

# Keys to Math Fluency

Playtime, snack time, story time... it's always a good time to work on math fluency. A youngster who's fluent in math thinks about numbers in different ways and uses various strategies to solve problems. Plus, he can explain his strategies, which shows he understands the "why" behind math operations. Try these activities that will fit "fluently" into your child's daily routines.



## Playtime

Whether your youngster counts blocks or rocks, he can practice counting fluently as he plays. First, ask him to make the tallest building possible by placing one block on top of another, counting as he builds. Next, go outdoors, and let him fill up his dump truck with rocks. Now he gets to dump it out and count the rocks. How could he fit in more rocks? (He'd need to find smaller ones!)

## Snack time

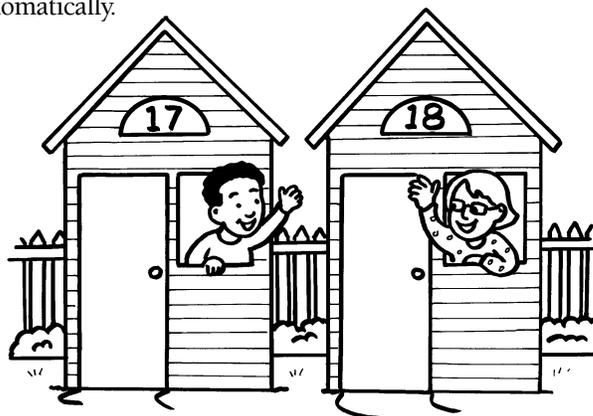


Here's a fluency-builder that tastes yummy! Choose a snack with small pieces, such as raisins, cereal rings, or blueberries. Arrange a handful (say, 12 blueberries) in two groups on your plate (maybe 8 on one side and 4 on the other), and say the number sentence you made ( $8 + 4 = 12$ ). Let your child take the same number of snacks and show the number

in a different way (perhaps  $5 + 7$ ). *Idea:* Turn your plates around and say the number sentences ( $4 + 8 = 12$ ,  $7 + 5 = 12$ ). She'll see that the total is still the same. That's the *commutative property* of addition—add numbers in any order, and the sum will be the same.

## On-the-go time

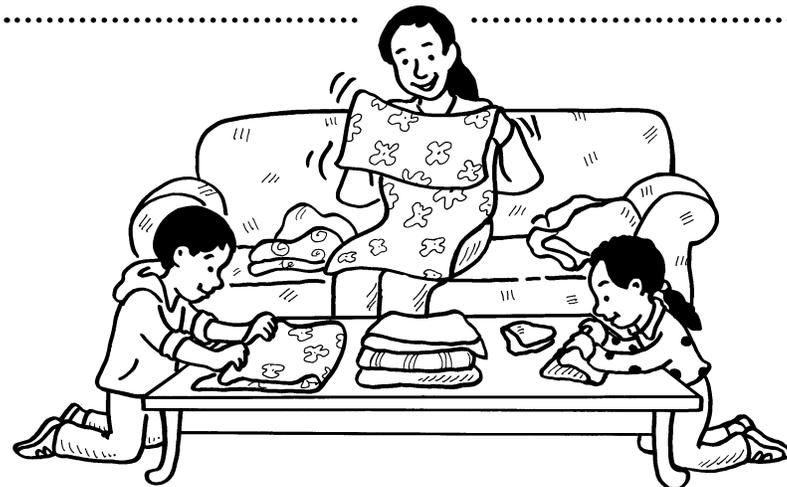
How is 17 related to 18? They're "neighbors," because 17 is *one less than* 18, and 18 is *one more than* 17! Spotting relationships between numbers helps your youngster solve math problems fluently. In the car or on a walk, work on "neighborly numbers." Point out a number, and ask him to tell you its neighbor. If you pick 35 on a speed limit sign, he would say that 34 and 36 are its "neighbors." *Variation:* Have him tell you which number is 10 less (25) and 10 more (45). *Note:* At first, he may need to start counting at 1 to figure out a number's neighbor. As he becomes more fluent, he'll be able to answer automatically.



