



Supporting Pre-Math Skills

Math comprehension is not only about recognizing numbers and learning to count, but also about sorting, patterns, and spatial orientation and logic.

Number Sense and Numeration:

- **Count.** Find objects around the house or outside and count them. Count everything and anything and make it fun.
- **Match.** Give your child a piece of paper with a number and that many dots on it, and ask them to put the appropriate number or stickers, rocks, etc. on each dot.
- **Sand paper number tracing.** Trace numbers in sand.
- **Cook and bake.** Cooking exposes your child to math terms, measuring, and even beginning fractions.
- **Create numbers.** Make numbers out of cookie or play dough with cookie cutters.
- **Card games.** Play “go fish” or “concentration” to improve number recognition. To improve number sequence and more or less than concepts, play “war.”
- **Board games.** Play games with dice that require counting like “chutes and ladders” and “candy land.”
- **Connect-the-dots.** Connect the dot drawing teaches numbers and hand-eye coordination.
- **Blocks.** The best way to learn about numbers is to manipulate objects, line them up, compare sets, take away and so on.
- **Find numbers everywhere.** “Which costs more?” “Which orange is bigger?” “Can you find grandma’s house?” “I live at #8.”
- **Choice.** “Do you want 5 grapes or 10?” Make these choices concrete by showing your child the options when you ask (hold 5 grapes in one hand, and 10 grapes in the other).
- **Pattern fun.** Use beads, stickers, small blocks, etc., to encourage fun with pattern making and pattern prediction.

Nurturing mathematical reasoning: Problem solving and reasoning require children to communicate their thinking about mathematics and mathematical reasoning.

- **Mathematical thinking/problem solving.** In play and everyday activities encourage your child to use mathematical reasoning (for example, to determine quantity: “How

many spoons do we need?” Or to reason geometrically: “What size shape will fit in that opening?”).

- **Reflection questions.** “How can you tell that’s bigger?” “How do you know we need 3 more forks?”
- **Easy word story problems.** Make up fun and simple stories for your child to get his brain thinking about math. For example, three children were on the swings but one had to go home, so how many children are still swinging?

Understanding of measurement: Measurement is one of the main real-world applications of mathematics and very enjoyable for young children who love to compare, order, classify, sort and measure

- **Measurement terms.** Teach measurement terms like bigger/smaller, more/less, etc. Start with which toys are bigger/smaller, then which group is bigger/ smaller. Introduce more/less as meaning the same as bigger/smaller.
- **Measure things.** Teach your child how to use a ruler, and have fun measuring things. Talk about which objects are bigger/longer and smaller/shorter. Count piles of coins. Talk about which pile has more/less. You can use anything to measure (for example, you can figure out how many piece of sticky tape it takes to line up the same length as your stuffed animal).
- **Make comparisons.** Identify areas you can measure and compare objects by length, weight, or capacity.
- **Ordered set play.** Have fun with ordered sets (for example, nested boxes, mixing bowls) to make comparisons and to figure out fit.
- **Sand play.** Give your child measuring tools (for example, measuring cups, measuring spoons) and some sand!
- **How far can you jump?** Challenge long jumps and use tape and a tape measurer to record your child’s distance. Make comparisons to future jumps.
- **Grocery store fun.** Discuss size options throughout the store and compare (for example, a gallon of milk to a gallon of ice cream).
- **Height chart.** Measure and chart your child’s height.
- **Bath fun.** Give your child containers of varying sizes but same volume, measuring cups and tools to have fun with and discuss.

Nurturing spatial reasoning skills: Spatial reasoning skills allow children to imagine spatial patterns and mentally manipulate them (for example, planning how to use the space on a page for drawing or writing).

- **Puzzles.** Strengthen your child’s ability to mentally manipulate shapes. Children have to analyze the shape in order to predict if it will fit.
- **Spatial terms** (for example round, square, corner, straight edge). Use spatial terms to describe the size and shape of objects, and encourage your child to use the terms as well.
- **Activities that require spatial terms** (for example, over, under, little, big). Choose activities that require spatial terms, such as blocks or puzzles. For example, build a bridge and talk about bridges, “Cars drive over bridges. Boats go under bridges.”
- **Use gestures.** Provide gestures, along with spatial words when you use them. For example, when describing the spatial word "straight," move your hand straight up and down. Or trace what a corner looks like in the air.
- **Construction games.** Make a simple construction using blocks. Then, ask your child to copy it block by block. Increase the number of blocks and complexity of the construction, as he becomes more skilled.
- **Build.** Blocks, legos, lincoln logs and marble runs all strengthen your child’s spatial reasoning and coordination skills. Helping your child follow directions (for example, with Legos) from a written diagram to a three-dimensional structure especially strengthens spatial skills. Don’t forget that open ended building is also important.
- **Treasure maps.** Making and following treasure maps will help your child translate 2-dimensional into 3-dimensional.
- **Checkers and chess.**
- **Paper folding activities.** Folding paper to form new shapes or even objects (for example origami or paper airplanes) encourages your child to internally plan the physical transformation they want to have happen.
- **Musical instruments.** Even tapping out a tune on an instrument or piece of furniture will strengthen your child’s spatial-reasoning skills.
- **Mazes.** Activity sheets with simple mazes encourage your child to plan routes from one point to another.