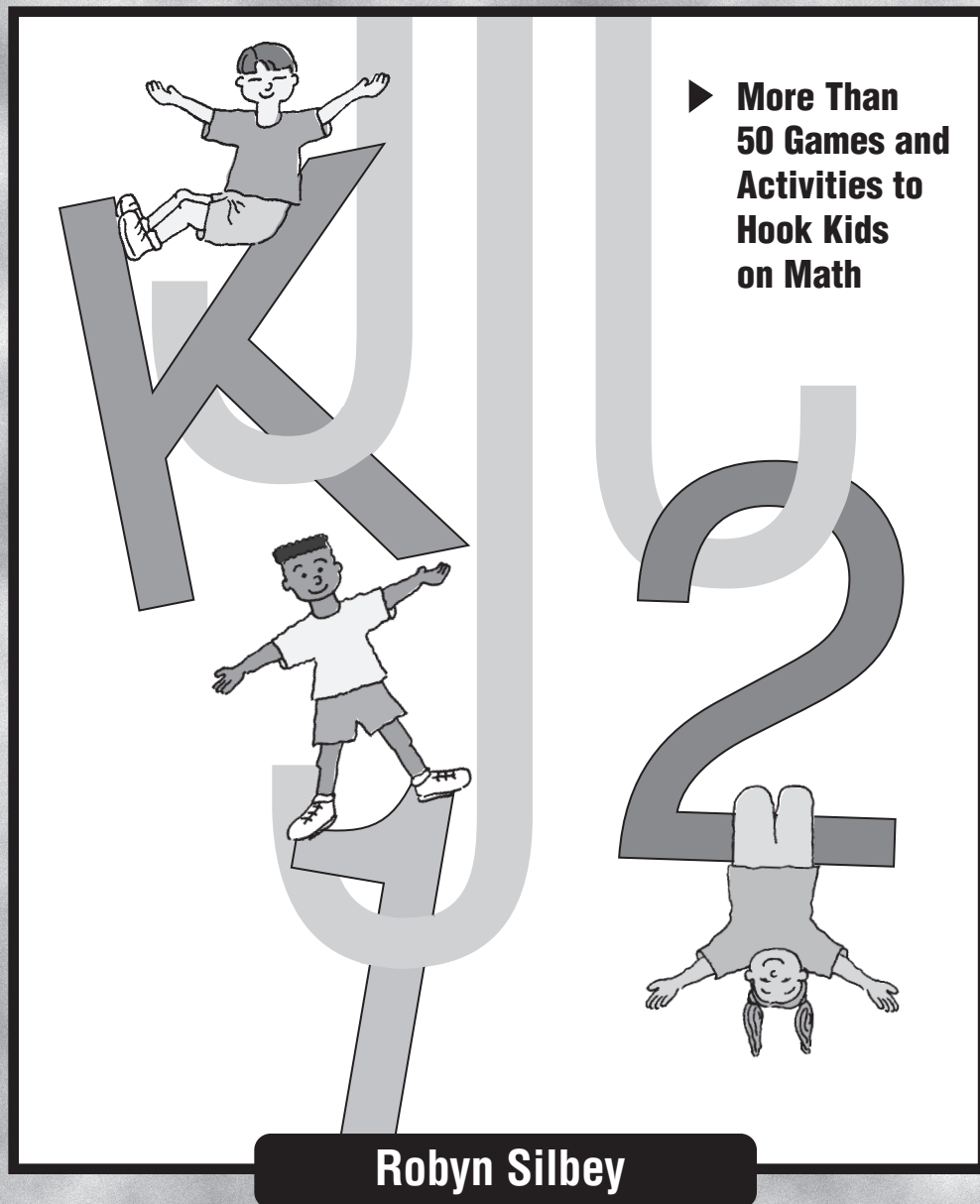


Math Hooks 1



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Preface

Most parents are already active participants in their children's reading or language arts education. They read to their children, and have their children read to them. They write letters and thank-you notes. They read street signs and cereal boxes. But when it comes to playing a part in their children's math education, most parents draw a blank.

With *Math Hooks 1*, parents and children will be hooked into a math education. Most of the activities in this book require little or no preparation. Some require nothing more than an awareness of everyday math problems that surround us.

Do you realize you are using math when you . . .

-
- *Calculate how much money you need to put into the parking meter when you go shopping?*
 - *Change a recipe to accommodate more or fewer people than the recipe calls for?*
 - *Decide when to leave the house to run a series of errands?*
-

If math opportunities are discussed as they arise, children will begin to value math as a necessity for living. Understanding that math concepts are needed for everyday living will motivate your child to learn the concepts presented in school.

Math Hooks 1 presents opportunities to learn mathematics in fun, realistic, and casual ways. Some activities are experiential in nature—they can be completed during a ride in the car or a hunt through a junk drawer. Other activities are games that can be played with a parent or other partner(s). All activities are designed to engage children in critical thinking and mindful discussion while they are having fun at the same time.

Enjoy the activities that follow. Make mathematics your child's favorite subject!

Robyn Silbey

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Introduction

Mathematics education at home should be an educationally and emotionally satisfying experience. Research shows that parents must be involved in order for their children to live up to their full potential in mathematics. Showing an interest in mathematics at home helps children in many ways:

It establishes a partnership between parents and teachers for the benefit of the child.

Parent involvement enhances children's understanding and boosts their achievement. A strong commitment at home sends a clear message to a child: Learning mathematics is important.

It reinforces how crucial mathematics is in the child's overall success. Mathematics is presented and taught differently today than it was two decades ago. Mathematics in today's classrooms opens the doors to the outside world. It involves real-life applications and experiences, especially highlighting those at home.

It enables children to achieve their maximum potential. A school's mathematics program actively involves children as they explore, investigate, question, predict, and analyze. Children are learning how to be critical thinkers, problem solvers, and decision makers. By encouraging children to use the same thought processes and skills at home, the most important concepts and skills learned in the classroom are being reinforced.

What Parents Can Do to Hook Children into Mathematics at Home

Complete the activities described in this book that are appropriate for your child's ability level. *Math Hooks 1* provides you with virtually everything you need to maximize your child's potential in mathematics in school and at home.

Here are a few additional helpful hints.

Ask questions. Your child’s responses to questions will give you an idea of what he or she knows, where gaps in understanding may lie, and how you can help clarify misconceptions he or she may have. Questions should be open-ended so that there is a wide range of correct responses. Be sure to give your child plenty of time to answer your questions. Your child may need to think, visualize objects he or she has used in the past, recall a lesson taught in school, or think about how best to respond to your inquiry. Many of the entries in this book include questions specific to the activity. Following are some questions that can be asked with almost any math activity you can do with your child.

- *What are you thinking?*
- *What are you trying to find out?*
- *What do you already know?*
- *What is the first step in solving the problem?*
- *How did you know that?*
- *Is that always true? Why?*
- *Why did you choose the operation (or the numbers) you did to solve the problem?*
- *Does this make sense?*
- *Can you think of another way to solve the problem?*
- *Show me the steps you used to find the answer.*
- *How could you check the answer to make sure it makes sense?*
- *Do you see a pattern? If so, describe it.*

A simple open-ended request such as, “Tell me what you know about the coins you are holding” yields a much more comprehensive and revealing response than several questions such as, “How much is this coin worth?” and “How many pennies make a nickel?” *Remember: Questioning can be an effective diagnostic tool and can also serve as a good conversation starter.*

Support and respect your child's efforts. Learning at home should be a positive, pleasant, mutually rewarding experience. Comfort children first, then challenge them. Break a troublesome problem down into easy-to-understand parts. Review each part separately until your child says, "This is easy!" Put the pieces together to form the easiest possible problem and guide your child through the solution. Offer more simple problems until your child can complete the process independently with success. Then move on to more difficult examples. Above all, be kind and patient throughout the process. *Remember: Your child wants to please you and feel successful.*

