

Reveal the Hidden Math

Math is everywhere! Here are some ways to find it.



Development and Research in
Early Mathematics Education

Notice the Math

In your daily conversations when you see or talk about:

- Adding and subtracting
- Measuring
- Numbers and counting
- Patterns
- Shapes, space, and location

Talk About the Math

Talking about math helps build children's math vocabulary, which helps develop their mathematical thinking.

Model and Praise Problem-Solving

- Talk out loud to show how you solve a math problem. "There's one for you, one for me, and one for Ashley, so that's three!"
- Focus on your children's problem-solving instead of whether they are right or wrong.
- Offer specific praise for your children's effort. "You're really figuring that out!"

Ask Questions

To encourage deeper thinking, ask:

- "How can we figure it out?"
- "What's another way we can try?"
- "What do you notice?"
- "What's the same?"
- "What's different?"
- "How do you know?"
- "Tell me what you're thinking!"



Math Snacks | Cleaning Up

Quick and easy ideas for finding and talking about math in everyday family routines.



Find the Math:

When washing dishes, sort objects by similarities and differences.

Talk About the Math:

Can you make a group of all the clean spoons and all the clean forks? Which of these clean dishes needs to be put away in the cabinet?



Find the Math:

When putting away groceries, think about where items fit in the cabinet or refrigerator.

Talk About the Math:

Can you put the milk behind the eggs? Will this box of rice fit in this cabinet or is it too tall? Should it go in front of, behind, or on top of something else?



Find the Math:

When putting away groceries, sort objects by similarities and differences.

Talk About the Math:

Can you find all the things that need to go in the refrigerator? Can you find all the cans?



Find the Math:

When doing laundry, sort objects by similarities and differences.

Talk About the Math:

Can you help me sort the clothes into whites, darks, and colors before we wash them?



Find the Math:

When putting away books and toys, use words about where things are in size, shape, and place.

Talk About the Math:

Should we put this book on the top shelf or the bottom shelf? Will the rectangular book fit in the circular bin?



Find the Math:

When matching containers to their lids, think about shape and size.

Talk About the Math:

Can you find me a lid that matches this container? Remember to look for the same shape and size!

Math Snacks | Playtime

Quick and easy ideas for finding and talking about math in everyday family routines.



Find the Math:

When your child is drawing, notice and compare different sizes.

Talk About the Math:

What is the biggest thing in your picture? What is the smallest? That horse looks so tall next to the short dog!



Find the Math:

When doing puzzles, describe the shape of the puzzle pieces to help figure out how to make them fit.

Talk About the Math:

See this flat side? That means this goes on the edge of the puzzle. How can you make the flat side of this piece match the flat side of that piece?



Find the Math:

Look around your home for examples of different shapes.

Talk About the Math:

What shape is this pasta? What shape is this book? Can you find something else that's the same shape as the book?



Find the Math:

When you're at the park, use words like up, under, and between to talk about what you see.

Talk About the Math:

What animal do you see under the bench? Are there animals up in the tree? Are there any benches between the trees?



Find the Math:

Use size, amount, and number words to talk about things around your home. For example, biggest, most, some, tall, short.

Talk About the Math:

Which stuffed animal is biggest? Is your cup full or empty? Do you have more toy bears or cows?



Find the Math:

When looking out your window, talk about the sizes and locations of things you can see.

Talk About the Math:

What's the tallest building you see? Which window is the biggest? What is shorter than that lamppost?

Math Snacks | Meal Prep

Quick and easy ideas for finding and talking about math in everyday family routines.



Find the Math:

When following a recipe, count out how many ingredients you need.

Talk About the Math:

We need three eggs. Can you get three eggs for me? We need a cupcake for everyone in the family. How many cupcakes do we need?



Find the Math:

When setting the table, count to see how many items are needed and describe where they go.

Talk About the Math:

How many plates do we need for everyone who is eating? Can you put a fork on one side of the plate and a spoon on the other? Can you put a napkin under the fork?



