their pencil.
What are some materials I can use to teach number?	Keep counting and number experiences hands-on with lots of materials to count, join, separate, and share.	Unifix cubes, counters, five- and ten-frames, base ten blocks, hundreds charts, two-color counters, Cuisenaire rods, geoboards, fraction bars, pattern blocks, and dice all come in handy for building understanding of number.
Why teach geometry in preschool?	Geometry includes the properties of shapes, our orientation to objects in space (between, above, below, etc.), and symmetry, transformation, and proportionality. Advancing through the levels of geometric thought moves children along a continuum of increasingly abstract geometric thinking.	Take a geometry journey in your kitchen center by naming shapes, identifying their attributes, then classifying shapes by their common attributes. This is especially fun if you use real objects like bowls, boxes, and cans. Try *Tabletop Composing Shapes Activity* (below).
How can I help kids learning the attributes of 2D and 3D shapes?	Child must recognize that rotating a shape doesn't change its name or its attributes.	Go on a Shape Hunt with children to identify 2D and 3D shapes. Use sticky notes to mark the squares, index cards for rectangles, dot stickers for circles. What could you use to mark the triangles? Ask children for ideas.
What in the world is a rhombus?	Four-sided figure with all sides same length. Incorrectly called a diamond.	Challenge your children to find errors in picture books and on kids' TV shows.
Why should I teach measurement?	Much of our real-world mathematics involves measurement. Hitting the snooze button, measuring oatmeal, filling up the gas tank, paying the cashier, driving to work, checking the clock, speeding up or slowing down, punching the clock—all measurement concepts that fill our math-positive day.	Measurement activities should be real-kid-world. Try *Show and Tell Measuring* (below).
What are measurement concepts for preschool?	Length, capacity, weight, and the passage of time are all measurable attributes children learn about in preschool.	Support measurement learning by having children find objects around the classroom that are longer than/shorter than their shoe.
What measurement tools should I have on hand?	Measurement must be taught using hands-on tools to solve problems situated in real-kid-world scenarios. When children use measurement tools, they see that doing mathematics is active rather than passive.	Some handy tools for measurement include: pan balance, ruler, measuring cups, and all sorts of nonstandards units like craft sticks, cubes, and paper clips.
What is the difference between a repeating and a growing pattern?	Repeating and growing patterns A repeating pattern has a discernible repeated core.	Patterns are fun when they are tied to movement. Try this one: Have a child choose three movements. For

	AAB, AAB, AAB is a repeating pattern. A growing pattern continues without a repeating core. A, AA, AAA, AAAA, AAAAA is an example.	example, kick, stomp, shake. Repeat the same sequence of the movements while saying the words. After a while say, "I'm replacing kick, stomp, shake with A, B, C because my mouth is getting tired." This connects the abstract symbols we commonly use to label patterns with the movements.
What supplies do I need to teach graphing and sorting?	You don't need fancy math manipulatives to build understanding of data analysis. Everyday objects from the crayon junk box to students' shoes make simple tools for investigations.	Have each child take off one shoe and work as a class to sort them. How many different ways can you put them in groups? Then make a real-object graph with the shoes and make simple comparisons. Try *Cereal Shape Sorting* (below).
Using online games for practice and learning	Dynamic learning programs provide adequate challenge. Variety helps engage and motivate kids. They love screens!	National Council of Teachers of Mathematics * National Library of Virtual Manipulatives * Khan Academy * Math Playground * Cool Math 4 Kids

FUN WORKSTATIONS YOUR CHILDREN WILL LOVE

Hole Punch of Fun Counting
Materials: hole punchers, quarter-sized sheets of construction paper
Instructions: Write a number on the paper. The child punches the correct number of holes in the paper. Don't forget zero!

Lose a Tooth Counting Game
Materials: small marshmallows, drawing of mouth with spaces for about 20 teeth, die
Instructions: Children place marshmallows in mouth for top and bottom row of teeth. Roll the die and remove that many teeth from the mouth. Place the removed teeth in a cup. Whoever loses all their teeth first is the winner.

Cereal Shape Sorting
Materials: Squares: Chex, Cinnamon Toast Crunch,
Circles: Cheerios, Fruit Loops, Apple Jacks
Rectangles: Frosted Mini Wheat
Instructions: Children sort the cereal pieces by shape.

Tabletop Composing Shapes Activity
Materials: colored masking tape, 3D or pattern blocks
Instructions: Use tape to outline 2D shapes on tabletop (squares, rectangles, rhombi, different types of triangles). Children use the blocks to "compose" the larger shapes. For example, six small squares might compose the rectangle.

Show and Tell Measuring
Materials: pan balance, small items from child's home, such as a can, spool of thread, toy, pen, jar, cap, stuffed animal, or coffee mug
Instructions: Have each child try to find another student who brought an item that is about the same length. Then have them find another student who has an item that has about the same weight. Use a balance scale to check.

For more ideas see *Math Positive Mindsets: Growing a Child's Mind without Losing Yours* by Carrie S. Cutler