

Math+Science Connection

Beginning Edition

Building Excitement and Success for Young Children

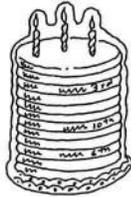
Calvin A. Hunsinger School

TOOLS & TIDBITS

Family birthdays
This birthday chart lets your child practice

writing numbers—and will remind him to wish relatives and friends a happy birthday! Help him cut out a big paper cake and draw lines to divide it into 12 layers.

He can label each layer with a month, then write names and birthdays (“Grandpa, April 3”) on the correct layers.



Plant parts we eat

Does your youngster know that when she eats carrots, she’s eating plant roots? Together, identify the plant parts you eat. *Examples:* seeds (peas, corn), stems (asparagus, celery), leaves (lettuce, spinach), flowers (broccoli, cauliflower). If you’re not sure which plant part a veggie is, help her look it up in a book or online.

Book picks

▣ The rhyming riddles in *Math for All Seasons* (Greg Tang) will inspire your child to experiment with different ways to solve math problems.

▣ *The Backyard Bug Book for Kids* (Lauren Davidson) introduces your youngster to insects like caterpillars and crickets with interesting facts and at-home activities.

Just for fun

Q: What do you call a penguin in the desert?

A: Lost!



Number sense in daily routines

“I have 5 buttons on my shirt.”
“There are 8 apples in the fruit bowl.” Strengthen your child’s number sense with these ideas that fit easily into everyday life.

Getting dressed

Your youngster’s clothing has lots of things to count, from buttons to pockets to designs. Perhaps she’s wearing her favorite shirt with stars on it. Ask her how many stars there are. As she counts, she should touch each star and say a number. This helps her work on one-to-one correspondence (matching one number to one object).



Washing hands

Show your child that math and good hygiene go hand in hand—literally! Have her write each handwashing step on a separate sticky note and number the notes. (“1. Wet. 2. Lather. 3. Scrub 20 seconds. 4. Rinse. 5. Dry.”) She can put the steps in order on the bathroom wall. For more practice with numbers,

encourage her to count slowly to 20 while she scrubs.

Doing chores

Invite your youngster to help you around the house and count by 2s, 5s, or 10s at the same time. When you fold laundry, she could count socks by 2s, since there are 2 socks per pair (“2, 4, 6, 8”). Or when she puts away small toys, she might pick up 5 blocks or 5 cars at a time and count by 5s. 🦋

Be a cloud collector!

Your youngster can observe clouds every day—rain or shine—and learn to describe weather patterns with this craft project.

Watch the sky together, and let your child model clouds he sees by gluing cotton balls on paper. Are the clouds big and fluffy or thin and wispy? Encourage him to write under each cloud what color it was (white, gray, black) and what kind of weather he observed (sunny, cloudy, rainy).

Repeat this activity in different types of weather, and let him staple the pages together into a book. He could make a cover and title the book “My Cloud Collection.” He’ll discover that clouds can help him predict the weather. (“I know big, dark clouds mean a storm is coming!”) 🦋



Measurement challenges

Just about anything can become a math tool when your child uses it to practice measuring. As he learns to compare sizes, try these activities.

Crayon contest. Give each player a pile of used crayons. For each round, draw a crayon from your pile, and line it up evenly alongside other players' crayons. The person with the longest crayon keeps the crayons. (If all the lengths are equal, "draw"



again.) Play until someone runs out of crayons. Count your crayons, and the person with the most wins. Repeat the game—this time, the shortest crayon wins.

Length hunt. Let your youngster choose a random object (say, a flashlight). Now have him find two objects that he thinks are longer (umbrella, baseball bat) and two that he thinks are shorter (bookmark, TV remote). Ask him to line up all the items from shortest to longest. If his predictions were correct, the flashlight will fall right in the middle. Now he can pick an object and let you search for longer and shorter items. 

MATH CORNER Make a math fort

Four chairs + 1 blanket = 1 math fort that will become your youngster's new favorite place to hang out—and do math.

First, let your child drape a blanket over the chairs (or a table). Have him stock his tent with all kinds of things to play with math. He might gather coins or pretend money, dice, dominoes, a ruler, a calculator, a pencil, paper, and small objects to count with like marbles or erasers.



Now suggest that he invite his stuffed animals inside and "teach" them what he's learning. He might use erasers to show patterns (red, blue, red, blue) or to practice making equal groups. *Example:* "There are 5 of us, and I have 10 marbles. How many marbles will we each get?" (Answer: 2.) 

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Q & A Explain your math thinking

Q: My daughter's teacher said students will be asked to explain their answers to math problems this year. Why is this, and how can I help her?

A: The teacher wants to know what's going on inside your child's head when she does math. Hearing or seeing her explanation tells him whether she understands how she got the answer. Plus, talking through math thinking (or writing about or drawing it) will often help your youngster correct her mistakes.