Find the Math:

When setting the table, gather information and make decisions.

Talk About the Math:

Can you find out what everyone wants to drink? Let's count how many people want milk and how many people want water.



Find the Math:

When serving food, think about how to make sure everyone gets a fair share.

Talk About the Math:

We have nine empanadas and three people. How many does each person get so it's fair?



Find the Math:

When cooking, use measurement tools to prepare a meal.

Talk About the Math:

I need two cups of shredded cheese. Can you help me put the cheese in the measuring cup? I need two teaspoons of vanilla extract. Count how many times I fill up the teaspoon.

Math Snacks | Storytime



Find the Math:

When reading books, notice and talk about examples of different sizes in the illustrations.

Talk About the Math:

Which one is taller, shorter, thinner, etc.? How do you know? Can you think of something even taller, shorter, thinner, etc. than this?



Find the Math:

When reading books, notice and talk about examples of shapes in the pictures.

Talk About the Math:

What shape is this? How do you know? How many sides does it have? How is that different from or similar to this other shape?

Math Snacks | Bedtime



Find the Math:

Use vocabulary for what happens first, second, and third to show that things happen in order.

Talk About the Math:

First, change into your pajamas. Second, brush your teeth. Then third, we get to read a story together!



Find the Math:

When reading books, count how many objects are in the pictures.

Talk About the Math:

How many flowers do you see? How many are there altogether? Can you find that number written on the page?

Family Card Games

for Building Young Children's Math Skills



Materials: A deck of regular playing cards

Count the Highest

Setup

- Take out all face cards. Aces count as 1.
- Be sure to shuffle the cards.
- Pass out all the cards in deck so that each player has an equal number.

How to Play

How a turn begins. Players say "1,2,3" and then turn over one card from their pile. Each player wants to have the highest numbered card.

How a turn ends. The player with the highest card wins all the cards, and puts the cards in their own saved pile of cards. If two players have the same card, they play another round. The person who wins gets all the cards.

How the game ends. Play until the players have no cards left. The winner is the one with the most cards in their own saved pile.

Variations

Make it easier. Remove some of the higher numbers from the deck. You can play the game using only the numbers 1 through 5 or 1 through 7. When the child knows the lower numbers well you can begin to put one or more of the higher numbers back in the deck for the games.

Make it harder. Each player puts out 2 cards, and the player with the highest number out of the 4, wins all 4 cards.



Line Them Up

Setup

- Take out all face cards. Aces count as 1.
- Be sure to shuffle the cards.
- Pass out all the cards in deck so that each player has an equal number.
- Imagine a number line going left to right from 1 to 10. The two players sit side by side so the number line they make together faces the same way for both players.

How to Play

How a turn begins. Players take turns. On each turn, they take a card from the top of their own deck and put it where it would belong on a number line that goes from 1 to 10. The cards go in order with the lowest number (1) on the left and the highest number (10) on the right.

How a turn ends. Each player in turn places their card in the correct spot on the same number line. If they draw a card that is already in the line-up, they place it on top of the card that is already in the correct spot.

How the game ends. The game is over when the number line from 1 to 10 is completed. The person who puts down the final card to finish the number line wins.

Variations

Make it easier. Make a short number line using only numbers 1 to 5, and remove the higher numbers from the deck.

Make it harder. If this game is too easy, you may want to go to the harder ordering game called Sneeze Orders the Cards.



Family Card Games

for Building Young Children's Math Skills



Materials: A deck of regular playing cards

Sneeze Orders the Cards

Setup

- Take out all face cards. Aces count as 1.
- Be sure to shuffle the cards.
- Players get 10 cards.
- Players put the cards face-down in 2 rows with 5 cards in each row. The game goal is to replace each face-down card with the correct number card so the top row has ace, 2, 3, 4, 5, and the bottom row has 6, 7, 8, 9, 10.
- The rest of the deck is put in a pile in the center.
- Turn over 1 card and put it in a discard pile next to the center pile.

