

Activities to Support Your Mathematician at Home

Math Reading

- Set aside time every week to read a math story rather than a traditional story. Make sure they are interesting stories that both engage the reader and provoke mathematical thinking. Ask questions about counting, comparing, finding totals and differences, looking at patterns or shapes, etc. See Math Book List.

Family Math Night

- Designate a night as Family Math Night. Play board games and other games that use number cubes (dice), and card games. See Mathematics and Playing Games Handout

Counting Numbers

Understanding numbers and knowing how to combine them to solve problems helps us in all areas of math.

- **Count everything!** Count toys, kitchen utensils, and items of clothing as they come out of the dryer. Help your child count by pointing to and moving the objects as you say each number out loud. Count forwards and backwards from different starting places. Use household items to practice adding, subtracting, multiplying, and dividing.
- **Practice "skip counting"**. Together, count by 2's and 5's. Ask your child how far he or she can count by 10's. Roll two dice, one to determine a starting number and the other to determine the counting interval. Ask your child to try counting backwards from 10, 20, or even 100.
- **Make up games using dice and playing cards.** Try rolling dice and adding or multiplying the numbers that come up. Add up the totals until you reach a target number, like 100. Play the game backwards to practice subtraction.
- **Play "Broken Calculator"**. Pretend that the number 8 key on the calculator is broken. Without it, how can you make the number 18 appear on the screen? (Sample answers: $20 - 2$, $15 + 3$). Ask other questions using different "broken" keys.
- **Ask your child to help you solve everyday number problems.** "We need six tomatoes to make our sauce for dinner, and we have only two. How many more do we need to buy?" "You have two pillows in your room and your sister has two pillows in her room. How many pillowcases do I need to wash?"
- **Plan dinner or a party** Whether you're planning a party or just getting ready for a family dinner, there are plenty of math concepts involved. Have your child help set the table and count out the plates, napkins, and silverware. For a party, have your child help with the shopping. Ask your child: *How many plates, napkins, and forks do you need for dinner? If you're inviting 10 guests to a party, and the plates come 8 to a pack, how many packs are you going to need? How many are going to be left over?*
- **Ordering food night** If your family sometimes orders take-out food, keep the take-out menus handy and have your child calculate the amounts required and the total cost. If the amounts are beyond your child's mathematical understanding, help them use a simple calculator.

Measurement

Developing the ability to estimate and to measure accurately takes time and practice.

- **Measure items found around the house.** Have your child find objects that are longer or shorter than a shoe or a string or a ruler. Together, use a shoe to measure the length of a floor mat. Fill different containers with sand in a sandbox or with water in the bath, and see which containers hold more and which hold less. Measure length of bedrooms and compare.
- **Encourage measurement in daily activities** Go for a walk. Point out when you have walked approximately a kilometer. Show what a meter looks like (roughly one large adult step). Predict and measure how long it takes to run 20 meters
- **Estimate everything!** Estimate the number of steps from your front door to the edge of your yard, then walk with your child to find out how many there really are, counting steps as you go. Estimate the time needed for a trip. If the trip is expected to take 25 minutes, when do you have to leave? Have your child count the number of stars he or she can draw in a minute. Ask if the total is more or less than your child thought it would be.
- **Household chores** Estimate the time it will take to clean a bedroom or toy box. Then do an accurate timing and compare.
- **Talk about time.** Ask your child to check the time on the clock when he or she goes to school, eats meals, and goes to bed. Calculate how long an activity will take and find elapsed time. Read analogue clock.
- **Keep a Record of the Daily Temperature Outside.** After a few weeks, ask your child to look at the record and see how the temperature affected his or her activities. Advanced concept would be to calculate mean, median, range of the temperature measured.
- **Bake Something** You can't help but use math when you're baking. Doubling recipes requires multiplying, halving a recipe requires dividing, and measuring a $\frac{1}{2}$ cup or a $\frac{1}{4}$ teaspoon gets you working with easy fractions. Ask your child: *How many chocolate chips do you think it will take to fill one cup? How many for $\frac{1}{2}$ cup? Count together and see how close you came to the right answer!*
- **Calculate Change at a Store-** When purchasing items at a store, ask your child to count and/or calculate the change.
- **What Coins Do I Have?** *Using mathematical reasoning skills to figure out the unknown is good preparation for understanding algebra. Choose coins so that your child can't see, then hold out your closed hand and ask her questions such as the following:*
 - *I have three coins in my hand. They're worth 7 cents. What coins do I have? (a nickel and 2 pennies)*
 - *I have six coins in my hand. They're worth 30 cents. What coins could I have? (1 quarter and 5 pennies or 6 nickels).*
 - *I have coins in my hand that are worth 11 cents. How many coins could I have? (2—1 dime and 1 penny; 3—2 nickels and 1 penny; 6—1 nickel and 6 pennies; 11—all pennies)*