If your daughter mentions numbers or amounts during conversations, try asking a question that begins with "How do you know..." You might say, "How do you know your brother has more crackers than you?" or "Explain why that's 26 cents." She'll get used to explaining her thinking—and become a better mathematician in the process! 



SCIENCE LAB Launch a balloon-rocket

Your youngster will have a blast with this demonstration that teaches her about the moving force of air.

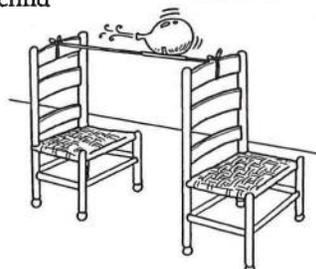
You'll need: yarn, scissors, straw, two chairs, uninflated balloon, masking tape

Here's how: Help your child cut a 6-foot piece of yarn and thread it through a straw. Tie the ends of the yarn to the backs of two chairs and set them apart so the yarn is pulled tight. Blow up the balloon,

and have her pinch the opening while you tape the straw along one side of the balloon. Then, she can slide the balloon to one end of the yarn and let go.

What happens? The balloon-rocket races along the yarn, and the balloon deflates.

Why? You blew air into the balloon, causing pressure to build inside. As the air escaped, the pressure was released—pushing the air backward and the balloon-rocket forward. 



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Clocks are everywhere

Your child can find clocks and tell time just about anywhere, from the microwave to the town square. When she spots one—digital or analog—help her read it. Talk about what usually happens at that time of day. (“You’re right, the cable box says 7:30. That’s when we eat breakfast.”)

Force of friction

Playing with toy cars teaches your youngster about *friction*, or the resistance caused by two surfaces rubbing together.



Ask him to roll a car across the carpet and then across a hard floor. He’ll see that the car travels farther on the floor because there’s less friction.

Book picks

■ In *Albert Keeps Score* (Daphne Skinner), a little brother wants an equal amount of everything his sister has—pumpkin seeds, books, and more. Part of the Mouse Math series.

■ Your child will get a glimpse of Earth and its place in the universe in *Here We Are: Notes for Living on Planet Earth* (Oliver Jeffers).

Just for fun

Q: What can you put in a barrel of water to make it lighter?

A: Holes.



This is the way we add

As your child learns about addition, he’ll start by using objects—then move on to drawing pictures and finally writing numbers. Have fun together with these autumn-themed addition ideas.

Acorn adding

Pretend to be squirrels getting ready for winter, and go outdoors to gather nuts. After you’ve each found some, let your youngster add his plus yours. He can count the nuts in each group, find the total, and say the problem: “I collected 5 nuts, and you found 7 nuts. $5 + 7 = 12$.”

Leaf pictures

Enjoy a nature walk and collect colorful leaves from the ground. Your child can sort them into piles and add the piles to make different combinations. (“I have 3 red leaves and 6 orange leaves. $3 + 6 = 9$.”) After your walk, he could draw leaf problems on paper. Maybe he’ll color 8 yellow leaves and 2 green leaves, and say, “ $8 + 2 = 10$.”



Apple equations

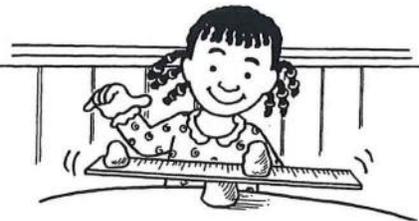
Let each family member cut out 10 “apple slices” from red paper and a “pie crust” from brown paper. Have each person write any number (1–20) on his pie crust. Now everyone writes an addition problem on each of his slices that equals a number on anyone’s crust. If your crust says 15, your youngster could write $8 + 7$ on an apple slice and place it on your crust. Ask your youngster to check all the equations.

Design a seesaw

A seesaw is a familiar example of a simple machine called a *lever*. Here’s how your youngster can create her own seesaw.

Have your child roll play dough into a ball, flatten the bottom, and set it on a table. Now ask her to balance a ruler on the *fulcrum* (the support for a lever, in this case the play dough).

Now let your youngster make two more play dough balls to represent each of you—one smaller and one larger. She should place them on opposite ends of the ruler. She’ll see that “you” push down on one end of the lever, lifting “her” up. Suggest that she experiment with moving each of you closer to and farther from the fulcrum until she balances the seesaw!



Pumpkin studies: Big learning, big fun

A pumpkin is full of opportunities for your youngster to explore science and math. Get a pumpkin, and try these activities.

Outside. Encourage your child to observe her pumpkin and think of words to describe it. She might say it's *orange, round, smooth, and heavy*. Now ask her to count the number of stripes, or ribs. As she counts each rib, she could paint it or color it with a marker. That will help her keep track, and she'll end up with a colorful pumpkin.



