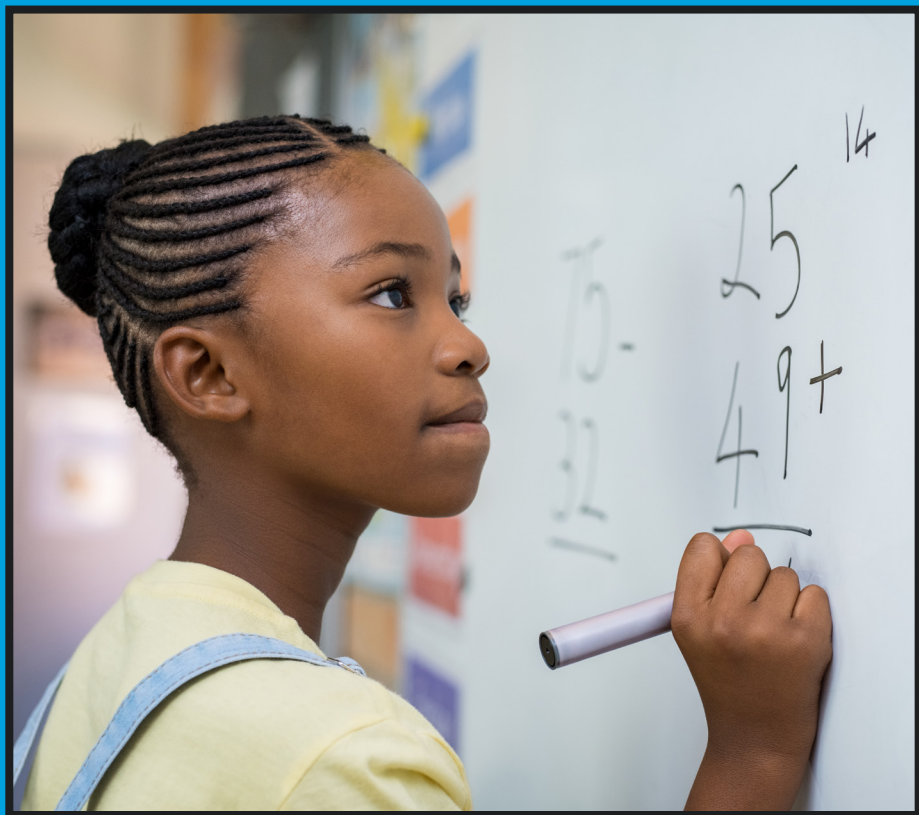# *What Parents Can Do at Home to* Help Students With Math

THE PARENT INSTITUTE®

Math is around us all the time. And in today's world, everyone needs a strong foundation in math to be successful. Workers need quick reasoning and problem-solving skills. They need to estimate and use mathematical thinking.

Even calculators, computers and phones require students to have good math skills. In fact, because calculators are only as accurate as the people operating them, it's even more important for students to have strong mental math skills so they can tell quickly if an answer is reasonable.

Sometimes, children don't see how useful math can be. Parents can help. When you or your child use math in your everyday activities, point it out. Did your child glance at the clock to see how many minutes remain before bedtime? That's math. Did your child find the best deal on new sneakers? That's math, too.

Whether you're looking for extra math activities to enjoy with your child or advice on how to help a struggling student do better, this booklet can help. By working on these activities with your child, you can promote a healthy interest in math, an appreciation of why math is useful and a positive attitude about studying math in school.

Take a Math Walk

When you and your child walk in your neighborhood, count the number of animals, birds, fire hydrants or green cars you see. Look for examples of geometry—circles, right angles, cones and so on. Estimate how far you'll walk. Later, you can check with a car odometer or GPS.