How to Play

How a turn begins. Players can pick a card either from the center pile OR from the discard pile. The player puts this card, number-side-up, in the correct spot. Place the cards as if they were ordered from 1 (Ace) to 10. For example, if the player picks up a 6, the player puts that card in the 6-spot. Next, the face-down card already in the 6-spot is flipped over. Then move that card to the spot where it belongs. Continue flipping over and placing cards in the correct space until a turn ends.

How a turn ends. A turn ends when a player flips over a card that is already in the correct spot. They should discard that card. For example, a player turns over a 2. But there is already a 2 in the 2 space. They then discard the 2, and their turn ends.

How the game ends.

The first person to make a number line from 1 to 10 wins.

Variations

Make it easier.

Remove the cards from 6 to 10 from the deck. Then it will be changed to a 1-5 ordering game.



Number Neighbors

Setup

- Take out all face cards. Aces count as 1.
- Be sure to shuffle the cards.
- Players get 4 cards each.
- Players put their cards in a row with numbers showing.
- The rest of the deck is put in a pile in the center.

How to Play

How a turn begins. Choose who goes first. The first player turns over the top card in the center pile, and places it, number-side-up, next to the center pile. The player then looks at their row of cards to see if they have a "Number Neighbor," a card that is either 1 lower or 1 higher than the comparison card in the center. If the player has a "Number Neighbor," they say "1 MORE" or "1 LESS," and place both the center comparison card and the "Number Neighbor" from their row face-down in a pile next to them.

How a turn ends. If a player has a "Number Neighbor," their turn ends by drawing a card from the center pile so that they once again have 4 cards in their row. And, a new center comparison card is turned number-side-up for the next player's turn. If a player cannot find a "Number Neighbor," they say "PASS" and leave all of the cards in place.

How the game ends. The game continues until the center pile is out of cards or no more plays can be made. The player with more saved cards wins.

Variations

Make it easier. Remove the cards from 6 to 10 from the deck. Then it will be changed to a 1-5 card game.

Make it harder. On each turn, players can put more than 1 card in their saved pile. Any card in the row that is 1 more or 1 less than the comparison card can go in the saved pile.

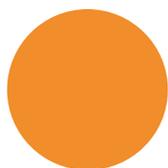


How to Play

Ask children to look for things around the house or neighborhood that come in different shapes, sizes, numbers, and amounts. For example, you could say, “Can you find something that has a triangle shape?” When the child finds an object that fits your clue, help them describe it using at least three math words. Here are some ideas to get you started. Try to come up with some of your own, too!

Math Talk While Playing

- Ask questions like, “How do you know?”
- Compare and contrast things by talking about what’s the same and what’s different.
- Use hand gestures to point to the sides, points, or curves of things.



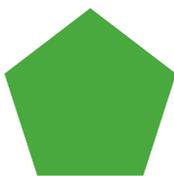
circle



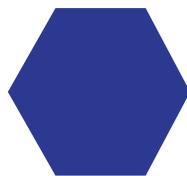
square



triangle



pentagon



hexagon



octagon



rectangle



oval



rhombus



parallelogram



trapezoid

Search for Numbers, Sizes, and Amounts:

- Find one thing that’s taller and one that’s shorter.
- Find something that’s smaller than your hand.
- Find something that’s shorter and wider than you are.
- Find something that’s empty.
- Find five things that start with the letter C.
- Find one container that’s close to empty and one container that’s close to full.

Ideas for Math Words to Try and Find

- most, least
- more, less, fewer
- some, all, none
- part, whole
- empty, full
- big, little
- large, small
- long, short, tall
- narrow, wide

Search for Shapes:

- Find three different triangles.
- Find three quadrilaterals (things with four sides).
- Find three things with more than four sides.

Ideas for Math Shapes to Try and Find

- round
- curved
- straight
- flat
- side
- edge
- point
- symmetrical
- long, short
- narrow, wide
- equal, unequal
- corner
- angle

Variations

Create a list with several clues and check items off the list as your child goes about finding the things.

Keep track of things you find by drawing pictures or taking photos.