Inside. Cut the top off the pumpkin so your youngster can observe what the inside looks and feels like. Explain that the firm part is called *flesh* (that's the part we use for pumpkin pie), and the stringy material is *pulp*. Have her count the seeds—suggest putting them in groups of 10 and counting them by 10s.

Fun fact: A pumpkin has about one row of seeds for every rib. Let your child look at different-sized pumpkins.

Which does she predict has more seeds? She could investigate to confirm her prediction.

MATH CORNER Coin caterpillars

Ten coins all in a row ... what do they make? A money caterpillar! With this idea, your child can learn about how much coins are worth.

Find the value

Let her line up coins (real or pretend) to make "caterpillars" of different lengths. Perhaps she'll use 6 pennies for one caterpillar and 5 nickels for another. Now help her count the money to figure out how much each caterpillar is "worth" (6 pennies = 6 cents, 5 nickels = 25 cents).



Show the price

Give your youngster a specific "price" (say, 38 cents). How many caterpillars can she make that are worth that amount? *Examples:* 3 dimes, 1 nickel, and 3 pennies or 1 quarter, 2 nickels, and 3 pennies. Can she form a caterpillar worth \$1?

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PARENT TO PARENT

Estimation made easier

My son Terrance is learning to estimate in school, and he wanted to estimate at home, too. My brother, who is a teacher, suggested that we set up a three-jar system to help Terrance practice estimating.

We got three identical clear jars. My son put 1 marble in the first jar and 5 marbles in the second. Then, I dropped a handful of marbles in the third jar. Terrance looked at the first two jars to estimate how many were in the third. Knowing how much space 1 marble and 5 marbles take up in a jar, he estimated 20. When he dumped them out—much to his delight—he was close (there were 18).

Now Terrance tries larger handfuls and different objects in the three jars. So far, he has estimated cereal rings, crayons, and dry pasta. It's satisfying for him to make such accurate estimates.



SCIENCE LAB

Geology: Rock on!

Your youngster will be impressed to learn how some fossils form in rocks, with this edible experiment.

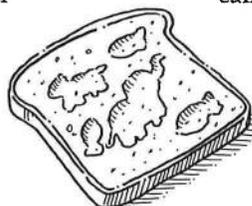
You'll need: 2 slices of bread, plastic wrap, small snacks (animal crackers, pretzels), heavy books

Here's how: Have your child lay a piece of bread on plastic wrap, arrange snacks on top, and cover with a second slice of bread and another piece of plastic wrap. Now help him set the books on the stack. After 10 minutes, he should pick up the

books, separate the layers of bread, and remove the snacks.

What happens? Your youngster will see imprints left by the snacks.

Why? The pressure from the books flattens the bread around the snacks, leaving imprints. In nature, pressure from layers of mud and other materials in the Earth form imprints in rocks called fossils. By studying them, scientists can learn about animals or plants that lived long ago and made the impressions. In this case, your child will see the shapes and sizes of his snacks—and then you can enjoy the snacks together!



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TOOLS & TIDBITS

Measure your name

How long is your child's name? Ask him

to write his name on paper, measure it with yarn, and glue the yarn in a straight line underneath. Then, help him line the yarn up with the "0" on a ruler and measure the length. *Idea:* He could measure other family members' names, too.

Where is Earth?

Here's an out-of-this-world art project that shows your youngster Earth's place in the solar system.

Have her paint a yellow sun in the center of a piece of black paper, then paint planets orbiting it. She could use a book or website to learn about the planets' order and appearance. Our blue-and-green Earth is third from the sun!



Book picks

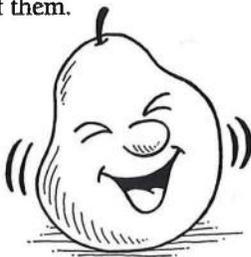
■ A child learns about saving and spending money in *You Can't Buy a Dinosaur with a Dime* (Harriet Ziefert).

■ The water cycle comes to life in *Ice Boy* (David Ezra Stein), a funny story of an ice cube that bravely ventures outside the freezer.

Just for fun

Q: How many pears grow on trees?

A: All of them.



"I can graph lots of things!"

Graphing is a fun way for your youngster to display information. Plus, she'll practice math skills like gathering and analyzing data. Suggest these kid-friendly graphs.

Coins

Your child can track coin flips with this simple graph. Let her get a handful of pennies and divide a sheet of paper into two columns ("Heads" and "Tails"). Then, she can flip each penny and place it in the correct column, making sure to lay it so it touches the coin below it. After she flips them all, have her count the coins in each column. Which has more? How many more?

Snacks

Ask your youngster to choose three snack foods and create a picture graph as she eats them this week. She can make three columns with 12 even rows on a sheet of paper and label the columns (*examples:* "Apple slices," "Pretzels," "Cheese"). Each time she eats a piece, she should draw and color that food in the correct column. After a

week, ask her which snack she ate the most and least of.