Turn your child's errors into useful learning tools. Rather than telling your child that he or she has made a mistake, you may ask some probing questions. Ask, "How did you get [this part of] your answer? Does the answer make sense to you? How can you check to make sure the answer is correct?" It is important for children to be able to justify their thought processes and solutions. This helps them clarify their ideas for themselves and strengthens their ability to communicate mathematically. Asking open-ended questions to call attention to the incorrect part of the solution often results in the child's self-correction of the error. If it doesn't, you may wish to patiently and calmly clarify your child's thinking. Assure your child that the right answers will come with more experiences, observations, and questions. However, if a child seems to be having particular difficulty with a specific solution strategy or approach, ask him or her to try a different way to attack the problem. For example, when finding the difference between 15 and 9, it may be easier for a child to count up from 9 to 15 than to count back 9 from 15. *Remember: The best way to solve the problem is the most efficient way that works every time for the problem solver. In other words, there are many "best ways" to solve a problem!*

Use real-world experiences. Take advantage of the opportunities that are available to you and your child at home and outside in your everyday world. Understanding that mathematics concepts and skills are part of almost every activity in daily life will encourage your child to want to learn. For example, children can predict the ending time of the soccer game if it starts at 3:00 and lasts about one hour. Your child should know that mathematics is needed and used when you:

- *Read and measure recipe ingredients*
- *Decide how to double a recipe*
- *Decide on the size of a pot or pan to cook an amount of food*
- *Decide into which container your leftovers will fit*
- *Calculate coupon savings*
- *Sort clothes, foods, and utensils*
- *Keep track of dates on a calendar*
- *Count the hours, days, or weeks until a special occasion arrives*
- *Schedule pickup times for carpools*
- *Sort coins needed for parking meters or phone booths*
- *Find a new address using street numbers and their patterns*
- *Measure clothing for hems or alterations*
- *Check change given by a store clerk*

Talking with your child about these routine events can lead to all kinds of exciting discussions and conversations. *Remember: By making your child aware of the mathematics you use, you will encourage your child to value what he or she is learning from you and at school.*

Share experiences and solution strategies. It is imperative to talk to your child and verbalize your thought processes as you solve problems related to mathematics. For example, your gas tank may be almost empty. You know it holds about 12 gallons of gas. Do you mentally estimate the number of gallons or the total cost for a fill-up? You might share, “I need gas. The tank holds about 12 gallons of gas. It is almost empty. I will probably need about 10 gallons. At about \$1.50 per gallon, it will probably cost about \$15.”

Children will not always be mathematically ready or able to participate in every real-life mathematics opportunity that occurs during daily life. However, they can absorb the patterns and relationships that you convey during normal conversation. *Remember: As you share processes and solution strategies, children hear over and over again that mathematics skills and concepts are used continuously and are crucial tools in everyday living.*

Call attention to real-world manipulatives as you use them. Authentic math manipulatives used at home are duplicated in school every day. These include:

- *Coins and bills*
- *Timepieces*
- *Calendars*
- *Timetables*
- *Catalogs*
- *Measuring cups*
- *Recipes*
- *Rulers*

Make sure your child recognizes the importance of each “tool” as well as the mathematics required to utilize it. *Remember: Calling attention to mathematics tools motivates children to learn how to use them.*

Our Nation's Goals in Mathematics

Most children in the United States are taught within the guidelines of a national program designed to improve children's understanding of mathematics. The Standards set forth by the National Council of Teachers of Mathematics suggest that:

- *Children will be engaged in discovering mathematics. Math Hooks 1 activities involve children in games and activities that will help them discover patterns, concepts, and new ideas.*
- *Children will see mathematics in daily life activities and experiences. In Math Hooks 1, children are asked to integrate mathematics topics with every other aspect of their lives. They will see that they live math every moment of every day.*
- *Children will explore and develop an understanding of mathematics concepts using materials they can touch and feel. With your help, children will be using authentic manipulatives as they use Math Hooks activities to explore mathematics in their real world.*
- *Children will have the opportunity to explore, investigate, estimate, question, predict, and test their ideas about mathematics concepts. The Math Hooks activities involve probing, open-ended questions and a wide variety of approaches.*
- *Parents and teachers will guide children's learning, rather than insist on how it should be done. Most Math Hooks activities include an extensive communication component. Parents and children will be able to discuss and compare solution strategies, or talk about conceptual understanding, observations, and predictions based on their experiences.*
- *Children will communicate ideas about mathematics using appropriate terms. Children should be able to discuss their solution strategies, describe their measurement techniques and tools, and convey their decision-making processes. A glossary is included so that you can enable children to use accurate terms in appropriate contexts. This glossary contains terms that children will hear in the course of their formal mathematics education. It is recommended that parents use the same mathematically correct terminology at home that is used in the classroom.*

Invite your child to explore core learning goals in mathematics that are age appropriate.

Conceptual understanding (the ability to discover and apply patterns and relationships, number sense, and estimation) and mental math techniques are ideas that emerge with exposure, experience, practice, and motivation. General benchmarks for elementary school age children are shown below. These benchmarks, or core learning goals, reflect the curriculum that is typically taught in elementary mathematics programs from kindergarten through second grade throughout the country. Although many mathematics concepts encompass a range of understandings, specific concepts within broad categories are shown.

Numeration and Number Sense

-
- *Count, match, and compare groups of objects or numbers*
 - *Use a number name and a written numeral to tell about an amount*
 - *Use objects to show groups*
 - *Understand numbers and place value*
 - *Compare and order numbers*
 - *Estimate numbers*
-

Whole Number Operations

-
- *Use objects to show addition and subtraction*
 - *Act out addition and subtraction sentences*
 - *Learn addition and subtraction facts to 18*
 - *Recognize how addition and subtraction are related*
 - *Add and subtract two- and three-digit numbers*
 - *Estimate sums and differences*
-

Money, Time and Fractions

- *Identify and show values of coins*
- *Count simple coin collections*
- *Tell time*
- *Use a calendar*
- *Explore parts of wholes*
- *Show and name simple fractions*

Geometry and Measurement

- *Identify, sort, and describe shapes*
- *Name shapes and their parts*
- *Explore measurements of length, capacity, and weight*
- *Choose the correct tool to measure length, capacity, or weight*
- *Estimate measurements*

Data

- *Read simple tables and graphs*
- *Organize data into simple tables and graphs*
- *Sort and compare everyday objects*
- *Copy and continue patterns*
- *Create original patterns*

Math Hooks 1 is organized by categories so that as your child is focusing on a topic at school, it can be effectively discussed and reinforced at home. Modify the activities to meet the needs of your child. Encourage your child to “take risks” by accepting responses that may not be correct, but that offer a clear vision of his or her thought processes. Guide your child to think and discover. Help your child find the importance of mathematics in his or her daily life.

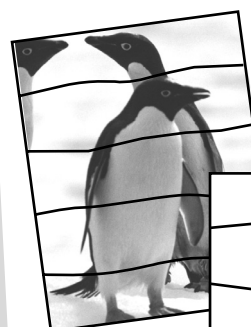
A cartoon illustration of a young boy with dark skin and curly hair, wearing a yellow t-shirt, orange shorts, and white sneakers. He is in a jumping pose, with his arms outstretched and legs bent. He is positioned in front of a large, faint background of numbers including 5, 4, 9, 8, 3, 2, 3, and 16. A black rectangular box with rounded corners is centered over the numbers, containing the title text in white.

Numeration and Number Sense

Ordered Picture Puzzles

This activity provides a fun way to explore ordering amounts or numbers. Your child can check his or her own work by putting the puzzles back together after making them.

(Grades K-1)



Magazine picture pasted on cardboard.