Math Talk While Playing

Here are some suggestions for exploring early math concepts while playing. Try to come up with some of your own, too!

Shapes, Space, and Location

- Put your arms behind your legs.
- Turn around to face the back of the room.
- Put one hand on top of your head and one behind your back.

Numbers and Counting

- Hop on one foot five times.
- Jump one time, clap two times, and repeat this three times.
- Go half-way to the door and come back.

Ideas for Math Words to Try and Use

- above, below
- over, under, through
- front, back, behind
- between
- next to
- in, out
- inside, outside
- on, off
- first, last, middle
- high, low
- far, near
- top, bottom
- rotate, turn, flip
- connect, separate
- twist
- big, little
- large, small
- long, short, tall
- narrow, wide

How to Play

Choose one player to be the leader. The leader gives commands and the other players follow. But the other players are supposed to follow only when the leader starts the command with “Simon Says.” For example, if the leader says, “Simon Says put your hands on your head,” you should put your hands on your head. But if the leader says, “Put your hands on your head,” don’t put your hands on your head.

Use hand gestures to highlight the meaning of the words, such as holding up two fingers to show “2.”



Ask questions that encourage children to use math words: “How do you know how many jumps you did?”

Variations

Use dice or a deck of cards to decide how many times to do the command.

Take turns being the leader.

For very young children, play “Follow the Leader” where they always do what the leader says, and then introduce the “Simon Says” rules.



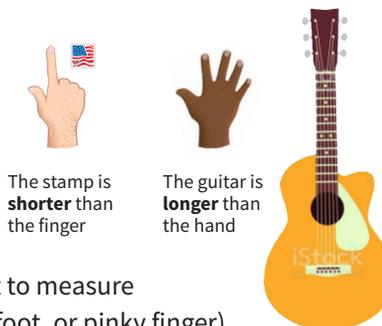
This activity is designed for children to do with the support of an adult or older sibling.

Length is the measure of something from end to end. Understanding whether something is longer than, shorter than, or the same length as something else can help prepare children to learn about measurement units, such as inches and feet.

In this activity, children explore measurement by comparing the length of their own body parts to everyday things at home—no ruler required!

Directions

- Discuss what *longer*, *shorter*, and the *same length* mean.
- Choose a body part to measure (for example, arm, foot, or pinky finger).
- Choose whether you will look for things that are longer than, shorter than, or the same length as the body part picked in the last step. For example, you might say, “Now we will look for things that are shorter than your finger!”
- Search around your home for things. For example, a stamp might be shorter than a child’s finger. An adult or older sibling may need to help hold up things so children can compare lengths. You can also trace the body part on paper to make it easier to compare lengths.
- As an optional step, draw pictures, take photos, or make a list of the things you find. If you do multiple rounds of measurement, organize your list or collection by longer, shorter, or the same length.



Math Talk While Measuring

To deepen children’s early math learning, talk and ask questions while doing this activity together. Here are some examples to get you started. Try to come up with some of your own ideas, too!

Compare Length

- “Is that pen longer than your finger? How do you know?”
- “You found three things that are shorter than your arm. Which one is the shortest? How do you know?”

Measure

- “Where should you start measuring?”
- “What will it look like if something is just as long as your arm?”

Make a Prediction

- “What is something you think will be shorter than your leg? Why do you think that?”
- “Do you think this will be longer or shorter than your arm? (after comparing the object to their arm) Which one is longer? Did you guess correctly?”

Ideas for Adapting This Activity

- Instead of searching for things around your home, give children a basket of things that are of different lengths. Sort them by longer than, shorter than, and the same length as the chosen body part.
- Pair up with your child or pair them up with a sibling and have them find things that are taller than, shorter than, or the same height as their partner.
- After your child has found several things during the game, ask them to put the things in order from shortest to longest.
- Work together to compare body parts, such as noses or hair, that are easier to measure with the help of another person.



This activity is designed for children to do with the support of an adult or older sibling.