Colors

Take a walk to spot colors in nature. Have your child carry a notebook to list things she sees of each color (green grass, blue sky, white clouds). Afterward, she could make a bar graph with a separate column labeled with each color word and numbers (1–12) evenly spaced up the left side of the graph. If she saw grass, cacti, and trees, she would color a green bar up to the 3. Which color did she see most often? Least often? 🦋



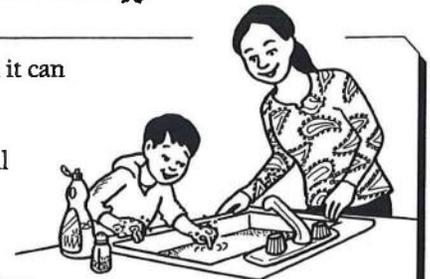
Soapy science

Soap keeps your child's hands clean—and it can teach him about science. Here's how.

Have your youngster fill a sink halfway with water and sprinkle in black pepper. He'll see that the pepper floats.

Now let him lather his hands with soap and touch one finger to the center of the water's surface. The pepper instantly races away from his finger and floats around the edges of the sink!

The science: Water is made of tiny particles (molecules) that cling together at the surface. This *surface tension* helps the pepper float. Soap breaks the tension, separating the water molecules. The water molecules quickly pull away from the soap to stay together, taking the pepper with them. 🦋



Throw a shape party

From making invitations and decorations to playing games, throwing a party is a great way for your youngster to explore geometry. Have fun with these ideas.

Invitations. Suggest that your child create personalized invitations by cutting paper into a different shape for each family member. He can describe each shape in a



rhyming verse on the invitation: "There are 4 sides on a square. There's a shape party Saturday—be there!"

Decorations. Let your youngster make a banner by cutting shapes from construction paper, punching a hole in each, and threading them onto yarn. He could also design a centerpiece out of building blocks. Ask him to name the shapes. ("I used triangles, circles, and hexagons for the banner.")

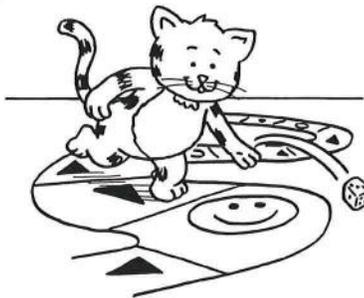
Games. Family members could play "Pin the Shape on the Robot" rather than "Pin the Tail on the Donkey" or "Circle, Circle, Square" instead of "Duck, Duck, Goose." Another idea is to take turns pretending you're a 3-D shape and describing yourself for others to guess. *Example:* "I have 4 triangular faces, 1 square base, and 8 edges. What am I?" (A square pyramid.)

Q & A Coding for the win

Q: My daughter is learning to code in school. How can I help her when I'm unfamiliar with this skill?

A: Think of coding, or computer programming, as using symbols to write instructions. Your child doesn't even need a computer to practice—she could, for example, use coding to design her own board game.

Suggest that she draw a path on poster board, divide it into spaces, and make a key telling how to move along the path. *Example:* ▶ = go forward one space, ◀ = go backward one space, ◎ = roll again, Ø = end turn, ★ = trade places with any opponent. On each square, she can draw a symbol.



To play, roll a die and move a game token the number of spaces rolled. Refer to the key and follow the instruction on the space, just like a computer would. The first player to reach the end of the path wins.

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SCIENCE LAB

Build a dam

Beavers are natural engineers! This experiment shows your child how beaver dams, made of natural materials, are different from dams people make.

You'll need: two large plastic storage containers, shovel, soil, twigs, Legos or play dough, water

Here's how: Have your child scoop 3–4 inches of soil into each container and run her finger through it to make a "streambed." She should criss-cross twigs to build a beaver dam in one streambed, then make a dam with Legos or play dough in the other. Help her pack soil around the dams and slowly pour water into the streambeds.

What happens? In the beaver dam, gaps between the twigs allow water to trickle through. The dam made of Legos or play dough holds all the water back.

Why? Water trickling through natural materials creates a pond between the dam and the beavers' home to keep predators away. Human engineers construct dams that block the flow of water to prevent flooding.



MATH CORNER

Compare the dots

Here's a two-player version of dominoes that lets your youngster count, add, and compare—three important skills for developing number sense.

Set up: Help your child make a set of index-card dominoes. He should draw a line down the middle of each card and draw dots on both sides of the line. (Or use a store-bought set of dominoes.) Put the dominoes in a bag.

Play: Each player takes a domino from the bag and places it faceup on

the table. Quickly add the dots on each half of your domino and call out the sum. (If your youngster's domino has 6 dots on one side and 5 on the other, he would say $6 + 5 = 11$.) The player with the greater sum keeps both dominoes.

Score: When the bag is empty, have your child count the dominoes to see who has the most. Or he might stack them to see whose pile is higher. The person with the most dominoes (or the highest pile) wins.



