

Math+Science Connection

Building Excitement and Success for Young Children

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Beginning Edition

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TOOLS & TIDBITS

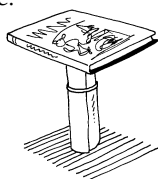


Number match

With this homemade game, your youngster will practice counting and recognizing numbers. Help her number index cards 1–20. Next, give her a pile of paper clips, and tell her to clip the matching number of them to each card (example: attach 4 paper clips to the 4 card). Put the cards with her toys so she can play anytime.

Paper strength

Ask your child if he thinks a piece of paper could hold up a book. Then, let him try this. Have him roll a sheet of paper into a tube and secure it loosely with a rubber band. If he stands it on end, he can carefully place a book on top. Discuss why he thinks it works.



Book picks

What happens when a straight line falls in love with a dot, but the dot is in love with a squiggle? *The Dot & the Line* (Norton Juster) blends geometry and romance in a heartwarming tale.

Inspire your youngster to see what lives under rocks. With field notes and fun facts, *Under One Rock: Bugs, Slugs, and Other Ughs* (Anthony D. Fredericks) teaches about the critters she may find.

Just for fun

Q: What has no beginning, no end, and nothing in the middle?

A: A doughnut!



Name your strategy

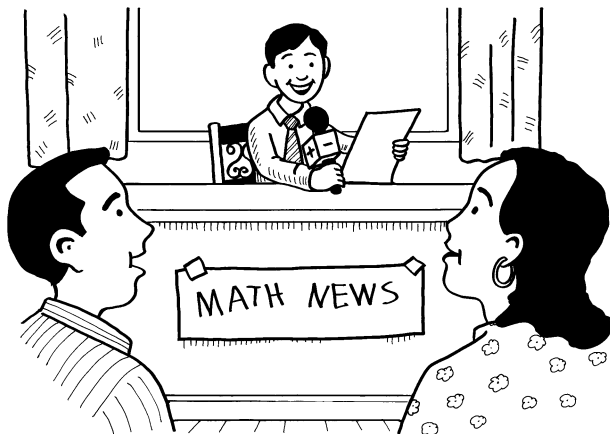
When your youngster explains how he solved a math problem, it helps him to understand the math concepts involved. With these ideas, you can encourage him to talk about how he figured out that $3 + 9 = 12$... and much more!

Roll and add

Play a simple dice game. Each person rolls two dice, adds the numbers together, and tells how he got the total. For instance, your youngster might say, "I know that $4 + 5 = 9$ because $4 + 4 = 8$, and 5 is 1 more than 4, so I have to add 1 more to 8." After five rounds, the high score wins. *Tip:* Boost the challenge by rolling three dice.

Talk it out

As your child does math homework, have him give a play-by-play—just like the announcer at a football or baseball game. Thinking out loud will let him use



math vocabulary to express his ideas.

Note: If he gets stuck, ask, "What could you do next?"

Write it down

At school, your youngster will need to write out his reasoning for math problems. Help him get ready by practicing at home. He might draw his answers, sketching out each step. Then, he can add sentences to explain his thinking. This will help him organize his thoughts and get used to showing his work.

Experiment with erosion

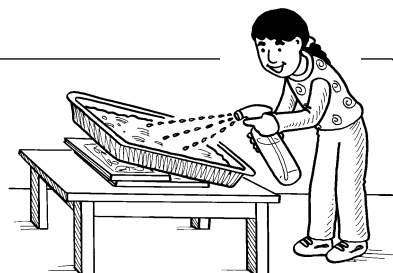
How do wind and rain shape the land? Your child can see for herself with these activities.

1. Have her dig up dirt from outside and cover the bottom of an aluminum baking pan with a 1–2 inch layer of it. Tell her to make a hill by propping up one end of the pan on a few books.

2. Let her simulate wind by blowing through straws onto the dirt. What happens if she blows gently or strongly?

3. Your child can test rain by spraying on water with a squirt bottle. To make a flood, suggest that she pour water from a watering can at the top of the hill.

4. Ask her what could keep the dirt from moving away, or *eroding*. (She might add pebbles or toy trees in different places.)



Creative graphs

Making graphs is a hands-on way for your youngster to collect and organize data and analyze the results. Here are two fun suggestions.

Design a graphing mat. Help her draw horizontal and vertical lines to divide a poster board into boxes. Then, she can use it to graph real objects. If she wants to graph her barrettes by color, she would put red barrettes in one column, pink in another, and so on (one barrette per box). What comparisons could she make? ("I have twice as many purple barrettes as green ones.") Have her put away the barrettes and graph something else!



Use sticky notes. What's the most popular month for birthdays in your family? At your next get-together, let your child hand out sticky notes and ask each person to write his or her birthday month. She can write the months across the bottom of a whiteboard or chalkboard, collect the notes, and line them up in the correct columns. Have her report the results and draw conclusions. ("Our family has the same number of birthdays in June and September.") *Idea:* Suggest that she rank the months from the one with the fewest birthdays to the one with the most.

SCIENCE LAB

What dissolves?

With this experiment, your youngster can make substances vanish!

You'll need: clear glasses, water, teaspoon, sugar, flour, salt, pepper

Here's how: Tell your child that you're going to test whether he can make items "disappear" in water. Have him fill a glass of water and predict which of the substances will *dissolve* in it. (Dissolving means to completely mix into something—the substances are still there, but they are broken down into such tiny pieces that they can't be seen.) Then, he should add 2 tsp. sugar, stir for 30 seconds, and observe. In the next glass, he should stir in 2 tsp. salt. Let him continue testing the substances in separate glasses.



What happens? The sugar and salt dissolve, but the pepper and flour do not.

Why? When a substance is lighter than water, it will float on top. Heavier substances will dissolve if they are *soluble* (capable of dissolving).

OUR PURPOSE

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

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Q & A

Math in the real world

Q: Math is getting a little harder for my son now, and he's feeling frustrated. How can I encourage him?

A: One of the best ways to motivate your child is to show him how you use math every day—he will see that he'll need math skills his whole life. Mention that you're doing math if you bake cookies and measure ingredients, or when you figure out how much his sneakers will cost after the discount.

Also, show him how you rely on math in your household while paying bills or planning a family vacation around your budget. Finally, talk about the ways you use math skills on your job. You might give change to customers, monitor inventory, or prepare a monthly financial report, for example. Let your son dream about what he wants to be when he grows up—and then help him think of ways he, too, will need to work with numbers.



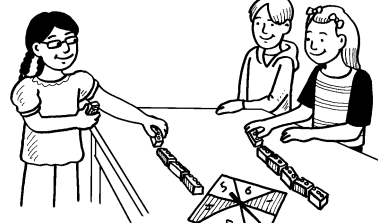
MATH CORNER

More or less

To decide whether there is more or less of something, your child has to count and compare. Play these games to practice.

Choo choo!

Gather same-size blocks and a spinner from any board game. Take turns spinning and using the number you get to build a train (spin a 3, make a train with 3 cars). Your youngster can tell whose number was "more" by whose train is longer. *Note:* If there's a tie, the numbers are equal.



High card

Place a deck of cards (face cards removed, ace = 1) facedown in a stack. Then, each player draws a card and turns it over at the same time. Your child declares who has "more," and that person gets both

cards. If you get the same number, draw again, and add your cards together. Whoever has the most cards at the end wins.