Building bridges

When you're driving across a bridge, ask your child why he thinks it can support your car. Then, help him find out by designing and testing his own bridges at home.

The challenge? To build the strongest bridge possible—out of paper! Have him place two stacks of books (of equal height) about 6 inches apart and lay a sheet of paper across. To test his bridge, he can add pennies, one at a time. How many will it hold before collapsing? (Have him record the number.)

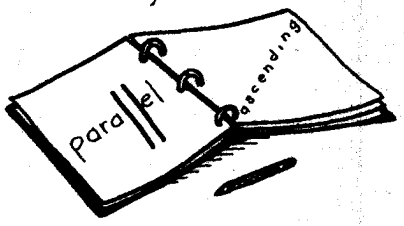
Next, he can experiment with ways to make his bridge stronger. He might bend the paper, roll it, fold it accordion-style, or turn up the sides to make walls. Or he could try different thicknesses by using two, three, or four sheets of paper. With each new design, have him test how many pennies it will hold.

You might explain that when engineers design a bridge, they test its *load*—or the weight of the structure plus the weight it must support—until it fails. Then, they analyze why it failed so they can improve the design and build the strongest structure possible.

Q & A The language of math

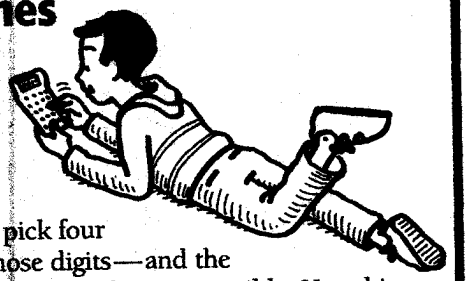
Q: *My daughter seems to get math words mixed up. Are there ways we can help her at home?*

A: Definitely! You might start by working together on a clever dictionary where the letters illustrate the math word. For example, she could make the double *l* in *parallel* stand out as parallel lines. Or you could write *ascending* with the letters going up and *descending* with the letters going down. As your child learns new math concepts, she can add pages to her dictionary.



Or set out an envelope labeled "Math Word of the Day." Each day a different family member can put an interesting word (*polygon, quotient*) inside the envelope and then use the word during dinner. After dinner, everyone else writes down what they think the word is and what it means. Did everyone get it?

MATH CORNER Calculator games



Your child may already use a calculator to divide numbers or check his homework answers. But he can also use it to play games that will build math skills. Suggest these ideas.

Combine numbers. Ask your youngster to pick four numbers (1, 3, 6, 7). The object is to use those digits—and the operations on the calculator—to make as many numbers as possible. Have him list 1–100 on a sheet of paper and write the equation he comes up with next to each number ($1 = 7 - 6$, $2 = 6 \div 3$, and so on). When he can't make any more numbers, he can try another set of four digits. Which set produces the most?

Cross over. In this two-player (and two-calculator) game, one person starts at zero and adds numbers. The second player starts at 100 and subtracts numbers. To play, take turns punching in any single-digit number you choose and saying the equation ($100 - 7 = 93$). The first one to pass the other person's number by exactly 1 wins that round. Next time, switch the starting numbers.

SCIENCE LAB Spinning around

Whirlpools and tornadoes are forces of nature that might seem mysterious to your youngster. This experiment will teach her about a *vortex*—the whirling mass that is a whirlpool in water or a tornado in the air.

You'll need: water, large mug, food coloring, spoon, ice cube

Here's how: Run tap water until it is very hot. Supervise as your youngster carefully fills the mug with hot water. Have her add a few drops of food coloring (this lets her see the water's movement better). Using the spoon, she should stir the water slowly in one direction until the water is rotating. Then, let her place an ice cube in the center.

What happens? The ice cube should start to spin faster until eventually it is spinning even faster than the water around it.

Why? This experiment creates a vortex. As the ice melts, the water under it sinks, and warmer water from the top is sucked in. This causes the ice cube to spin faster.

OUR PURPOSE

To provide busy parents with practical ways to promote their children's math and science skills.

