

Math in the Home

Your home is full of opportunities to explore math with your child and, at the same time, build his or her self-confidence and understanding of mathematical ideas. This is a chance for you and your child to "talk math" that is, to communicate about math while discovering relationships between numbers. Being able to describe mathematical patterns and relationships, such as those between "addition and subtraction" or "odd and even numbers," is important to later success in math.

The activities in this section are intended to be enjoyable and inviting and use items that can be found in your home. While doing the activities, keep in mind that an understanding of math and a sense that math is enjoyable will help children develop skills that they will need for success their entire lives.*

1. Fill It Up: Filling empty containers provides opportunities to explore comparisons, measurement, volume, estimation, and geometry. **Grades K-2**

- *Materials*
A measuring cup, 4 glasses of equal size, and water
- Pour water at different levels ($\frac{1}{3}$ cup, $\frac{1}{2}$ cup, $\frac{3}{4}$ cup and 1 cup) in each glass. Put the glasses next to each other. Ask your child: Are all the water levels the same or different?
- Ask your child questions to encourage comparison, estimation, and thinking about measurement. Which glass has more water? Which has less? How many glasses of water do you estimate it will take to fill the container?
- Pour more water into one of the glasses to make it equal to the amount of water in another glass. Move the glasses around so that the glasses that have the same amount of water are not next to each other. Ask your child: Which glasses do you think have the same amount of water?
- As your child begins to understand more, do activities using different-shaped containers that hold the same amount of a substance (water, rice, and popcorn kernels). This helps your child see comparisons, as well as the various capacities of different-sized and -shaped containers.

2. Fractured Fractions: This hands-on activity explores whole numbers and fractions by using measurements your children can see. Your children also will learn to guess or estimate quantities. **Grades K-3**

- *Materials*
Clear container, masking tape, marker, measuring cups ($\frac{1}{2}$, $\frac{1}{3}$, or $\frac{1}{4}$ cup measure), uncooked rice or popcorn kernels, and water
- Have your child stick a piece of masking tape straight up one side of the clear container from the bottom to the top.
- For younger children, use a $\frac{1}{2}$ cup measure. For older children, use a $\frac{1}{3}$ or $\frac{1}{4}$ cup measure. Choose the unit of measure and fill the measuring cup. Then let your child pour the substance from the measuring cup into the clear container. Continue to pour the same amount of the substance into the container.

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- As each equal amount of the substance is poured, mark the level on the container by drawing a line on the tape. Write the cup size or appropriate fraction on each line. The fraction for one-third cup would be $\frac{1}{3}$.
- Follow this procedure until the container is full and the tape is marked in increments to the top of the container.
- Fill the container again and again using different measures each time. Ask your child "thinking" questions.
 - * How many whole cups do you think this container will hold? How many $\frac{1}{2}$ cups, $\frac{1}{3}$ cups, or $\frac{1}{4}$ cups do you think the container will hold?
 - * How many $\frac{1}{2}$ cups equal a cup?
 - * How many $\frac{1}{4}$ cups equal $\frac{1}{2}$ cup? A cup?
 - * How many $\frac{1}{4}$ cups equal $\frac{3}{4}$ cup?

3. Money's Worth: Coin games help children to learn the value of coins. They also teach counting, addition, subtraction, and multiplication. Coupons can help teach children money management, as well as subtraction and percentages. **Grades 1-3**

- *Materials*
Coins, grocery store coupons, and a pencil
- **Coin clues.** Ask your child to gather some change in his or her hand without showing what it is. Start with amounts of 25 cents or less (for first-graders, you can start with pennies and nickels). Ask your child to tell you how much money and how many coins there are. Guess which coins are being held. For example, "I have 17 cents and 5 coins. What coins do I have?" (3 nickels and 2 pennies).
- **Clip and save.** Cut out grocery store coupons and tell how much money is saved with coins. For example, if you save 20 cents on detergent, say 2 dimes. Ask your child what could be purchased using the savings from the coupon. A pack of gum? A pencil? How much money could be saved with 3, 4, or 5 coupons? How could that money be counted out in coins and bills? What could be purchased with those savings? A pack of notebook paper? A magazine? How much money could be saved with coupons for a week's worth of groceries? How would that money be counted out? What could be purchased with those savings? A book? A movie ticket? What percentage of the original price is the coupon worth?
- **Count the ways.** How many ways can you make 10 cents, 25 cents, 30 cents, 40 cents, or 50 cents? You can help your child add the coins in various ways to get different answers.
- Try playing the coin games with coins from another country.

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4. In the News: This newspaper activity helps children read and understand numbers and charts. **Grades K-2**

- *Materials*
Newspaper, scissors, pencil or crayon, glue, and graph paper
- **Newspaper numbers.** Help your child look for numbers 1 to 100 in the newspaper. Cut the numbers out and glue them in numerical order onto a large piece of paper. For children who cannot count to 100 or recognize numbers that large, only collect up to the number they do know. Have your child say the numbers to you and practice counting up to that number.

* *Or*

- Collect only numbers within a certain range, like the numbers between 20 and 30. Arrange the numbers on a chart, grouping all the numbers with 2s in them, all the numbers with 5s, and so on.
- **Counting book.** Cut out pictures from the newspaper and use them to make a counting book. Page 1 will have one thing on it, page 2 will have 2 things that are alike, page 3 will have 3 things that are alike, and so on. All the things on the each page have to be the same. At the bottom of each page, write the number of items on the page and the word for the item. Have your child tell you a story about what is on the page.