Ask a Silly Question

Try making math fun by asking your child silly questions that require math to answer: "How many minutes are there until your birthday?" "What percent of the pizza did Dad eat tonight?" After you ask the question, ask how your child could find the answer. Have your child solve the problem with a pencil and paper or with a calculator. Challenge each other to think of new fun questions.
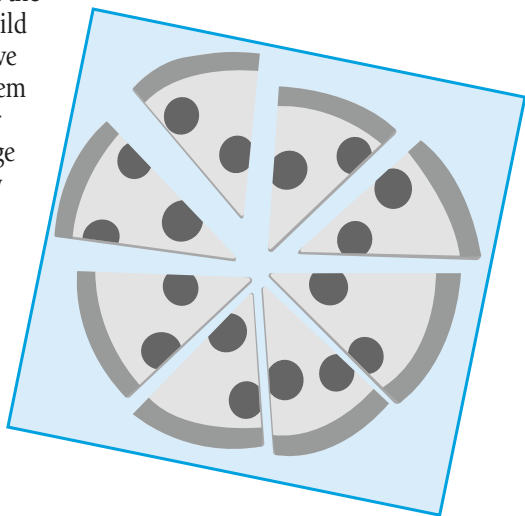
There's More Than One Right Way to Get the Answer

Children sometimes think that because there's only one correct answer to a math problem, there's only one way to come up with the answer. In fact, there may be *many* ways to get the right answer. When your child studies math at home, ask, "How did you get the answer?" Your child's way may be different from yours. If the answer is correct, the method may be a great alternative. Getting children to think about *how* they solve problems makes them better mathematicians.
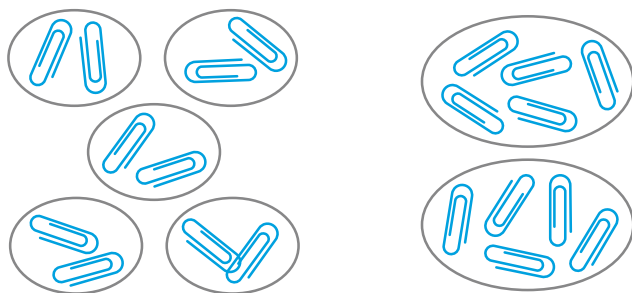
Use Manipulatives

What's the difference between 5 x 2 and 2 x 5? Both problems have the same answer—but the groupings are different. Children of all ages can often understand math concepts if they have a chance to see, move and use objects.

Teachers call these objects *manipulatives* because children can move them around as they are learning about a math concept. You can create your own math manipulatives. Look for something small—raisins, paper clips, dry beans, even candy pieces.

To see the difference between 5 x 2 and 2 x 5, have your child group 10 raisins—first into five groups of two, then into two groups of five. Moving the manipulatives around will lead to an understanding of how the two problems have the same answer even though they are different.

Practice Mental Math

Whether children are solving math problems on paper or with a calculator, they need to know if an answer is reasonable. So children need to learn to estimate the answer in their heads. Here are some ways to foster mental math skills:

- **Ask your child to give you quick answers** to simple math problems. For example, "I've put in three cups of flour, but the recipe calls for five. How many more do I need?" "I need to bring 24 drinks for your class party. They come in packages of six. How many packages should I buy?"

- **Teach your child to estimate an answer.** Sometimes, that means using numbers that make it easier to do a problem in your head. It's hard to add 18 and 29 quickly, but it's easy to add 20 and 30. So the answer to 18 + 29 should be close to 50.

- **Ask often, "Is the answer reasonable?"** Is it reasonable to add 17 and 35 and get 367? Why or why not?

- **Ask for your child's help at the grocery store.** You can have your child weigh vegetables, count items in the cart, compare unit prices or estimate your total grocery bill. Or use coupons to teach math. Ask, "If this coupon gives us 25 cents off, what will the final price be?"

Here's the Secret to Solving Word Problems

Word problems can sometimes be confusing. Help your child follow these five steps when solving any word problem:

- **Step 1: Figure out the question** you need to answer. Often, this is the last sentence of the problem.

- **Step 2: Write down the information needed** to solve the problem. A word problem includes all the information needed to answer the question (although it may also include some extra information).

- **Step 3: Develop a clear plan** to solve the problem. There may be one step to solving the problem, or several. It may help to draw a picture or make a table.

- **Step 4: Solve the problem.** Make sure you check your plan so you don't leave out any steps.

- **Step 5: Check your work.** Did you answer the question completely? Reread the problem to see if your answer makes sense. Check your answer to be sure you haven't made a simple error.

Here's how your child might use the five-step plan to solve the following word problem:

Each Monday for six months you have put 1/10 of your allowance in your pink piggy bank. If you now have $7.00 in your piggy bank. How much total allowance have you earned?

My 5-Step Plan for Solving Word Problems

Step 1: Figure out the question I need to answer.