Categories: *Numeration, Number Sense*

Vocabulary: *Order*

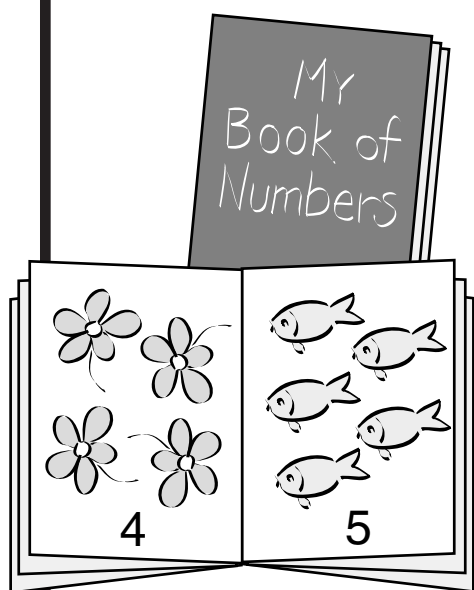
Format: *Activity*

What you need: *Magazines, glue, cardboard, scissors, straightedge, pencil*

What to do:

- 1 Have your child cut out a picture from a magazine. The picture should be about the size of a sheet of notebook paper.
- 2 Ask your child to glue the picture to a piece of cardboard.
- 3 Help your child use a straightedge to draw lines about two inches thick widthwise across the back of the cardboard or poster paper.
- 4 Have your child make one dot or a "1" in the top space, two dots or a "2" in the second space, and so on until every section has dots or numerals in increasing amounts.
- 5 Have your child cut along the lines, then place the picture puzzle strips in a pile and mix.
- 6 The puzzle is ready to reassemble. Your child can use the dots or numerals to order the pieces from top to bottom. If the pieces are ordered correctly, your child can turn over the pieces to see the picture as it originally appeared in the magazine.

Number Book



This activity involves an awareness of surroundings. Your child will count groups of objects and record them pictorially and symbolically to create his or her very own number book.

(Grades K-1)

Categories: Numeration, Number Sense

Format: Activity

What you need: Paper, crayons or markers

What to do:

- 1** Before going on an outing, make a blank number book for your child to use to record numbers of objects he or she sees outdoors. Help your child label each page consecutively with the numbers 1 to 10.
- 2** Challenge your child to look for groups of one to ten objects during the course of the outing. Have your child record the number of the appropriate page by drawing the corresponding number of objects. For hard-to-find numbers, encourage your child to call out and draw the number within a street sign, a house number, or a license plate.
- 3** Later in the day, have your child review the number book he or she has created. Ask your child to say each number aloud, count the objects drawn, and tell where they were seen during the course of the day.

Encourage your child to enjoy his or her number book over and over again.

Calculator Count

In this activity, your child will use a calculator to count to 10.

(Grades K–1)



Categories: Numeration, Number Sense

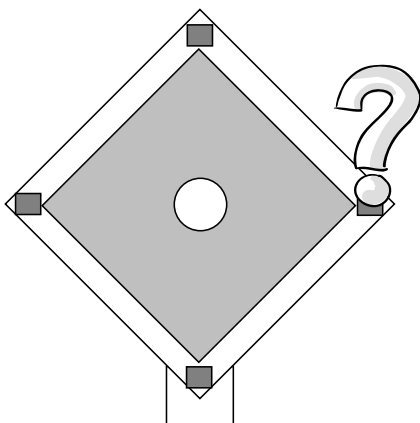
Format: Activity

What you need: Calculator

What to do:

- 1 Have your child begin by pressing the [ON/C] button to turn on the calculator.
- 2 Have your child press the key sequence [0] [+] [1] [=] and describe the resulting screen display. [1]
- 3 Have your child press [=] again and describe the screen display. [2] Then ask your child to predict how many times he or she would need to press the [=] key in order to reach three. Then have your child test his or her prediction.
- 4 Have your child predict how many times the [=] key would need to be pressed for 5 and for 10. Then have your child test the prediction.
- 5 Ask your child to press the [=] key again and again. Ask your child to describe the pattern formed by pressing the [=] key. (The screen display increases by 1 each time, or counts by ones.)

Who's On First?



In this activity, your child will practice hearing and using ordinal numbers to describe people and objects encountered during daily activities.

(Grades K–2)

Categories: Numeration, Number Sense

Vocabulary: Ordinal numbers: first, second, third, fourth, fifth, sixth, seventh, eighth, ninth, tenth

Format: Activity

What to do:

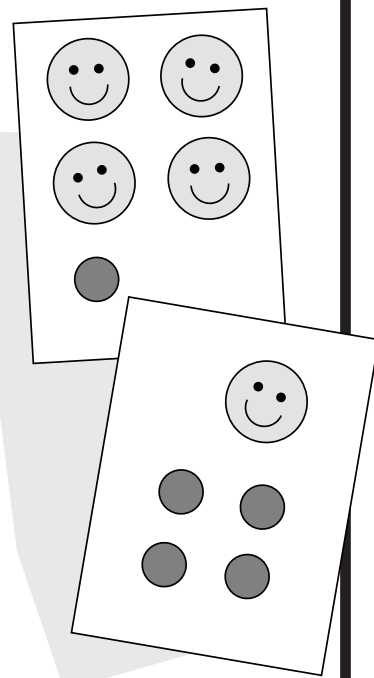
- 1 Review the ordinal numbers with your child. Make sure he or she understands the relationship between 1 and first, 2 and second, 3 and third, and so on.
- 2 When waiting in a checkout line at the supermarket, ask your child to describe the customer who is second in line. Next, describe a customer and ask your child to name that person's (ordinal) place in line.
- 3 When waiting at a red stop light, ask your child to describe the vehicle that will go through the green light first. Next, describe a vehicle and ask your child to name its (ordinal) place in line.
- 4 Discuss with your child the things he or she does in order to get ready for school in the morning. Ask your child to repeat the morning procedure, using ordinal numbers to state the order of the activities. For example, "First, I wash my face. Second, I brush my teeth. Third, I make my bed," and so on.
- 5 Brainstorm with your child about times when ordinal numbers are used in daily life. You may wish to open the discussion by mentioning the bases in a softball or baseball game.

By using ordinal numbers in the context of everyday activities, your child will have a heightened understanding of how they relate to numerals and their order.

Place Value Pictures

This activity emphasizes your child's creativity as he or she invents new symbols for our base ten number system.

(Grades 1–2)



Categories: Numeration, Place Value, Number Sense

Vocabulary: Place value

Format: Activity

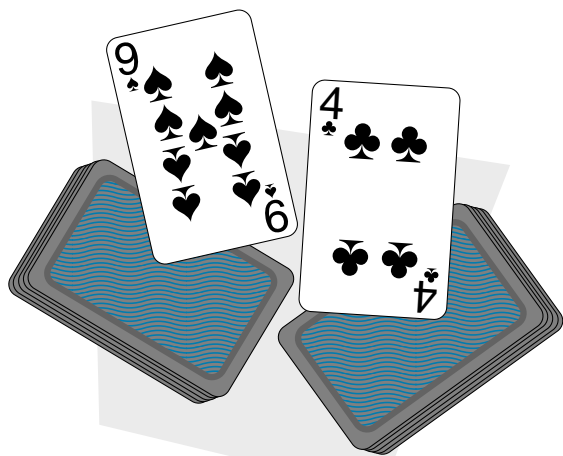
What you need: Paper, crayons or markers, Hundred Chart (p.72)

What to do:

- 1 Have children invent their own symbols for tens and ones. Your child might, for example, want to use happy faces for tens and dots for ones.
- 2 Have your child use his or her pictures to show 14 and 41. Ask your child how the pictures are alike and how they are different.
- 3 Have your child use his or her symbols to show other numbers. Have the Hundred Chart available for your child's reference. For each illustration, have your child identify the number and describe how the picture shows its value.
- 4 Ask your child to draw other pictures and challenge you (or another child) to read the numbers he or she has symbolized.

Using pictures for numbers helps children understand the concept of symbolization for numbers in our system. Your child can make up stories about his or her pictures and may even learn a little addition as they work on their pictures.

Less Than or Greater Than?



This game reviews the order of numbers 1–10. It also provides children with picture clues for matching numerals with pictures.