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Make Your Holiday Healthy By Managing Holiday Stress

You might feel pressured not to admit it amidst all the cheer, but let's be frank: Holidays can be stressful. Whether it's buying gifts, dealing with unruly relatives or resisting cravings, the hype can leave you feeling exhausted and overwhelmed. Fortunately, you can stay both healthy and happy during the holiday season by mastering these common seasonal challenges.

Overeating
Nothing will make you crabbier than an over-full stomach and a large dose of guilt about what you just ate. The good news is that you can indulge in your holiday favorites without overindulging. Rather than munching absentmindedly on appetizers and snacks, make yourself a sampler plate all at once with one or two bites each of your favorite things. That way you will be able to keep track of how much you are eating, and you'll get a variety of foods that will satisfy all your taste buds. When it comes to dinner, fill a large portion of your plate with healthy foods like salads and veggies so you can still enjoy the taste of mashed potatoes and turkey without gulping down calories. Skipping sugary, caloric drinks like eggnog, alcohol and soda is also a great way to save your calories for special foods you get only once a year. Also consider a pre-dinner (or morning after) run or family football game. Extra exercise won't just flood you with feel-good endorphins, it'll also burn calories, zapping away pounds and guilt.

Family Relationships
Most everyone has relative or two they wouldn't miss at group gatherings, but don't let it make you dread family time altogether. If you have a relative or family friend you haven't spoken to in a while or have had trouble with in the past, try giving him or her a call a couple weeks before the holidays to check in and say hello. This can help break the ice and will make it less tense when you see each other at the dinner table. Traditions shouldn't be divisive. If there are some traditions that seem to be driving a wedge between family members, be open to changing them or starting whole new ones. **Hosting**
Hosting can be overwhelming, to say the least. If you're going to be cooking at your house, decide in advance who will help you cook and who will help clean. If you can, try giving yourself a break either during the cooking process or the cleaning process so you get to socialize too. Preparing food a day or two in advance and keeping it in the fridge can also give you a head start, as can ordering (healthy!) food for takeout from a restaurant.

If people are staying in your house, be clear about house rules and preferences from the get go. Don't be shy about posting signs asking people to remove their shoes at the door, or wipe down counters after use. It's okay to delegate some of your hosting duties to others. Take some time for yourself every day that you have visitors by going on a walk or spending some time reading or napping in your room.

Gifts and Finances
Don't let the holidays drain your bank account. Before the season starts, make a holiday budget and stick to it. Ask your friends and family what they want, rather than spending valuable time and money on something they'll never use (similarly, include gift receipts in the package and promise no hard feelings if they want to exchange). If you have a big family, consider arranging gift exchanges or Secret Santa instead of buying a gift for every single person – and don't be afraid to decide together on a price limits for gifts. Factor in the cost of holiday food and decorations, too, and rotate who buys big ticket items like the turkey each year.

What's the Best Way to Discipline My Child? Healthychildren.org

As a parent, one of your jobs to teach your child to behave. It's a job that takes time and patience. But, it helps to learn the effective and healthy discipline strategies.

Here are some tips from the American Academy of Pediatrics (AAP) on the best ways to help your child learn acceptable behavior as they grow.

10 Healthy Discipline Strategies That Work

The AAP recommends positive discipline strategies that effectively teach children to manage their behavior and keep them from harm while promoting healthy development. These include:

1. **Show and tell.** Teach children right from wrong with calm words and actions. Model behaviors you would like to see in your children.
2. **Set limits.** Have clear and consistent rules your children can follow. Be sure to explain these rules in age-appropriate terms they can understand.
3. **Give consequences.** Calmly and firmly explain the consequences if they don't behave. For example, tell her that if she does not pick up her toys, you will put them away for the rest of the day. Be prepared to follow through right away. Don't give in by giving them back after a few minutes. But remember, never take away something your child truly needs, such as a meal.
4. **Hear them out.** Listening is important. Let your child finish the story before helping solve the problem. Watch for times when misbehavior has a pattern, like if your child is feeling jealous. Talk with your child about this rather than just giving consequences.
5. **Give them your attention.** The most powerful tool for effective discipline is attention—to reinforce good behaviors and discourage others. Remember, all children want their parent's attention.
6. **Catch them being good.** Children need to know when they do something bad--and when they do something good. Notice good behavior and point it out, praising success and good tries. Be specific (for example, *"Wow, you did a good job putting that toy away!"*).
7. **Know when not to respond.** As long as your child isn't doing something dangerous and gets plenty of attention for good behavior, ignoring bad behavior can be an effective way of stopping it. Ignoring bad behavior can also teach children natural consequences of their actions. For example, if your child keeps dropping her cookies on purpose, she will soon have no more cookies left to eat. If she throws and breaks her toy, she will not be able to play with it. It will not be long before she learns not to drop her cookies and to play carefully with her toys.
8. **Be prepared for trouble**. Plan ahead for situations when your child might have trouble behaving. Prepare them for upcoming activities and how you want them to behave.
9. **Redirect bad behavior.** Sometimes children misbehave because they are bored or don't know any better. Find something else for your child to do.
10. **Call a time-out**. A time-out can be especially useful when a specific rule is broken. This discipline tool works best by warning children they will get a time out if they don't stop, reminding them what they did wrong in as few words—and with as little emotion—as possible, and removing them from the situation for a pre-set length of time (1 minute per year of age is a good rule of thumb). With children who are at least 3 years old, you can try letting their children lead their own time-out instead of setting a timer. You can just say, *"Go to time out and come back when you feel ready and in control."* This strategy, which can help the child learn and practice self-management skills, also works well for older children and teens.

The more you know, the more you can support your child's science learning at home. So what should you know about science education at school? Start with these key questions for your child's teacher:

1. **How is science taught in your classroom? What methods or activities do you use? Are there sample lessons I can review?**
2. **What science topics will my child learn and what skills will he/she master by the end of this year? How does this relate to what my child learned last year and what he or she will learn next year? How does it relate to what my child is learning in math, other subjects, or the world in which we live?**
3. **Do you have access to local informal science opportunities? Will there be field trips to local museums or science centers?**

   Will there be science homework and what will it look like?
4. **What types of questions should I ask my child about science on a day-to-day basis?**
5. **What can I do to support my child's science learning? Are there science projects or activities we can do together at home, or apps, websites, or learning games we could explore?**
6. **How does the school support education in science, technology, engineering, and math (STEM) subjects? Is STEM incorporated throughout the day and if so, how? Are there after school STEM clubs, programs, or science and engineering fairs that would support my child's learning?**

   How will learning be assessed? Will you use only formal assessments like tests or will children be able to show you what they know through other avenues?
7. **What happens if my child doesn't achieve the learning goals of a lesson or unit of study? Can he or she get extra help?**
8. **What types of science equipment and technology will be used throughout the year?**

There are no standard answers to these questions, but a teacher who creates a rich classroom environment for science exploration will be happy to discuss them with you. And while you are having this valuable conversation, look around. These are just some of the signs that the classroom environment supports science learning:

- **Space and storage:** Science requires "stuff." Whether the shelves are filled with rocks and leaves or hand lenses and measuring instruments, it's important that teachers have the materials nearby to teach science.
- **Safety equipment:** To explore science in the mode of a scientist, your child will occasionally need eye protection, gloves, soap, and water. There are many experiences that are both simple and safe, but safety criteria must always be in mind.

Whatever the answers are to your questions, a great response to close a conversation would be, "What can I do to help?" Most teachers would be thrilled to know if you have a background in science, technology, engineering, or math, or have time and resources to share.

A strong foundation in STEM will put your child on the road to success in school and beyond. Want to know more about how to support your child's learning in science? Find helpful resources from NSTA at *www.nsta.org/parents*.

Want to learn about how your state might be updating its K-12 science standards for students?
Visit *www.nextgenscience.org*.

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