How much allowance have I earned?

Step 2: Write down the information needed to solve the problem.

I have saved $7.00 In my piggy bank. I have saved 1/10 of my allowance.

Step 3: Develop a plan to solve the problem.

Multiply the amount in my piggy bank by 10.

Step 4: Solve the problem.

$7 X 10 = $70

Step 5: Check my work.

Yes, the answer is correct.

You may want to make a copy of these five steps and keep it handy when your child is solving word problems.

Thinking Games Build Math Skills

Math involves specific ways of thinking. You can use games to help your child build the thinking skills needed in this important subject. Here are some ideas:

- **Help your child see patterns.** For example, ask your child to figure out the next number in this series:

  10   11   13   16   20   25 _____

  (The correct answer is 31—add 1, then 2, then 3, and so on.)

- **What's the next number in this series?**

  72   27,   56   65,   41 _____

  (The correct answer is 14—reverse the digits.)

- **Use math to crack a coded message.** The key to the code in this example is that each letter has a numerical value starting with: A=1, B=2, C=3, etc. to Z=26. Then the number code for each letter is multiplied by five, so that the code for "A" becomes 5 (1 x 5 = 5), the code for "B" becomes 10 (2 x 5 = 10), etc. Using that key to the code, see if you can decipher the following message:

  125-75-105   35-75-100
  45-100   90-45-35-40-100!

  > **Answer: YOU GOT IT RIGHT!**

- **Make up your own math-based code** with your child.

Use the News for a Math Scavenger Hunt

Children in the upper elementary grades will enjoy using news articles for a math scavenger hunt. See if your child can find:

- A graph
- A number less than 10
- Something that comes in 2s, 3s, 4s
- A number greater than 50
- The date
- A number greater than 100
- A number greater than 100 but less than 999
- A symbol for inches, feet or yards
- A schedule
- A triangle
- A weather symbol
- A percent sign
- Sports statistics

Card Games Teach Math Skills

Card games are not only fun—they help build math skills! Here are two you can try:
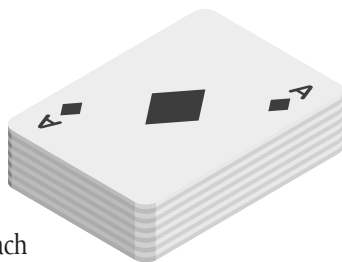
1. **Math Madness.** For this game, you'll need the cards from 1 to 9 in each suit. Give each player four cards. Have players use addition, subtraction, multiplication and division to see how many problems they can create in a specific amount of time using those four numbers. Award one point for each answer. Here's how a player might write problems using 3, 5, 6 and 8:

$$3 + 5 + 6 + 8 = 22$$
$$(8 \times 5) - (6 \div 3) = 38$$
$$(5 - 3) + (8 - 6) = 4$$
$$(6 \times 3) + 8 + 5 = 31$$

2. **Fraction Frenzy.** For this game, you'll need the cards from 1 to 10 in each suit. Deal out half the deck to each of two players. Then have players turn over two cards each. The player who can make the largest fraction from the two cards showing takes all the cards. The first person to collect the entire deck wins.

Have More Fun With Fractions and Decimals

• **Number lines can help children** understand fractions and decimals. Write a list of fractions—1/8, 1/4, 1/6, 1/2, 1/5, 1/3, 1/10 and so on. Have your child place those fractions on the line below in approximately the place where they should go between 0 and 1.

0_____1

This will help your child get a mental picture of the value of a fraction. Repeat with a wider variety of fractions—3/10, 4/5, 5/8, 1/2, 1/3, and so on. You can do the same with decimals. See who can come up with the largest or smallest five-digit decimal that could go on the line: .99999, for example, or .00001.

• **Use a pizza to help children see fractions.** Cut the pizza into halves, quarters and eighths, or into thirds, sixths and twelfths. This way, your child can clearly see that 2/4 is equal to 1/2, or that 2/6 is equal to 1/3.

• **When you're in the kitchen,** use measuring cups to help your child understand fractions. Use rice, water or popcorn and let your child find the answer to questions like these:

– How many times will you have to fill up the 1/4 cup measure before the one-cup measure is filled? (4)

– How many 1/4 cup measures will fill up the 1/2 cup measure? (2)

– Is 1/3 cup plus 1/4 cup more or less than 1/2 cup? (more)

Use License Plates to Teach Math Skills

When you're on the road, you can use license plates on other vehicles to teach math skills. Young children can read the numbers. Older children can try to add the numbers quickly in their heads.