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## Story time

Read aloud to your child, and make up math stories related to the book for each other to solve. If you read *Jack and the Beanstalk*, you might say, “Jack had 25 beans. He spilled 8 of them. How many beans did he have left?” ( $25 - 8 = 17$ ) Then, talk about the strategy used to solve the problem. Your youngster could say, “ $25 - 5 = 20$ . 8 is 3 more than 5, and  $20 - 3 = 17$ .” A different strategy would be working up from 8 to 25 using numbers that are easy to add. (“ $8 + 2 = 10$ ,  $10 + 10 = 20$ , and  $20 + 5 = 25$ . Then  $2 + 10 + 5 = 17$ .”) She’ll learn to approach problems in multiple ways and see that more than one strategy leads to the answer.



## Chore time

Doing household chores is a great way for your child to practice estimating accurately—an important part of math fluency. Have him get the towels out of the dryer and estimate how many there are, then count to check. He can also estimate the number of napkins in a stack before he sets the table or the number of boxes in the recycling bin before he helps you take it out. If he estimates frequently, he’ll learn to eyeball different quantities, and his estimates will become more accurate.

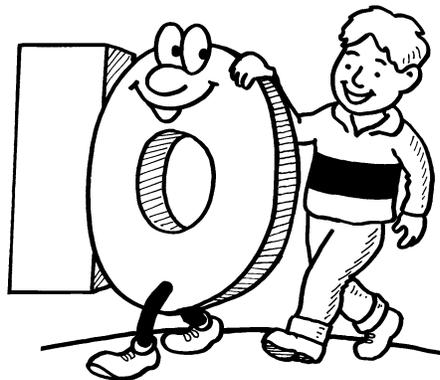
## The friendliest number

The “friendly” number 10 can help your youngster add and subtract fluently, because our number system is based on 10. Here are ideas for working with 10 and its multiples (20, 30, 40, and so on).

### Make a chart

With this colorful chart, your child will see all the ways to make 10. On a large sheet of paper or poster board, have him write the numbers 0–10 across the top and 10–0 across the bottom.

Using different-color crayons, let him draw lines connecting the pairs of numbers that make 10 (0 and 10, 1 and 9, 2 and 8, 3 and 7, 4 and 6, 5 and 5). Then, he can write the number sentences for each pair ( $1 + 9 = 10$ ,  $2 + 8 = 10$ ). Suggest that he hang his chart in his room, and he’ll soon be fluent in making 10.



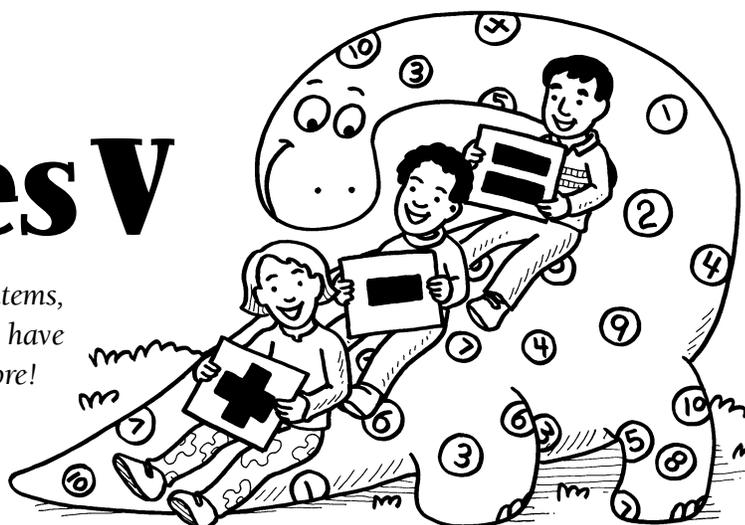
### Play a game

Now let your youngster use what she knows about facts from 1 to 10 to add and subtract bigger numbers. Each person should make a game board by dividing a piece of paper into 4 rows and 4 columns. In each square, a player writes any two-digit number that does not end in 0 (examples: 12, 53, 38, 21).