(Grades K–1)

Categories:	<i>Numeration, Number Sense</i>
Vocabulary:	<i>Less than, greater than</i>
Format:	<i>Game</i>
Who can play:	<i>2 or more</i>
What you need:	<i>Deck of playing cards: Ace–10 of all suits</i>

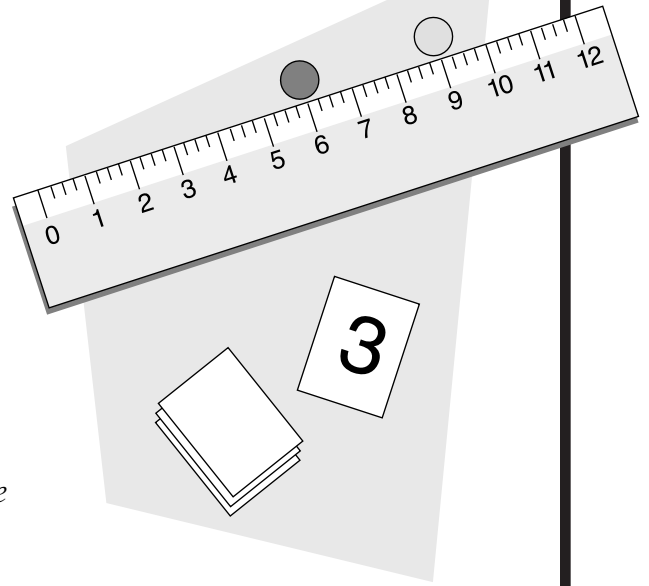
What to do:

- 1 One person deals all the cards so that each player has the same amount.
- 2 Each player arranges the cards he or she received into a deck, then places his or her deck so that all the cards are facedown. Before looking at the cards, the dealer names the round “Less” or “Greater.”
- 3 Players turn over the top card at the same time and compare numbers. The player whose number is greater (or less) takes the other players’ cards and places them aside.
- 4 When all cards have been compared and decks are exhausted, players decide who has the thickest deck. They may estimate or actually count the cards in each deck. The player with the most cards wins the round and decides whether the next round of play will be a “less” or a “greater” round.

Forward and Backward

A player will win this game if he or she can get to 10 first!

(Grades K-1)



Categories: *Numeration, Number Sense*

Format: *Game*

Who can play: *2 or more*

What you need: *2 different markers; 3 sets of numeral cards labeled 1, 2, and 3; inch ruler or number line from 1 to 12*

What to do:

- 1 Use an inch ruler or make a number line from 1 to 12 for a game board. If you make a number line, space numbers about one inch apart. Shuffle all number cards and place them facedown in a pile between players.
- 2 Each player chooses a marker and places it on the “6” of the number line or ruler.
- 3 The first player draws a numeral card and moves his or her marker the number of spaces shown on the card. Players may move forward or backward. For example, if a player is on “6” and draws a “2,” he or she may move forward 2 spaces to 8 or back 2 spaces to 4.
- 4 Take turns. The first player to land on 10 exactly wins the round.
- 5 Play the game again using a new place to start or finish. For example, you may place markers on “3” to begin and need to land exactly on “9” to win.
- 6 After several rounds of play, discuss game strategies. Ask questions such as, “What happens to the numbers when you move forward? backward? Suppose you move from the 5 spot to the 8 spot. Did you move forward or backward?”

Street Addresses



In this simple activity, your child will explore his or her neighborhood to recognize and extend number patterns.

(Grades K–2)

Categories: *Numeration, Number Sense*

Vocabulary: *Before, after, next, order*

Format: *Activity*

What to do:

- 1 Take a walk with your child. Walk around the block, up and down the hallway of an apartment building, or down a street lined with retail stores or businesses. Read aloud the last one or two digits of the building numbers.
- 2 Call attention to the number patterns by saying, “Listen to or look at the numbers as we go along. What pattern do you hear or see?”
- 3 Ask your child to describe the pattern in words. Once the pattern has been correctly described, ask a question that encourages your child to continue the pattern. Say, “If you were to add another block of homes, or more stores or businesses to the street, what would the numbers be?”
- 4 When your child has responded with the continuation of the number pattern, ask him or her to explain it. Ask, “What makes you think so?” It is crucial to hear and assess the child’s thinking so that you can assess his or her understanding of the number pattern.
- 5 As an extension, your child can sketch his or her own block of homes, including the street numbers.

Yes or No Questions

This game reinforces place value skills and such number sense concepts as *greater than*, *less than*, and *between*.

(Grades 1–2)

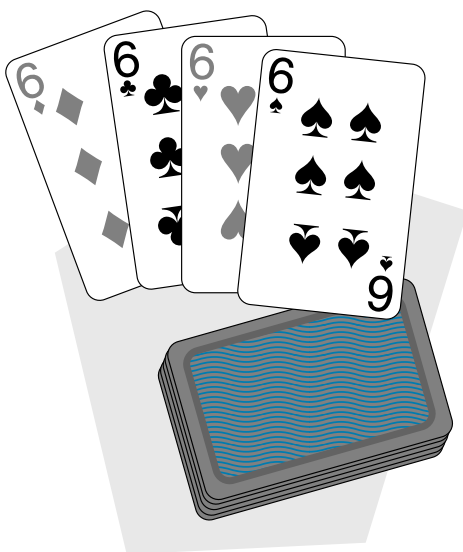


- Categories:** *Numeration, Number Sense*
- Vocabulary:** *Greater than, less than, between, odd, even*
- Format:** *Game*
- Who can play:** *2 or more*
- What you need:** *Paper, pencil or pen, Hundred Chart (p. 72)*

What to do:

- 1 Ask your child to think of a number between 1 and 20 and secretly record it on a piece of paper. Provide your child with the Hundred Chart as a reference for selecting and recording a number.
- 2 Try to guess the number by asking questions that can be answered “yes” or “no.” Possible questions include, “Is it less than 15? Is it greater than 7? Is it odd? Do I say it when I count by threes?”
- 3 Play again. This time you choose a number and have your child ask “yes” or “no” questions.
- 4 The game can be extended to include numbers from 1 to 50, numbers from 1 to 100, numbers from 51 to 100, or any other range that is suitable for your child’s skill level.

Go Fish!



This well-known game reinforces number recognition and the connecting of numbers to pictorial representations.

(Grades 1–2)

Categories:	<i>Numeration, Number Sense</i>
Format:	<i>Game</i>
Who can play:	<i>2 or more</i>
What you need:	<i>Deck of playing cards: Ace–10 of every suit</i>

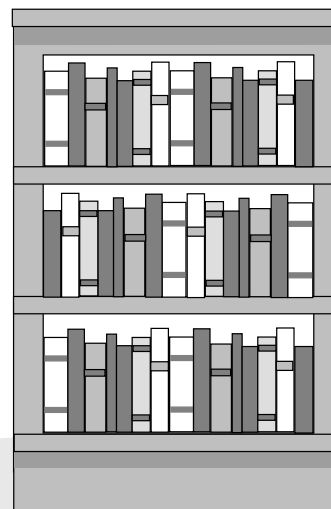
What to do:

- 1 The dealer deals seven cards to each player. Remaining cards are placed in a pile facedown between players.
- 2 Each player arranges his or her cards by like numbers. For example, all aces, threes, or sevens are grouped together.
- 3 The player to the right of the dealer becomes the first “requester.” He or she begins the game by asking one other player for a number that would add to or complete a like-numbered set. If that player has cards with that number, he or she must hand the matching card or cards over to the requester, and the requester gets another turn. As four-card sets are completed, the requester removes them from his or her hand and places them on the playing surface. If a player does not have the numbered card requested, he or she says, “Go fish!” and the requester must pick a card from the center pile and add it to his or her hand.
- 4 The game continues as players take turns being the “requester.” The game ends when the center deck is exhausted and all four-card sets are complete. At that point, all players count their like-numbered sets. The player with the greatest number of sets wins the round.

About How Many?

In this activity, your child can sharpen his or her estimation skills using objects around the house.