As your child gets older, you can try different problems using the numbers on a license plate. For example, if you use the plate number **663M218**, ask your child to make an equation that equals 1

- Using two numbers. *3 - 2 = 1*

- Using three numbers. *6 - (3 + 2) = 1*

- Using four numbers. *(6 + 6) - 8 - 3 = 1*

- Using five numbers. *3 - [(6 + 6) - 8 - 2] = 1*
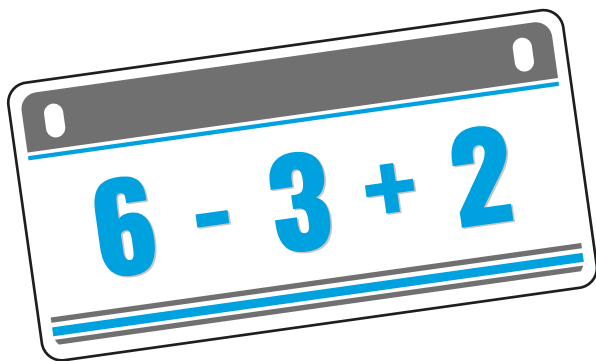
Help Older Students Get Over Math Anxiety

Some students may be so anxious about math that they can't do their best. Here are some teacher-tested tips on turning math anxiety into math success:

- **Point out** that boys and girls can do equally well in math. The idea that boys are better than girls in math is a cultural myth unique to some countries. In other countries, the belief is that girls are naturally better than boys in math—and the girls are expected to help the boys learn math.

- **Be positive.** Students who *think* they can do well in math usually *do.* Kids know that an "I can do it!" attitude helps in sports and many other areas. Tell your child that attitude also makes a difference in math.

- **Be prepared.** The way to do well in math is by studying every day. There is no magic to success in music, reading, spelling or any other subject, including math. The key is to study and *practice, practice, practice*.

- **Use errors as learning opportunities.** Have your child rework incorrect answers on a test as soon as possible. Nearly everything can be learned through trial and error. Your child will try something, figure out what went wrong, try again, do a little better and try again—until getting it right. That's how your child learned to talk, walk, ride a bike and read—and it's true for math, too.

Build an Interest in Math With Sports Statistics

Many students who have never developed much interest in math start to see its importance when they develop an interest in sports. As you're watching a game together, suggest that your young sports fan keep statistics. For example, ask:

number of throws caught ÷ number of throws

- **What percentage of passes** did the quarterback complete in the first quarter?

- **What percentage of three-point shots** did your favorite team make?

number of baskets ÷ number of three-point attempts

- **If a baseball player's batting average is .325,** how many times on average does the player get a hit for every 10 times at bat? How many hits for every 100 times at bat? How many hits for every 1000 times at bat? (3.25 hits per 10; 32.5 hits per 100; 325 hits per 1000)

multiply the batting average by the number of times at bat

90 miles per hour × 5,280 feet per mile ÷ 60 minutes per hour ÷ 60 seconds per minute

- **If a pitcher throws a ball at 90 miles per hour,** how many feet does the pitch travel in one second? (132 feet)

multiply the number of runs charged (not counting errors) by 9 innings, then divide by the number of innings he pitched

- **How do you compute** a baseball pitcher's Earned Run Average (ERA)? A basketball player's field goal percentage?

- **Can you find other averages** in sports news? How do you compute them?

number of baskets made ÷ number of field goal shots taken

When You Need Help

There may come a time when your child needs more help in math than you can offer. Where can you get help?

- **Your child's teacher** may have suggestions. It may be possible for your child to stay after school for extra help.

- **A volunteer tutor** may be able to help your child. In many middle and high schools, student volunteers are often available as tutors. Some schools even organize networks of parent volunteers who can offer assistance.

- **A professional tutor** might also be an option. Again, the teacher may offer some suggestions. While a private tutor can be expensive, some tutoring centers offer scholarships or charge fees on a sliding scale.

> No matter what children do when they grow up, math is sure to be a part of their lives. Helping with math today helps prepare your child for future success.