Take turns rolling either one die or two dice (your choice). If the number rolled can be added to or subtracted from a number on your board to make a multiple of 10, cover that number with a token. (Place only one token per turn). Perhaps your child rolls a 2. She knows that  $8 + 2 = 10$ , so she could put a token on 38, because  $38 + 2 = 40$ , and 40 is a multiple of 10. The first person to fill her board wins.

# Marvelous Math Games V

With a deck of cards, dice, and a few other household items, your child can play all the games in this collection. She'll have fun counting, adding and subtracting, estimating, and more!



## Count the cards

The object of this game is to collect cards from 1–10. Your youngster will practice counting and putting numbers in order.

**You'll need:** deck of cards (face cards removed, ace = 1)

1. Shuffle the cards, deal 10 to each player, and stack the rest facedown.
2. On each turn, draw a card from the pile and discard one from your hand—with the goal of getting every number from 1 to 10. So if your child draws a card she already has, she should discard it.
3. The first player to get 1–10 (of any suit) wins the game.



## Addition pickup

Quick! Grab—and hold onto—as many numbered balloons as you can. The higher the numbers, the better, in this fun-to-play game that lets your child work on addition.

**You'll need:** a dozen balloons, permanent marker, timer, pencil and paper (optional)

1. Blow up the balloons, and help your youngster carefully number them (1–12).
2. Set the timer for 1 minute.
3. Everyone tries to pick up and hold as many balloons as possible.
4. When the timer goes off, each person adds up all the numbers on the balloons he's holding. (Note: Add in your head or on paper.) The player with the highest total wins.

## Watery measurement

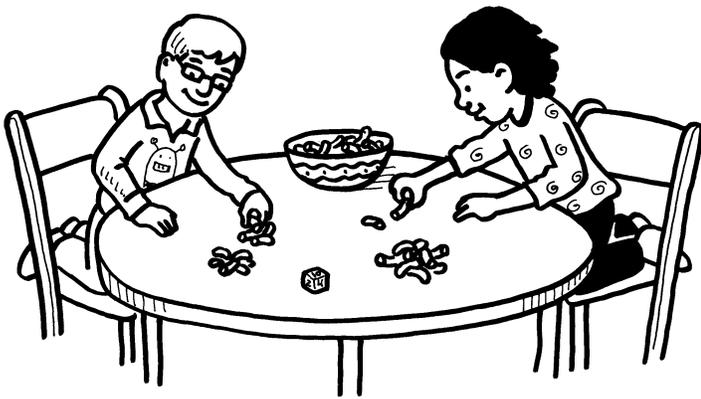
Encourage your child to estimate more accurately with this outdoor game that's great for a warm day.

**You'll need:** containers of various sizes (buckets, bowls), measuring cups, paper, pencils, water

1. Each person chooses a container and writes down how many cups of water she estimates it will take to fill her container.
2. Have players fill a 1-cup measuring cup with water the number of times they estimated and keep track with tally marks on their papers. If your youngster estimated that her container would hold 7 cups, she would empty 7 cups of water into the bucket. If her estimate was too high, the overflow will let her know right away—and she's out for the round.
3. All the remaining players use the measuring cups to figure out how much more water would be needed to finish filling their containers. The player who would need the least amount of water wins.
4. Pick a new container, and play again.



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## Macaroni leftovers

How can “leftover” macaroni help your child explore odd and even numbers and equal groups? When you play this game where odd numbers help you win! *Bonus:* Making equal groups gets your youngster ready for division.