Building things is a great way for children to explore early math concepts. One way to boost children's learning while they play is to challenge them to build specific things.

Children can build with almost anything. Pick any building toys you have at home, such as wooden blocks, Legos, or Magnatiles. Get creative by building with common household items, such as books, containers, or empty boxes.

Directions

Start by building structures your child already recognizes, such as your home or something in your neighborhood. Make, take, or look for pictures to show different structures (for example, towers, arches, stairs, or columns).

- For beginners, have them build specific features, such as a tower or a staircase. As they grow more comfortable, move on to building an entire structure.
- For experienced builders, tell them how many features to make in one structure. For example, you could say, "Let's build a castle with two towers and one staircase."

Choose a Building Theme and Play Along!

- **Castle** "The king and queen made this list of structures they want in their new castle."
- **Construction Site** "Builders are construction workers who decide what structures and how many to include in their building. What should we include?"

Ideas for Adapting This Activity

- If more than one child is playing, make each child responsible for a different set of blocks (for example, one child has all the cylinders or triangles). Encourage children to work together to build.
- Create groups of family members and challenge them to follow the same set of building instructions. Then compare the structures. Talk about how buildings with the same features can look different.
- Give multi-step building requirements (for example, "Build two windows beside the door; the columns should be in front of the door; the door should be three blocks away from the arch").

Math Talk While Building

To deepen children's early math learning, talk and ask questions while doing this activity together. Here are some examples to get you started. Try to come up with some of your own ideas, too!

Shapes, Space, and Location

- "What did you build above the window? Below the window?"
- "Where do you think you should put the window? Where is there space to put it?"
- "Is it above the tower or below the tower?"
- "What block is the same shape as the column in the picture?"
- "What shapes make the top of the tower in this picture? How could you make a shape like that with these blocks?"

Numbers and Counting

- "How many windows do you have in your building?"
- "How many blocks do you need to make the right number of steps?"

PROMOTE PLANNING AND TEAMWORK

Before children start building, ask, "What do you think the building will look like? Who will do what? What will go where?"



Turn reading time into math learning time! Many picture books have examples of numbers, shapes, sizes, or patterns in the words and pictures. You can help your children learn and talk about these concepts by asking them questions about the math in the story. Here are some suggestions to get you started.

FIND AND TALK ABOUT MATH IN PICTURE BOOKS

When reading a book about **numbers**, notice and talk about objects in the pictures. Ask children to:



Count | How many are there?

Compare | Are there more of this object or more of that object?

Predict | If one animal leaves, how many are left?

When reading a book about **patterns**, notice and talk about patterns that repeat or grow. Ask children to:



Name | What patterns do you see?

Predict | If the pattern continues, what will come next?

When reading a book about **shapes**, notice and talk about examples of shapes and their properties. Ask children to:

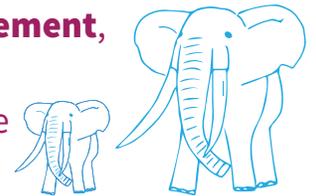


Name | What shape is this? How do you know?

Describe | How many sides does this shape have?

Combine | If we put these two shapes together, what new shape can we make?

When reading a book about **size or measurement**, notice and talk about the height, length, width, and weight of different things in the story. Ask children to:



Describe | What do you notice about the animal's size?

Compare | Which one is the tallest? Which one is the widest?

Notice the math.
Talk about the math.
Encourage problem solving.
Ask questions.

Try to come up with some of your own questions, too!

Make your own mini-pizzas with whatever toppings you like. The tips included with this recipe will help you to practice some special counting skills, such as counting out the same number of objects as someone else, or counting out exactly five objects.