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TOOLS & TIDBITS

1-2-3 puzzle

Your child can turn her artwork into a math jigsaw puzzle. Have her color a picture and write the numbers 1-10 across the bottom. Now let her cut between the numbers, separating the picture into vertical strips, and mix them up.

Challenge her to put the puzzle together by arranging the numbers in order.



A box of landforms

Suggest that your youngster make models of landforms he sees in books or in real life. He could line a shoebox lid with green construction paper and add blue yarn for a river, aluminum foil for a lake, and white play dough for a snow-capped mountain.

Book picks

Counting on Katherine: How Katherine Johnson Saved Apollo 13 (Helaine Becker) tells the extraordinary true tale of star mathematician Katherine Johnson, who calculated NASA's first flight paths to the moon.

Why do mirrors fog up during a bath? How do boats float? *Science Experiments at Home: Discover the Science in Everyday Life* (Susan Martineau) answers these questions and more.

Just for fun



Q: Betty had 8 cookies. She shared 3 and ate 5. What does she have now?

A: An empty plate—and a full tummy!

Breaking apart numbers

Like buildings made of blocks, numbers can be put together and taken apart in all different ways. Help your child *compose* and *decompose* numbers at home with these activities.

Build block towers

Encourage your youngster to build the number 10 with blocks or Legos. Using two different color blocks, how many different towers of 10 will he make? (Examples: 1 yellow + 9 blue, 2 red + 8 green, 3 blue + 7 red, 4 blue + 6 green, 5 yellow + 5 green.) Can he use combinations of three colors to make 10?

Drop the beads

Ask your child to draw a line dividing a paper plate in half. Have him drop a handful of small objects (beads, pom-poms) so some fall into each section (say, 4 on the left and 3 on the right). He can count the total (7) and write the number sentence ($4 + 3 = 7$) on a sheet

of paper. Now he could drop the beads again and again, writing as many different number sentences as possible.

Hide toys

Let your youngster get 12 toys like cars or bouncy balls. While he looks away, cover some (say, 8) with a blanket. Can he count the toys he sees and figure out how many are hidden? He might think, " $4 + \underline{\quad} = 12$." Or maybe he'll ask himself, "4 plus how many more make 12?" (8)



Get ready for winter

Bears hibernate. Birds migrate. Squirrels adapt. How does your youngster prepare for winter? Suggest that she write checklists for animals—and people.

- Animals.** Help your child look up animals in books or online to learn what they do to get ready for winter. For a bear, she might write, "Eat lots of food. Find a cozy place to sleep." A bird's list could include "Invite friends to migrate with me. Fly south in a V shape." And for a squirrel: "Gather nuts. Hang out in my den."
- People.** Your youngster can think about tasks that help your family prepare for cold weather and then make a checklist. Examples: "Take out winter clothes. Put heavy blankets on beds. Stock up on hot chocolate!"



'Tis the season for sorting

What do holiday cards and family photos have in common? Besides bringing us joy, they can help your child work on sorting, an important early math skill. Try these ideas.

Separate mail. Save a few days' worth of greeting card envelopes, catalogs, postcards, and advertising circulars. Then, let your youngster sort them in different ways. She might group according to size,



shape, thickness, or color. Or maybe she'll sort by type of sender (friend, relative, store).

Arrange photos. Gather family pictures, and encourage your child to sort them into categories for a photo album. The possibilities are endless! She can sort by occasion (birthday, holiday, wedding, vacation) or season (winter, spring, summer, fall). Let her label the pages with her categories and display the album on your coffee table.

Idea: Take turns sorting mail or photos in various ways and figuring out each other's sorting rule.

MATH CORNER Buttons: Odd and even

This cute-as-a-button activity will build your child's number sense by letting her explore odd and even numbers.

Materials: scissors, construction paper, two dice, 12 buttons

1. Have your youngster cut out a large coat shape from construction paper.
2. Take turns rolling the dice and placing that many buttons on the coat.



3. Say whether the coat has an odd or even number of buttons. (*Hint:* She could try arranging the buttons in pairs. If each button has a "partner," the number is even. If not, it's an odd number.)

4. Let your youngster keep a chart with two columns, labeled "Odd" and "Even" to record the numbers made. Can she figure out a "rule" for knowing whether a number is odd or even? (Even numbers are the ones we use to count by 2s.)

Idea: Your child could check the coats in your closet to see which ones have an even or odd number of buttons.

SCIENCE LAB

Light, shadows, experiment!

Your child will see how light shines through different materials to create shadows (or not) in this experiment.

You'll need: ceramic coffee mug, plastic milk jug, clear glass, flashlight, paper, pencil

Here's how: Ask your youngster to line up the mug, jug, and glass and predict which ones will have the darkest and lightest shadows. He can shine a flashlight on each one and record and sketch the results he observes.