(Grades K–2)



Categories: Numeration, Number Sense

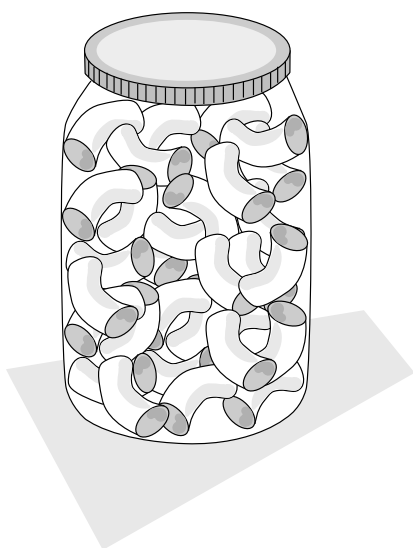
Vocabulary: Estimate

Format: Activity

What to do:

- 1 Encourage your child to invent estimation and counting strategies to figure out the number of items in a collection or group. For example, to estimate the number of flowers on a specified area of wallpaper, your child might count out a small section of five or ten flowers. Then he or she can count by fives or tens to estimate the number in all.
- 2 Your child can estimate the number of books on a set of shelves at home or in a library by counting the number of books on just one shelf and skip counting or adding repeatedly for each shelf.
- 3 Offer your child many opportunities to estimate quantity. Suggestions include estimating the number of tiles on a floor, pages in a book, items of clothing in a drawer, or spoonfuls of cereal in a bowl. Along with estimation techniques, your child will begin to develop an intuitive feeling about magnitude.

Pasta Pieces



Your child will use his or her own technique to estimate the number of pasta pieces in a container. In the process, he or she will soon discover the technique seems most effective!

(Grades 1–2)

- Categories:** *Numeration, Number Sense*
- Vocabulary:** *Estimate*
- Format:** *Activity*
- What you need:** *Clear plastic container, pasta*

What to do:

- 1 Fill a 1- to 2-pint plastic container with large pasta (large shells, twists, or elbows).
- 2 Have your child use two or more strategies for estimating the number of pasta pieces in the container. Your child may tell you each estimate or may wish to record estimates on a piece of scrap paper.
- 3 Have your child empty the container and count.
- 4 Ask your child to tell which estimate he or she thinks was closer and explain why he or she thinks so. Your child's explanation will indicate his or her understanding of order and relationships between numbers. (Hint: If this produces a problem, use a number line to plot each estimate along with the actual amount so your child can actually see which is closer.)
- 5 Use a smaller type of pasta and repeat the activity. With practice, your child will find that his or her estimates become closer to the actual counts.

Calculated Tens and Ones

In this activity, your child will find out how the calculator can help to count.

(Grades 1–2)



Categories: *Place Value, Addition*

Format: *Activity*

What you need: *Calculator*

What to do:

- 1 Have your child use the calculator to skip count. Ask your child to press the keys shown to count by ones.
[ON/C] [1] [+] [1] [=] [=] [=] [=]
Ask your child to name the number shown on the screen. Ask your child how many times [1] or [=] needed to be entered to make 4. (four times)
- 2 Have your child press the keys shown to skip count by tens.
[ON/C] [1] [0] [+] [1] [0] [=] [=] [=]
Ask your child to name the number shown on the screen. Then have your child use the calculator to make 50. Ask your child how many times [1] [0] or [=] needed to be entered to make 50. (five times)
- 3 Remind your child that 54 equals $50 + 4$. Have your child predict how he or she would use the calculator to make 54 appear on the screen. Discuss the prediction and ask your child to explain his or her thinking. Then have your child check the prediction.
- 4 Repeat the procedure, having your child make other numbers appear on the calculator screen by using repeated addition sequences of [1] [0] and [1].

Place Value Roll and Record

Tens	Ones
TOTAL	

In this game, your child can use what he or she knows about numbers and place value to roll his or her way to a win! The goal is to apply number sense strategies to get closer to 100 with each game.

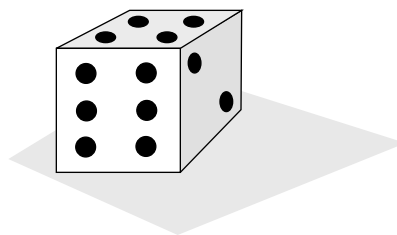
(Grades 1–2)

Categories: *Place Value, Addition*

Format: *Game*

Who can play: *2 or more*

What you need: *1 die, paper, pencil*



What to do:

- 1 Have each player make a score sheet like the one shown.
- 2 Players take turns rolling the die. After each roll, all players record the number in either the ones place or the tens place. If the number is written in the tens place, the player should add a zero in the ones place. For example, a roll of 3 can be recorded in the ones place as a “3” or in the tens place, along with a zero, as “30.”
- 3 After all players have rolled the die six times, each player finds the sum of the numbers he or she has written. The player closest to 100 wins the round.
- 4 Play several more rounds. All players should use strategies to get closer to 100.
- 5 You may wish to vary the game by changing the number of rolls or changing the final sum.

Ask questions after each round such as, “How did you decide whether to put the number you rolled in the ones place or in the tens place? How did you change the way you played after the first round?”

$$3+5=8$$

$$14-9=5$$



$$3+4=7$$

Whole Number Operations

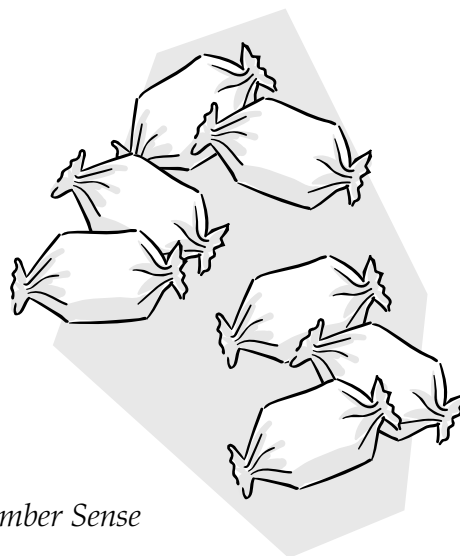
$$5+8=13$$

$$2+4=6$$

Story Time

Your child will learn how mathematics relates to everyday life as he or she creates and solves problems.

(Grades K–2)



Categories: *Whole Number Operations, Number Sense*

Format: *Activity*

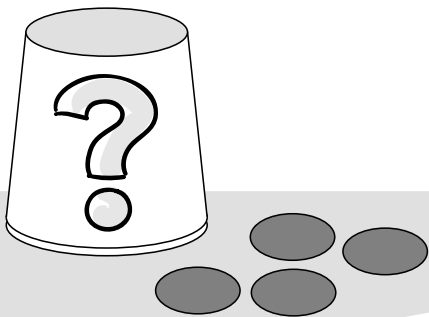
What you need: *Kitchen utensils and other household objects*

What to do:

- 1** Ask your child to set the table for a company dinner. You might say, “As always, there are four people in our family eating dinner together. This evening, Grandmom and Grandpop are joining us. For how many people should we set the table?” Children can use real kitchen objects (such as plates) or other objects to help them find the sum. They may also tell a number sentence that can be used to solve the problem. ($4 + 2 = 6$)
- 2** For a child who is learning basic facts in addition, you might say, “You have seven pieces of Halloween candy. If you give four pieces of candy to your brother, how many will you have left?” (three pieces)
- 3** When you feel your child is comfortable with the concept of addition and subtraction, ask him or her to make up a story for a given fact. For example, write a fact such as $5 + 2 = 7$ on a piece of paper and ask your child to create a story for it.

Note: Step 3 is a quick and informal assessment. If your child can successfully complete this task, he or she truly understands the concept of the operation (addition or subtraction).

Cup Game



In this game, your child will use critical thinking and pre-algebra skills to predict how many counters are under the cup.

(Grades 1–2)

Categories: *Addition Concepts, Number Sense*

Vocabulary: *Prediction, outcome*

Format: *Game*

Who can play: *2 or more*

What you need: *10 counters or beans, paper cup*

What to do:

- 1 Have your child place four counters or beans on a workspace or table.
- 2 Tell your child that you will hide some of the counters under the cup and ask him or her to “magically” tell how many counters are hidden.
- 3 Hide some of the counters and ask your child for his or her prediction. After the prediction is made, ask your child to explain his or her thinking.
- 4 Have your child lift the cup to check his or her prediction. With your child, compare the prediction with the actual outcome.
- 5 Play several rounds. Vary the total number of counters used and the number hidden under the cup. Include instances where all the counters are under the cup or none of the counters are under the cup. Make sure to discuss these specific examples.