**You'll need:** bowl of dry macaroni noodles (or beans)

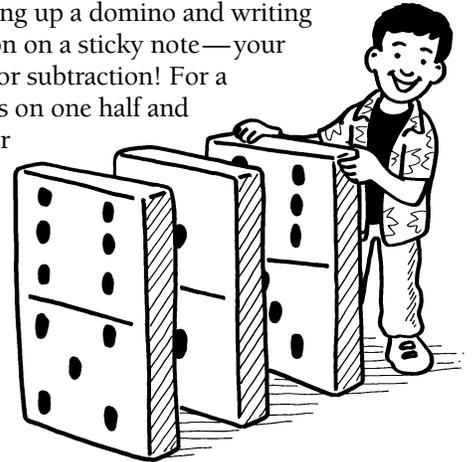
1. Have each player take a small handful of macaroni.
2. Each person divides his macaroni into two equal groups. If there is a noodle left over that means the total is an *odd* amount. Say your child has 13 noodles. He would make two groups of six noodles each, with one noodle left over. He gets to keep the leftover noodle and puts the rest back in the bowl. If he has an even amount, such as 16, he would make two groups of eight noodles each. No noodles are left over, so he would return all the macaroni to the bowl.
3. After 10 rounds, players count their noodles. The person with the most leftover noodles wins.

## Domino-chain add and subtract

What do 1, 2, 3 and 8, 9, 10 have in common? They're *consecutive numbers*, or numbers we say in order when we count. To win this addition-and-subtraction game, be the first player to make three number sentences whose answers are consecutive.

**You'll need:** dominoes, sticky notes and a pencil for each player

1. Spread out all the dominoes facedown.
2. Take turns picking up a domino and writing a matching equation on a sticky note—your choice of addition or subtraction! For a domino with 3 dots on one half and 2 on the other, your youngster could write  $3 + 2 = 5$  or  $3 - 2 = 1$ .
3. Keep playing until you get answers that are three consecutive numbers. Say your child has one sticky note with  $6 - 5 = 1$  and another with  $9 - 6 = 3$ , then draws a domino with 4 dots on one half and 6 on the other. He could write either  $4 + 6 = 10$  or  $6 - 4 = 2$ . Because he needs a 2 (1, 2, and 3 are consecutive), the subtraction problem would be his better bet to win!



*Tip:* Suggest that players arrange their sticky notes in order so they can easily see which number they need to win.

## Odds and evens war

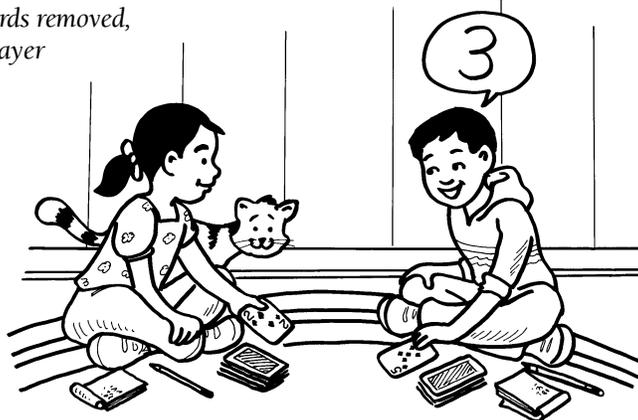
This two-player twist on the classic card game of War sharpens your youngster's subtraction skills.

**You'll need:** deck of cards (face cards removed, ace = 1), paper and pencil for each player

1. One player is “odds” and the other is “evens.”
2. Shuffle the cards. Deal them equally in facedown stacks to the two players.
3. To start, both players turn over their top card at the same time. Whoever has the bigger number subtracts the smaller number from it

and says the answer. So if your youngster flips over 5 and you flip over 2, your child would say 3, since  $5 - 2 = 3$ . Then, she tells whether the answer is odd or even. The odds player takes both cards if the answer is odd, and the evens person takes them if it's even. *Note:* Matching cards equal zero, which is an even number.

4. When every card has been played, count to see who has the most cards—and wins. Switch “odds” and “evens,” and play again.



# How's the Weather?

"The clouds are white and puffy."

"It's cold outside."