What happens? The mug has the darkest shadow, the milk jug has a lighter one, and the glass has the lightest shadow.

Why? Light travels through some materials but not others. The solid (opaque) mug blocks all light, resulting in a dark shadow. The translucent milk jug blocks some light, creating a dim shadow. And the clear (transparent) glass lets almost all light through, casting an even dimmer shadow. Can your child find more items in each category?



PARENT TO PARENT

"Are we there yet?"

In the car, my son Ethan always asks, "Are we there yet?" So I decided the car would be a good place for him to practice telling time.

I gave Ethan an old watch so he could see the time on a clock face as well as on the car's digital clock. Before we leave, I give him our estimated arrival time and ask him where the watch hands will be. For instance, I

said we'd be at Grandma's house at 3:30, and he said the little hand would point toward the 3 and the big hand would be on the 6. When we arrived, he checked his watch and saw that he was right.

Now I notice Ethan looking at his watch periodically in the car to see how close the hands are getting to the time we'll arrive—and he rarely asks if we're there yet.



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Arm span = height

Ask your child to stretch his arms out to

his sides, and share this fun fact: For most people, arm span is equal to height. To test this, use yarn to measure him both ways, then let him measure you. He'll see it's true! *Idea:* Suggest that he draw stick figures with arm spans equal to their heights.



Compare states of matter?

Your youngster can explore states of matter with balloons. Help her fill two balloons with water (a liquid). Freeze one overnight, turning it into ice (a solid). Blow up a third balloon with air (a gas). Have her hold each one and compare how heavy they feel. Now she can line them up from lightest (air) to heaviest (ice).

Book picks

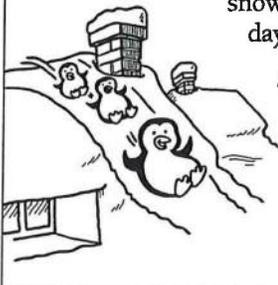
■ *Zero Is the Leaves on the Tree* (Betsy Franco) introduces the number 0 through familiar examples like a bare oak tree.

■ A boy and his dog play with a ball and other rolling toys in *Newton and Me* (Lynne Mayer). Rhyming text explains Isaac Newton's laws of force and motion.

Just for fun

Q: What would you have if 1 foot of snow fell every day for 2 weeks?

A: A lot of snow to play in!



Make-believe play, real math

Children love to pretend, whether they're blasting off into space, having tea parties, or playing store. Add math to your youngster's imaginary play with these ideas.

Spaceship

Let your child turn a large cardboard box into a spaceship. She can draw a control panel inside with buttons labeled 1–10. Before blasting off, she could count down from 10 to 1—or develop her own countdown. Perhaps she'll count backward from 20 by 2s or from 100 by 10s. Each time she goes on a "mission," she could write the date and time in a "captain's log."

Tea party

Suggest that your youngster treat her stuffed animals to afternoon tea. She can count out 1 saucer and 1 teacup for each guest, then make pastries out of play dough. If she "bakes" 12 cakes and there are 4 guests, how many would each get? She could deal them out like cards and count (3 cakes per guest).



Then, help her measure water into tea-cups, making sure to give each guest an equal amount.

Flower shop

Give your child craft supplies, such as pipe cleaners and tissue paper, to make flowers. Let her arrange them in glasses and put a sticky-note price tag on each bouquet. Use spare change or play money to buy flowers from her shop. Help her count the money you pay to make sure it matches the price on the tag.

Resolve to conserve

Here's a New Year's resolution that comes with a science lesson: Use less water. Try this strategy to teach your child about a valuable natural resource.

1. Help your youngster list ways your family uses water. *Examples:* washing hands, doing laundry, drinking, bathing, running the dishwasher. For one day, have him track how many times you use water by putting tally marks next to each item.

2. Let your child make a poster showing ways to save water and hang it on the refrigerator. He might draw a showerhead and write "Take shorter showers," then draw a toothbrush and write "Turn off water while brushing." Ask him to post reminders around the house, too.



Count on the calendar

“What day is it today?” Teachers often use the calendar as a tool to help children learn about days and months. Let your youngster explore the 2021 calendar at home with these suggestions.