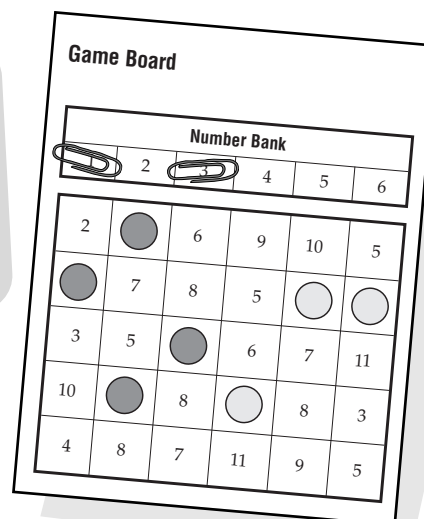
After several rounds of play, discuss general findings. You may say, “Suppose you put the counters under the cup together with the counters that are showing. Would you have the same number of counters that you started with? Why or why not?”

In a Row Math-o

In this critical thinking game, the player who gets four markers in a row first wins!

(Grades 1–2)

Category: Whole Number Operations
Format: Game
Who can play: 2 players
What you need: Game Board (p. 73), beans, pasta, or other counters of 2 colors or types, 2 paper clips



What to do:

- 1 Display the game board between the players.
- 2 Each player counts out 15 counters. You may wish to use two types of beans or pasta, or use pieces from another game.
- 3 One player begins by placing the paper clips on any two numbers in the Number Bank at the top of the game board.
- 4 The player adds the numbers and then tells their sum. For example, if a 1 and a 3 are selected, the player might say, "1 and 3; the sum is 4."
- 5 The player places one of his or her counters on the game board section that matches the named sum. If there are no matching numbers, the player's turn ends without placing a counter on the game board.
- 6 The second player moves *one* of the paper clips to a new number and repeats the procedure described in Step 4.
- 7 Play continues until one player has Math-o (4 markers in a row) either across, up and down, or diagonally.

Note: During the first round of play, discuss game-playing strategies. For example, you may help your child discover that if a 6 is open on the game board and will help to make a Math-o, he or she may try to move the paper clip so that the sum or the difference equals 6.

Flippin' Fun



This activity focuses on basic addition concepts and provides a natural opportunity to see “turnaround” facts.

(Grades 1–2)

- Categories:** *Addition Concepts, Patterns and Relationships*
- Vocabulary:** *Turnaround facts*
- Format:** *Activity/Game*
- What you need:** *6 pennies, paper, pencil, Addition Facts List (p. 74)*

What to do:

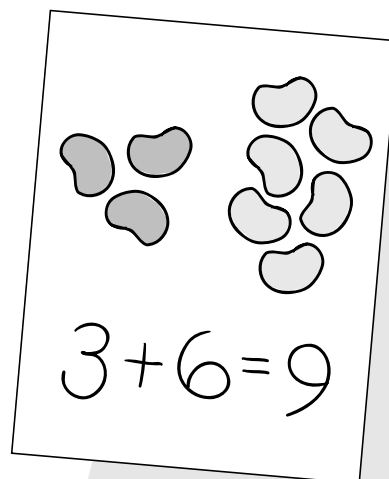
- 1 Have your child count out six pennies.
- 2 Ask your child to flip the pennies on a table and sort them according to whether they land heads up or tails up.
- 3 Ask your child to say or write two addition sentences telling about the heads and tails. For example, if four pennies land heads up and the remaining pennies land tails up, your child might say, “ $4 + 2 = 6$ and $2 + 4 = 6$.”
- 4 Repeat the activity until all combinations of 6 are made. You may wish to use the Addition Facts List (p. 74) to help you decide if all combinations have been made.
- 5 Extend the activity to include combinations for 7, 8, 9, 10, or facts through 18.

Flippin' Fun can be used either to learn addition facts or to reinforce them.

All in the Family

This activity is similar to “Flippin’ Fun” on page 29, but includes the subtraction facts and focuses on the relationship between addition and subtraction.

(Grades 1–2)



Categories: Whole Number Operations, Patterns and Relationships

Vocabulary: Fact family, related facts, addition, subtraction

Format: Activity

What you need: Lima beans, a magic marker, paper, pencil

What to do:

- 1 Have your child help you make 10 two-color counters using dried lima beans. Your child can help by coloring with the magic marker on one side of each counter.
- 2 Have your child toss beans onto a table, then make up related addition and subtraction sentences to describe what he or she sees.

For example, nine tossed beans that land three red side up and six white side up creates the fact family $3 + 6 = 9$ $6 + 3 = 9$ $9 - 3 = 6$ $9 - 6 = 3$.
- 3 You may wish to ask your child to paste the beans onto a piece of paper and record the fact family beneath the beans, or your child can simply draw the beans above the recorded fact family.
- 4 Repeat the procedure, using up to 18 beans (especially appropriate for second-grade students).

Fact Patterns

Basic Facts Table

+/-	0	1	2	3	4	5	6	7	8	9	10
0	0	1	2	3	4	5	6	7	8	9	10
1	1	2	3	4	5	6	7	8	9	10	11
2	2	3	4	5	6	7	8	9	10	11	12
3	3	4	5	6	7	8	9	10	11	12	13
4	4	5	6	7	8	9	10	11	12	13	14
5	5	6	7	8	9	10	11	12	13	14	15
6	6	7	8	9	10	11	12	13	14	15	16
7	7	8	9	10	11	12	13	14	15	16	17
8	8	9	10	11	12	13	14	15	16	17	18
9	9	10	11	12	13	14	15	16	17	18	19
10	10	11	12	13	14	15	16	17	18	19	20

In this activity, your child is asked to see and describe patterns in addition and subtraction facts.

(Grades 1–2)

Categories: Whole Number Operations, Patterns and Relationships

Format: Activity

What you need: Basic Facts Table (p. 76), counters

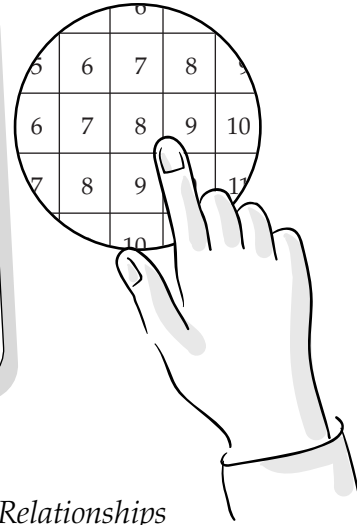
What to do:

- 1 Provide your child with the Basic Facts Table.
- 2 Have your child slide his or her finger across the “+ 0” row of the chart and describe the pattern he or she sees. Your child will probably notice that the numbers are the same as those in the top row in bold numbers. Guide your child to note that when zero is added to a number, the sum does not change.
- 3 Repeat the procedure described above with the “+ 1” rows. Help your child make a generalization about what happens to a number when 1 is added to it. If interest permits, have your child identify the patterns made by adding 2 or 3 to a number.
- 4 Have your child choose a number, such as 7, and follow the diagonal pattern it creates as the sum of two numbers. Help your child discover that as one addend of the number decreases by one, the other addend increases by one. To see this pattern more clearly, have your child make groups of five counters and two counters for a sum of seven counters. Then have your child move one of the five counters to the other pile, making groups of four counters and three counters.

Find a Fact

In this activity, your child will use a basic facts table to find a sum or difference. The facts table will actually help your child solve problems using the relationship between addition and subtraction.