Adapted from:
<https://www.allrecipes.com/recipe/86649/fast-english-muffin-pizzas/>

Personal Pizzas for Playing with Numbers

Ingredients

- Enough English muffins or sub rolls for your family
- Pizza or spaghetti sauce
- Shredded mozzarella cheese
- Your favorite pizza toppings, such as pepperoni, black olives, cut-up Canadian bacon, canned sliced pineapple, chopped up bell pepper, or mushrooms

Materials

- Baking sheet

Directions

1. Everybody washes their hands with soap and water while counting to 20 before starting to cook.
2. Preheat oven or toaster oven to 375°F.
3. Use a butter knife to split English muffins (or sub rolls) and place the muffins cut side up on a baking sheet.
4. Spread 2 spoonfuls of pizza or spaghetti sauce onto each of the muffin halves.
5. Top each muffin half with shredded mozzarella cheese and your favorite pizza toppings.
6. Bake for 10 minutes in preheated oven, or until the cheese is melted and browned on the edges.



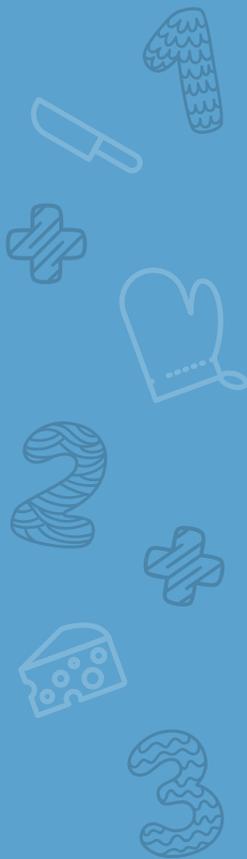
Math Tips

★ Once you determine how many English muffins are needed, ask your child to count them out of the package. For example, say, “Can you get us six English muffins?”

★ Add toppings to one of the muffin halves and then ask the child to put the same number of toppings on a different muffin half. For example, make a pizza with five pieces of pepperoni but don’t tell them how many pieces you’ve put on. Then ask your child, “Can you put the same number of pieces of pepperoni on your pizza as I have on mine?” They will have to first count your pepperoni and then count their pieces.

★ Have your child count as they add two spoonfuls of sauce to each of the muffin halves. Explain *why* you are measuring. For example, ask, “If we add more or less than two spoons of sauce, what will happen to the way the pizzas look and taste?”

Make your own cookies using our recipe or even with a slice-and-bake dough! The tips included with this recipe will help you to practice some fair sharing skills and have conversations about how to split the cookies equally.



Adapted from:
<https://www.babble.com/best-recipes/4-ingredient-chocolate-chip-cookies/>

Chocolate Chip Cookies for Sharing

Ingredients

- 1 box yellow cake mix
- $\frac{1}{2}$ cup vegetable oil
- 2 eggs
- 2 cups chocolate chips

(Note: These math tips work with any cookie recipe, or with a slice-and-bake roll of prepared cookie dough!)

Materials

- Cups for measuring $\frac{1}{2}$ -cup and 1-cup amounts

Directions

1. Everybody washes their hands with soap and water while counting to 20 before starting to cook.
2. Preheat oven to 350°F.
3. Mix together cake mix, vegetable oil, and eggs in a medium bowl.
4. Stir in the chocolate chips.
5. Spoon tablespoon-sized balls of dough evenly spaced onto baking sheet.
6. Bake for 10-12 minutes or until bottoms and sides of cookies are golden brown.
7. Remove baking sheet from oven. Transfer cookies onto a cooling rack or plate. Allow to cool before eating.
8. Repeat steps 4 through 6 with remaining dough.



Math Tips

Once you've made the cookies, try a couple of ways of sharing them, then count how many cookies each person gets to see if that way is fair (sharing between two people is easiest for young children):

- ★ Make two piles of cookies, one for you and one for your child (or one to eat now and one to eat later). Ask your child to count the piles to make sure you both have the same amount. It's okay if the amounts are different because then your child can help figure out how to make this way of sharing fair.
- ★ Have your child divide the cookies onto two plates, one at a time until the cookies are gone, trying to put equal amounts of cookies on each plate. After they are done, have them count to see if there are equal amounts on each plate.
- ★ If you have an odd number of cookies to share between two people, have a conversation about how to give everyone a fair amount. For example, what happens if you break the last cookie in half?