Geometry

Becoming familiar with shapes and spatial relationships in their environment will help children grasp the principles of geometry in later grades.

- **Identify shapes and sizes.** When playing with your child, identify things by their shape and size: "Pass me a sugar cube." "Take the largest cereal box out of the cupboard."
- **Build structures using blocks or old boxes.** Discuss the need to build a strong base. Ask your child which shapes stack easily, and why.
- **Play "I spy", looking for different shapes.** "I spy something that is round." "I spy something that is rectangular." "I spy something that looks like a cone."
- **Ask your child to draw a picture of your street, neighborhood, or town.** Talk about where your home is in relation to a neighbor's home or the corner store. Use directional words and phrases like *beside* and *to the right of*.
- **Go on a "shape hunt"** Have your child look for as many circles, squares, triangles, and rectangles as he or she can find in the home or outside. Do the same with three dimensional objects like cubes, cones, spheres, and cylinders. Point out that street signs come in different shapes and that a pop can is like a cylinder.
- **Build Something Together** Big or small, any project that involves measuring includes counting, adding, and multiplying. It doesn't matter whether you're making a clubhouse out of shoeboxes or building a genuine tree house. Legos and other building toys are wonderful tools for incorporating both numbers and spatial thinking into playtime. Ask your child: *How high can you build that stack of Legos? How many Legos do you need to stack to reach as high as the coffee table? Can you make a square? A rectangle? Other shapes?* Talk about the shapes of whatever your child has created.

Patterns

Understanding patterns helps prepare children for the study of algebra in later grades.

- **Look for patterns in storybooks and songs.** Many children's books and songs repeat lines or passages in predictable ways, allowing children to recognize and predict the patterns. See attached page of books about math.
- **Hunt for patterns around your house and your neighborhood.** Your child will find patterns in clothing, in wallpaper, in tiles, on toys, and among trees and flowers in the park. Encourage your child to describe the patterns found. Try to identify the features of the pattern that are repeated.
- **Use household items to create and extend patterns.** Lay down a row of spoons pointing in different directions in a particular pattern (up, up, down, up, up, down) and ask your child to extend the pattern.
- **Explore patterns created by numbers.** Write the numbers from 1 to 100 in rows of 10 (1 to 10 in the first row, 11 to 20 in the second row, and so on). Note the patterns that you see when you look up and down, across, or diagonally. Pick out all the numbers that contain a 2 or a 7.

Managing Data

Learning to collect, organize, and interpret data at an early age will help children develop the ability to manage information and make sound decisions in the future.

- **Sort household items.** As your child tidies up toys or clothing, discuss which items should go together and why. Show your child how you organize food items in the fridge – fruit together, vegetables together, drinks on one shelf, condiments on another. Encourage your child to sort other household items.
- **Make a weather graph.** Have your child draw pictures on a calendar to record each day's weather. At the end of the month, make a picture graph showing how many sunny days, cloudy days, and rainy days there were in that month.
- **Make a food chart.** Create a chart to record the number of apples, oranges, bananas, and other fruit your family eats each day. At the end of the month, have your child count the number of pieces of each type of fruit eaten. Ask how many more of one kind of fruit were eaten than of another. What was your family's least favorite fruit that month?
- **Talk about the likelihood of events.** Have your child draw pictures of things your family does often, things you do sometimes, and things you never do. Discuss why you never do some things (swim outside in January). Ask your child if it's likely to rain today. Is it likely that a pig will fly through the kitchen window?

References: Parent Math Tips; *A Parent's Guide to Understanding Math Education in Today's Schools* by Cathrine Kellison and Catherine Twomey Fosnot; Encouraging Math Learning at Home: A Guide for Parents