(Grade 2)



Categories: Whole Number Operations, Patterns and Relationships

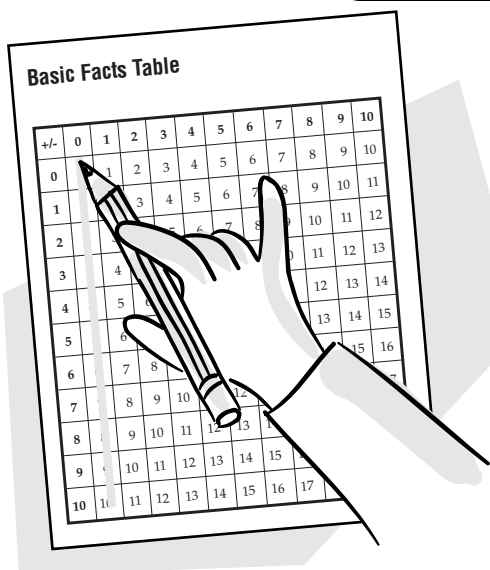
Format: Activity

What you need: Addition Facts List (p. 74)

What to do:

- 1 Help your child find the bold numbers across the top row and far left column of the Basic Facts Table. Explain that these are the numbers that will be combined to find the sums inside the table.
- 2 To find a sum, guide your child to choose two addends, such as 3 and 5. Have your child place a finger on 3 in the top row and 5 in the left column. Show your child how to use his or her fingers to slide down the “3” column and across the “5” row to find their intersection. Make sure your child finds “8” as the correct intersecting number.
- 3 Repeat the process. This time, have your child place a finger on the 5 in the top row and the 3 in the left column. When your child finds the same sum, ask him or her to predict whether or not that always happens.
- 4 Repeat steps 2 and 3 several times, using number pairs such as $5 + 7$ and $7 + 5$, $4 + 8$ and $8 + 4$, $9 + 3$ and $3 + 9$, and so on. Your child will eventually notice that the addends can be combined in any order without changing the sum.
- 5 When your child can find sums comfortably, introduce the concept of using the table to find differences. Start with a fact such as $10 - 7$. Ask your child to slide along the “7” row until he or she finds the 10 within the “body” of the chart. Then have your child move up that column to the top of the table where the result will be “3.” Repeat the process several times.

Cross Off



This activity focuses your child on what he or she already knows.

(Grade 2)

- Categories:** Whole Number Operations, Patterns and Relationships
- Format:** Activity
- What you need:** Addition Facts List (p. 74), Blank Basic Facts Table (p. 75) pencil, counters (optional)

What to do:

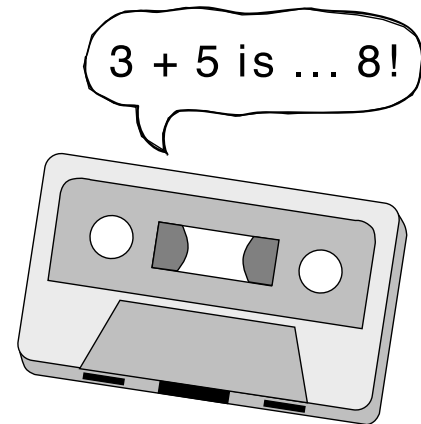
- 1 Work with your child to complete one row of the Blank Basic Facts Table at a time. You may wish to provide your child with the Additional Facts List as a reference. Guide your child to see skip-counting patterns created as each row is completed. Actively involve children by having them fill in all of the numbers in the table by themselves. Provide facts wherever needed—this is a worksheet that will later be used as a reference for fact mastery.
- 2 Once the entire table is completed, help your child decide which facts he or she already knows. Ask your child to use pencil to lightly cross off these facts in the table. Known facts may include “+ 0’s.” These facts will be eliminated from future activities, so be sure that your child knows them well.

Your child will find that after eliminating facts he or she already knows, there is less to learn than they expected! Proceed with basic fact mastery using one or more of the activities in this book.

Beat the Tape

This activity is especially useful in helping your child master basic facts. You and your child will create an audiotape that can be played over and over again to reinforce basic facts.

(Grade 2)



Categories: *Whole Number Operations, Patterns and Relationships*

Format: *Activity*

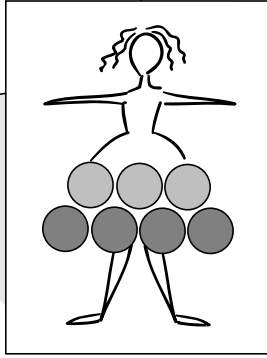
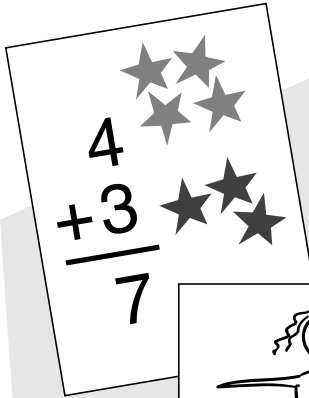
What you need: *Addition Facts List (p. 74), cassette tape, recorder*

What to do:

- 1** With your child, practice preparing the audiotape together. Have the Addition Facts List in front of you. Point to and read aloud an addition or subtraction problem. Silently count out a three-second delay, then have your child read the answer. For example, you read, "3 plus 5 is _____," and wait three seconds. Your child responds by reading the answer, "8."
- 2** When you have finished practicing, prepare the audiotape: Read a fact into the tape cassette. Silently count three seconds. Have your child read the sum into the tape. Keep track of the facts you have recorded by checking them off the facts list as you go. (For best results, read the facts in the list out of order.)
- 3** Once the tape is completed, have your child play it back. Challenge your child to say the answer before his or her own answer on the tape. Even if your child cannot "beat the tape" to begin with, the answers are heard and provided by the tape. Your child can practice facts cleaning his or her room, taking a bath, or making lunch!

Note: It is important for the facts list to be visible when making the tape. Your child will have a multisensory experience—he or she will see, read, say, and finally hear the basic facts. This almost guarantees success for any type of learner.

Daily Fact



This activity ensures that your child will experience success as he or she learns basic facts one day at a time.

(Grade 2)

Categories: *Whole Number Operations, Patterns and Relationships*

Format: *Activity*

What you need: *Completed Basic Facts Table from "Cross Off" (p. 33)*

What to do:

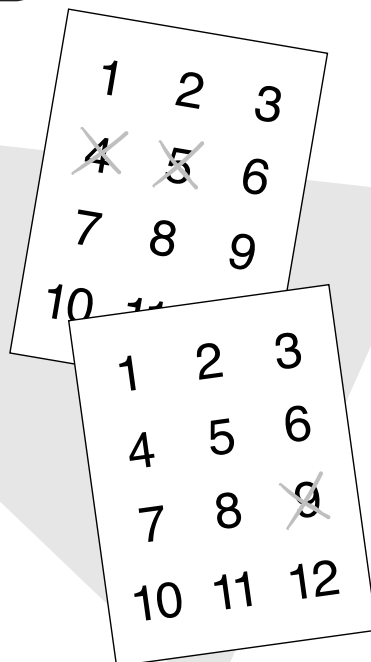
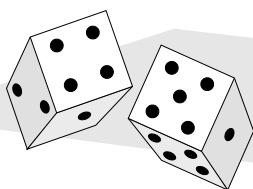
- 1 Ask your child to choose one fact from the "cross off" chart that he or she does not know. This will become the daily fact for the day.
- 2 Have your child write, say, sing, chant, draw pictures, or make an art project to show the daily fact.
- 3 At the end of the day, ask your child to recite the daily fact one last time.
- 4 Try a new fact the next day. Repeat the procedure described in Steps 1 and 2. You may wish to try a new fact each day during the week and use the weekends to review and reinforce.

Have your child cross off the fact mastered the previous day. This will provide a feeling of accomplishment and serve as a built-in progress record.

High Rollers

This TV show-inspired game is fun for children of all ages. The object is to find numbers or number pairs with sums of 1–12.