Days. What day of the week does January start on in 2021? (Friday.) Encourage your child to investigate whether all months start on the same day. Have him make a two-column

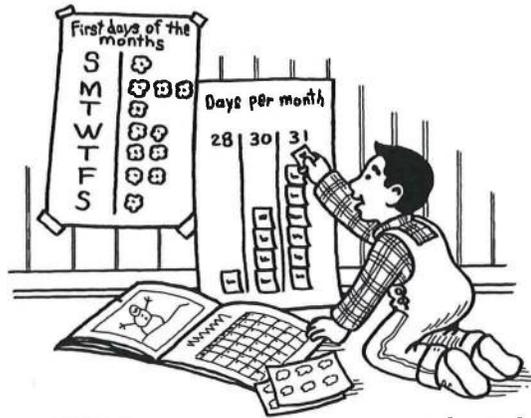


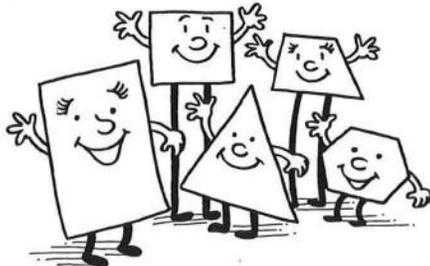
chart with the days of the week in one column. In the other, he can put one sticker for every time that day falls on the first of a month. Which day starts the most months this year? The fewest?

Months. January has 31 days, but what about the other months? Suggest that your youngster make a graph to compare the lengths of the months. He could write the name of each month on a separate sticky note, then divide a sheet of paper into three columns labeled “28,” “30,” and “31.” He can put the sticky notes in the correct columns in even rows. He’ll notice that most months have 31 days like January has. How many months have 30 days? (Answer: 4.)

Q & A Geometry stories

Q: My daughter mixes up the names of shapes like “rectangle” and “triangle.” How can I help?

A: Try making up stories about shapes with your child—she’s likely to remember their names and learn about their special features, or *attributes*.



For a rectangle, your daughter might begin, “Rachel Rectangle has two long sides, two short sides, and four corners. She loves to put on shows as a TV screen.” And for triangle, you could start with, “Trevor Triangle has three sides and three corners. He likes to be dipped in salsa as a tortilla chip.”

Make up stories for a circle, square, hexagon, and trapezoid, too. To cement the information in her memory, your child can write down the tales and illustrate each one.



SCIENCE LAB

Two ears are better than one!

A plane flies overhead, and your child looks up and around to spot it. Sound familiar? This experiment demonstrates how her ears work together to locate noises.

You’ll need: blindfold (scarf, bandanna), earplug or cotton ball

Here’s how: Have your youngster cover her eyes while you stand a few feet away and clap. Can she point to where you are? Move around (forward or backward, left or right), and clap each time. Now help her plug one ear, and repeat the activity.

What happens? Your child locates you more easily when she listens with both ears.

Why? Because our left and right ears are on opposite sides of our head, each ear hears a sound at a different volume and time. The brain measures these differences to figure out which direction the sound is coming from. If one ear is plugged, then the sound reaches only the other ear.



MATH CORNER

Double high five

Put your youngster’s two hands and your two hands together. There are four hands, because $2 + 2 = 4$ —and that’s a doubles fact! Here’s a quick activity for helping your child add doubles and learn addition facts.

Start by showing him a number with your fingers (say 7). Ask him to hold up the same number and add them ($7 + 7 = 14$). Encourage him

to name the doubles fact ($7 + 7$) and count his fingers with yours to check his answer. When he sees he’s correct, give each other a high five.

Idea: Your child could illustrate each doubles fact on a separate sheet of paper, from $0 + 0 = 0$ to $9 + 9 = 18$. He might draw two bicycles with two wheels each ($2 + 2 = 4$) or two bunches of eight grapes each ($8 + 8 = 16$).



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Math+Science Connection

Building Excitement and Success for Young Children

Beginning Edition

Calvin A. Hunsinger School

TOOLS & TIDBITS

Sum fun

This outdoor game lets your child practice

adding three numbers. Have her use chalk to draw a bull's-eye on a sidewalk and write the numbers 1–20 randomly all over it. Take turns tossing three beanbags at the bull's-eye and adding the numbers they hit. (Example: $9 + 2 + 4 = 15$.) Get the highest sum to win.

At-home safari

Flies and spiders and pill bugs, oh my! Insects and other many-legged critters may hide in our homes for shelter and survival. Encourage your youngster to inspect dark corners and closets with a flashlight and magnifying glass. He might observe a fly in a spiderweb or a pill bug rolling into a ball.

Book picks

▮ *Sizing Up Winter* (Lizann Flatt) lets your youngster explore math with plants and animals.

▮ A rhyming story that inspires perseverance, *Rosie Revere, Engineer* (Andrea Beaty) tells of a girl who works hard to become a brilliant engineer.

Just for fun

Q: What has no fingers but many rings?

A: A tree.



Explore place value

When is 1 worth more than 9? When it's in a number like 19 or 109. That's because a digit's place in a number helps to determine its value. Here are ways to give your youngster practice with place value.

Heart counters

Let your child make a set of place value "counters" using 1 index card cut into 10 equal strips and 9 whole index cards. Have him draw 1 heart on each strip ("ones") and 10 hearts on each whole card ("tens"). Say different numbers for him to show with his counters. If you say "39," he would lay down 3 tens and 9 ones.