"I hear thunder!"

Like scientists, children make observations about the weather. And you can use your youngster's natural interest in weather to help her explore science. Try these activities and experiments.

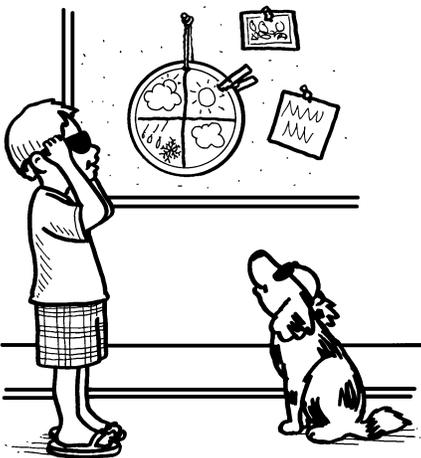


## Weather tales

Read storybooks related to weather. Try *Little Cloud* by Eric Carle, and encourage your child to dip pieces of a cut-up sponge into white paint. On blue construction paper, she can create the different kinds of clouds that appear in the story. Or read *The Snowy Day* by Ezra Jack Keats (available in English and Spanish). Talk about activities that she might do in the snow, such as go sledding, make snow angels, and build a snowman.

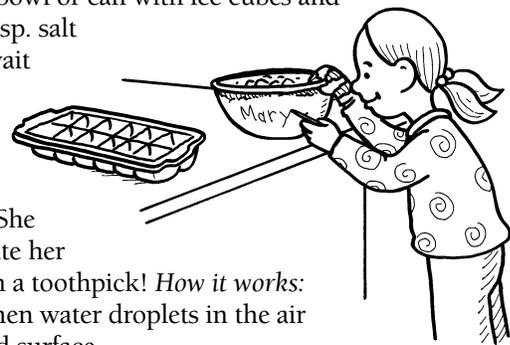
## Miniature meteorologist

Appoint your youngster as family weather announcer. First, suggest that he make a weather wheel to use as he gives his reports. He should divide a paper plate into four sections, draw pictures in each one, and label them "Sunny," "Partly sunny," "Cloudy," and "Rain or snow." Each morning, help him read the forecast in the newspaper or look it up on *weather.com*. He'll learn to read weather words and recognize their symbols. Let him share the prediction with the rest of the family and clip paper clips or clothespins on the parts of his weather wheel that match.



## Frost hunt

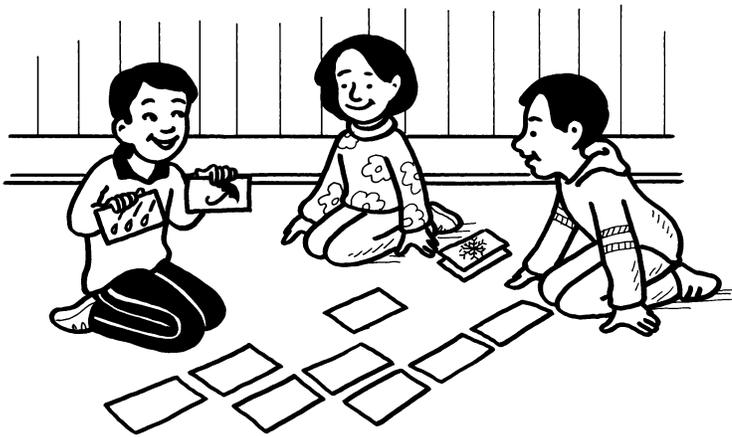
Go on a frost hunt on a cold morning. How many things can your child find that are covered with frost? *Examples:* grass, cars, bushes. Indoors, she can make her own frost by filling a metal bowl or can with ice cubes and sprinkling 1 tsp. salt on top. Now wait 10 minutes—frost will appear on the outside of the container. She could even write her name in it with a toothpick! *How it works:* Frost forms when water droplets in the air freeze on a cold surface.