5. Newspaper Search: This activity helps children see how much math is used in everyday life. It also helps in the variety of ways in which math is used to tell a story, read a timetable or schedule, plan a shopping list, or study the weather. **Grades 3-5**

- *Materials*
Newspaper, calculator, pencil, paper, and graph paper (can be hand-drawn)
- **List it.** Give your child the grocery section of the newspaper in order to make up a list of foods that will feed the family for a week and also meet a budget of a certain amount of money. Have your child make a chart and use mental math or a calculator to figure the cost of a few items. If the total for the groceries is more than you have budgeted for, talk about which items can be eliminated. Could the list be cut down by a few items or by buying less of another item? What will best serve the needs of the family?
- **Shop around.** Have your child search for advertisements in the newspaper for an item they have been wanting, such as a piece of clothing or tennis shoes, in order to find the lowest price for the item. After your child finds the best buy, have him or her compare the best buy to the rest of the advertised prices. Are this store's prices lower for everything or just items in demand?
- **Highs and lows.** Have your child search the newspaper for daily temperatures and create a graph showing weekly trends. Ask your child for the differences in temperature from day to day.

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- 6. Treasure Hunt:** Organizing the "treasures" in one's house provides practice in addition, subtraction, multiplication, and division. Children can also graph data on shapes and sizes. **Grades K-2**

- *Materials*
Large container, buttons, screws, bottle caps, old keys, anything else you can count, and graph paper (can be hand-drawn)
- Find a container to hold the treasures.
- Sort and classify the treasures. For example, do you have all the same-sized screws or keys? How are they alike? How are they different?
- Use these treasures to tell addition, subtraction, multiplication, and division stories. For example, if we share 17 buttons among 3 friends, how many will we each get? Will there be some left over? Or if we have 3 shirts that need 6 buttons each, do we have enough buttons?
- For older children, you can organize the treasures by one characteristic and lay them end to end. Compare and contrast the different amounts of that type of treasure. For example, there are 3 short screws, 7 long screws, and 11 medium screws. There are 4 more medium screws than long ones. Make a simple graph showing how many of each type of screw there are. This activity may also provide an opportunity to talk about fractions: $\frac{7}{21}$ or $\frac{1}{3}$ of the screws are long.

- 7. Simply Symmetrical:** A shape can be symmetrical when two parts of it are exactly alike. This exercise helps young children develop an understanding of symmetry and a sense of geometric patterns. **Grades 1-5**

- *Materials*
Paper, pencil, marker or crayon, magazine pictures, scissors, and glue
- Explore your house for symmetrical designs. See how many your child can find. Look at wallpaper, floor tiles, pictures, bedspreads, and appliances.
- Cut out a magazine picture that is symmetrical. Cut it along the line of symmetry. Paste one half of the picture on the paper. Have your child draw the missing half.
- Write your child's name in big block letters, then write your name. Which name has more letters with lines of symmetry? How many letters have one line of symmetry? How many of each letter have two? (a B has one line, an H has two). Does anyone have a name with all symmetrical letters? (BOB is one.) Can any letter be turned upside down and still look the same? (Yes H, I, O, S, and X are symmetrical around a center point.) Go through the alphabet, making a list of the letters that look the same on both sides and those that look different.
- Fold a sheet of paper in half lengthwise. Have your child draw half of a circle, heart, or butterfly from top to bottom along the fold on each side of the paper. Help your child cut out the shapes that were drawn. Unfold the paper to see the symmetrical figure. Have your child color and glue the full figure on another sheet of paper to display the design.

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8. Tracking Time: Statistics includes collecting information, analyzing it, and describing or presenting the findings in an organized way. **Grades 2-5**

- *Materials*
Clock or watch, newspaper, blank paper, and graph paper (can be hand-drawn)
- Together with your child, keep track of the time he or she spends watching television as well as doing homework. Make a table listing the 7 days of 1 week. Keep two columns, one for television and one for homework. At the end of the week, see if together you can make a graph comparing the two different activity columns.
- While watching television, make a chart showing how much time in every hour is used for commercials compared to how much time is used for the actual show. Do this for every half-hour of television you watch. Then make a bar or pie chart showing the two amounts. Time the minutes carefully.
- Together with your child, keep track of how he or she spends time in one 24-hour period: time spent sleeping, eating, playing, reading, and going to school. Measure a strip of paper that is 24 inches long. Let each inch represent 1 hour. Color in the number of hours for each activity, using a different color for each activity. When finished, make the strip into a circle and place it on a blank piece of paper. Trace around the circle. Then make lines from the center of the circle to the end of each color. Your child has just made a circle (pie) chart of how he or she spends 24 hours. Compare this with how other people in your family spend their time.

9. Reading: While reading with your child, take part in the mathematics within the story. Many books provide themes that are based on mathematical concepts. Listed below are examples of books based on content and grade level. The books listed are available from Scholastic.

Kindergarten

Counting

Good Night, Gorilla
Ten Little Fish

Addition

Monster Math Picnic
Monster Musical Chairs

Shape Recognition

What is Square?
What is Round?

Grade 1

Addition and Subtraction

Cats Add Up!
Fat Frogs on a Skinny Log

Grade 2

Length

Inch by Inch
Biggest, Strongest, Fastest

Addition

12 Ways to Get to 11
A Quarter from the Tooth Fairy

Grade 3

Subtraction

Pigs Will Be Pigs
Math for All Seasons

Multiplication

Sea Squares
Bats on Parade

*Activities are provided from: <http://www2.ed.gov/pubs/parents/Math/mathhome.html>