Muffin puzzles

Have your youngster draw and cut out a dozen paper "muffins." Write any two-digit number on a muffin top (say, 26). On the bottom, your youngster can write its tens and ones (2 tens, 6 ones). When you've used all the muffins, let him cut off the tops, mix up the pieces, and put together his "puzzles."



Digit game

Compete to make the biggest number! Each player divides his paper into three columns ("Hundreds," "Tens," "Ones"), then draws four rows of blank lines in the columns. Take turns rolling three dice and writing each number rolled (say, 4, 6, and 1) in any of your blanks. Since 6 is the biggest, your child might put it in one of the hundreds-column blanks. When you've filled every blank, let him find the biggest three-digit number and declare the winner. 🦋

Star light, star bright

Does your child know where the stars "go" during the day? She'll find out with this indoor "stargazing" activity.

Help your youngster carefully poke holes in a piece of aluminum foil with a sharpened pencil. In a dark room, hold up the foil a few feet from a wall while she shines a flashlight on the foil. She'll see "stars" on the wall!

Leaving the flashlight on, turn on a light in the room. She can't see the stars. Why? Stars are visible at night because it's dark. They're still there during the day, but the sun (the closest and brightest star to Earth) outshines them. 🦋



Subtraction play

Catch a fish, knock down pins ... these versions of fishing and bowling give your youngster a fun way to work on subtraction.

Go fishing. Let your child cut out 12 paper "fish." She can slide a paper clip onto each one and make a fishing rod by taping a refrigerator magnet to a string. Place some fish on blue construction paper, and ask her to



count how many are in the "pond." Each time she catches a fish, she can say the subtraction problem to know how many fish are left in the pond ($12 - 1 = 11$, $11 - 1 = 10$, and so on).

Go bowling. Set up 10 empty water bottles like bowling pins. Take turns rolling a ball at the pins from a few feet away, then say a subtraction problem for how many pins you knocked down. If your child toppled 7 pins, she would say, " $10 - 7 = 3$." She can bowl again, trying to hit the pins still standing, then say another subtraction problem ($3 - 2 = 1$). Reset the pins for the next player.

MATH CORNER See, touch, and hear patterns

Tick, tock, tick, tock ... does your youngster notice a pattern when she hears a clock? Help her identify and create more patterns with these ideas.

Textures

Ask your child to gather small objects that have different textures, such as pencils, sticks, marbles, and rocks.

Make a pattern with the items. Have her name the pattern she sees (pencil, stick, pencil, stick), then feel the objects and tell you the pattern by texture (smooth, rough, smooth, rough).



Can she line up different objects that follow the same texture pattern? (Example: marble, rock, marble, rock.)

Sounds

Encourage your youngster to create sound patterns with everyday items. She could fill a cardboard tube with dry beans, tape foil over the ends, and shake it in a pattern (shake, shake-shake, shake, shake-shake). Or she might turn over a mixing bowl and hit it with a plastic spoon (tap-tap-tap, rest, tap, tap-tap, rest, tap).

PARENT TO PARENT Hunting for math

During a recent online meeting, my coworkers and I had fun doing a virtual scavenger hunt. That gave me an idea to have a math scavenger hunt for my twins.

I made a list of math-related items for Mason and Jack to find around the house, including a four-digit number, a number word, a 2-D shape, a 3-D shape, and a coin.

The boys were delighted when I told them about my scavenger hunt and presented them with the list. They found a calendar with 2021 on it, a bag with a three-cheese blend, a rectangular napkin, a Rubik's Cube, and a penny.

Mason and Jack enjoyed searching for math, and next time, they want to make a list of items for me to find!



SCIENCE LAB Drop a parachute

Parachutes help skydivers descend slowly. In this experiment, your youngster can test different materials to see which would make the best parachute.

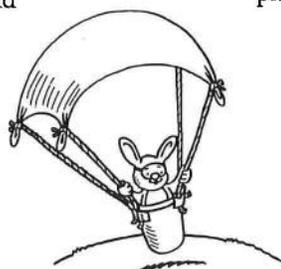
You'll need: scissors, plastic trash bag, small cloth (napkin, dish towel, bandanna), yarn, ruler, tape, two plastic or paper cups, two identical small toys

Here's how: Help your child cut a piece of plastic the same size and shape as the cloth. Then, have him cut eight 2-foot pieces of yarn. He should tie four pieces around the corners of the plastic and four around the corners of the napkin. Now he can tape the opposite

ends of the yarn from each "parachute" to a cup. Let him place a toy in each cup and predict which one will hit the floor first if he drops the parachutes from the same height (stairway, balcony) at the same time. Now help him safely test his prediction.

What happens? The plastic parachute falls more slowly than the cloth parachute.

Why? A parachute "resists" the air underneath it, which slows its fall. The lightweight plastic bag creates more air resistance than the heavier cloth, so that parachute slows down as it falls.



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