## Disappearing puddle

Watch evaporation in action with this simple activity. After a rainfall, ask your youngster to choose a puddle on the sidewalk and draw a circle around it with chalk. Every two hours, he can draw a new ring around his puddle. At the end of the day, he will have a series of smaller and smaller circles. *How it works:* Water *evaporates* (warms up, turns into a gas, and rises into the air). Have your child try this on a day when the sun comes out after the rain and on a day when it stays cloudy. Help him keep track of the time it takes for the puddles to evaporate. What does he find?

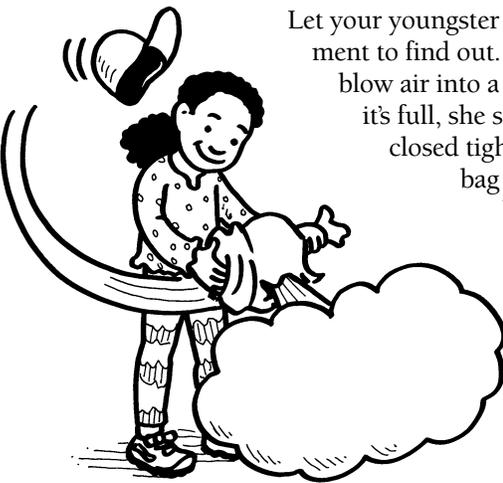
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## Picture matchup

This game will teach your child about items we use in different types of weather. On separate index cards, have him draw weather pictures and items that match. For example, he could draw a raindrop on one card and an umbrella on another. Other ideas: a sun and a swimsuit, a snowflake and boots, a tree blowing in the wind and a kite. Mix the cards up, and put them face-down. To play, take turns flipping over two cards at a time. If they're related, keep them, and take another turn. If not, put them back, and the next player gets a turn.

## Indoor "thunderstorm"



What makes the boom of thunder? Let your youngster try this experiment to find out. First, ask her to blow air into a paper bag. When it's full, she should hold it closed tightly and pop the bag by clapping it between her hands. Boom!

The air rushes out, making a loud sound.  
*How it works:*  
 During a thunderstorm, lightning makes the air

extremely hot, and the air *expands* (its molecules spread out). Then it quickly cools and *compresses* (its molecules move closer together), making the sound of thunder. When your child clapped the bag, she compressed the air inside, and it made a loud noise.

## Backyard weather station

Forecasters use tools to collect data about the weather. Your child can, too! With these ideas, your backyard will be the perfect place to gather information.

**Track the temperature.** Hang up an outdoor thermometer. Ask your youngster to check the temperature and report it to you at breakfast, after school, and at dinner. When is the temperature usually lowest? When is it highest? Have her record the temperatures on a chart each day. After a few days, she may be able to step outside and predict the temperature without looking at the thermometer.

**Measure rain.** On the outside of an empty, clean jar (mayonnaise, jelly), help your child mark off quarter inches from bottom to top, using a



ruler and a permanent marker. Explain that four quarter inches make up one inch. When rain is forecasted, have him set his rain gauge outside and measure the rainfall by the marks on the jar.

**Watch the wind blow.** Your youngster will observe the wind blowing with this project. First, remove both ends from an empty, round cardboard container, such as an oatmeal canister. Let her decorate it with paint, glitter glue, or stickers. Help her cut strips of colored tissue paper and glue them to the bottom of the cylinder so they hang down and will blow when it's windy. Then, punch four holes around the top, thread yarn through, and hang the container from a porch or tree branch. Go outside on a calm day and show your child that the streamers aren't moving. Try a windy day, and she'll see the difference!

## Vocabulary book

Here's a project that teaches your youngster to write and understand weather words. Cut three sheets of construction paper in half. Staple the six halves together to make a book. On the cover, help him write a title ("My Weather Book") and his name. At the top of each page, he can write a different weather word (sun, rain, snow). Next, have him cut out weather-related pictures from old magazines and glue them on the appropriate pages. *Example:* A snow shovel ad would go on the snow page.