(Grade 2)



Categories: *Whole Number Operations, Number Sense*

Format: *Game*

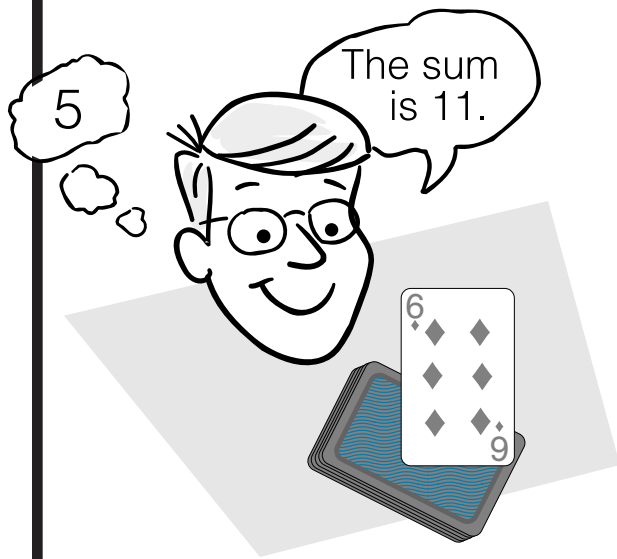
Who can play: *2 players*

What you need: *Paper, pencil, two dice*

What to do:

- 1 Each player lists the numbers from 1 to 12 on a sheet of paper to form a game board.
- 2 The first player begins by rolling the dice. The numbers shown can be used separately or together as a single sum. For example, a 5 and a 6 may be used separately by crossing off the 5 and the 6 on the game board, or may be added together and used as a sum of 11.
- 3 Take turns. If either *both single numbers* or *the sum of the numbers* cannot be crossed off, the player's turn ends with no movement on the game board.
- 4 The first player to cross off the last number on the game board wins the round. If the last number on the game board is a "1," the round ends with no winner.

Mystery Addend



This simple game will teach your child subtraction facts through missing addend sentences.

(Grade 2)

Categories:	<i>Whole Number Operations, Number Sense</i>
Vocabulary:	<i>Addend, sum</i>
Format:	<i>Game</i>
Who can play:	<i>2 players</i>
What you need:	<i>Playing cards: Ace–10 of one suit</i>

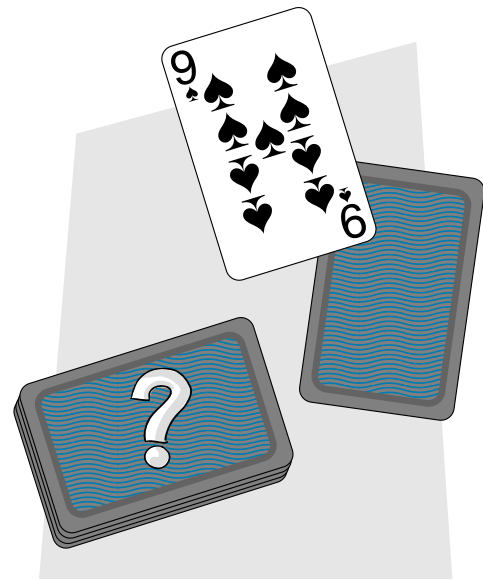
What to do:

- 1 Secretly record a mystery addend between 1 and 10. Tell your child that you will mentally add the mystery number to each card he or she turns over and tell the sum.
- 2 Shuffle the cards and place the deck face down between you and your child.
- 3 Have your child turn over the top card. Give the sum of the mystery addend and the overturned card. For example, if your mystery addend is 5 and a 6 is the overturned card, you would say, "The sum is 11."
- 4 Have your child turn over card after card until he or she correctly identifies your mystery addend. One point is scored for each card that is turned over before guessing the mystery addend. The object is to get as low a score as possible.

Twenty-One

In this popular game, players use mental math and basic facts as they try to reach a sum of 21.

(Grade 2)

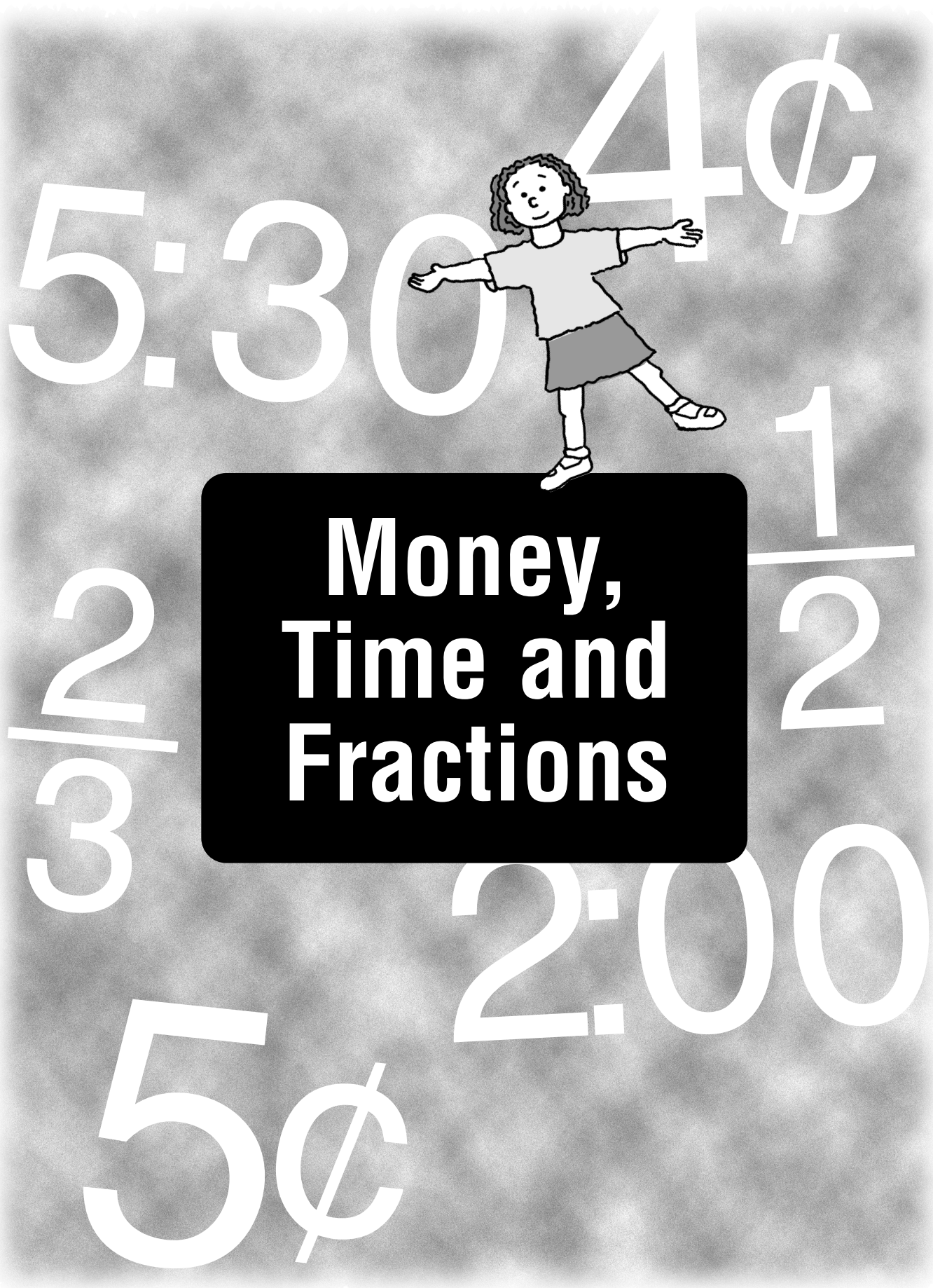


Categories:	<i>Whole Number Operations, Number Sense</i>
Format:	<i>Game</i>
Who can play:	<i>2 or more</i>
What you need:	<i>Playing cards: Deck with face cards removed</i>

What to do:

- 1 Deal one card face down and one card face up to each player.
- 2 Players secretly look at the face down card and mentally find the sum of the two cards.
- 3 Players may ask for one or more additional cards, but must be careful not to exceed a total score of 21.
- 4 You may wish to suggest that your child ask him- or herself questions such as, "How many points do I have now? How many do I need to reach exactly 21? Which cards would be best to get? Which would be worst?"

If your child has never played this game, it is advisable to play several rounds with both cards face up. Guide your child through the questions posed in Step 4. Make sure your child understands how to keep a running mental record of the sum of the cards as well as the cards needed to reach 21.

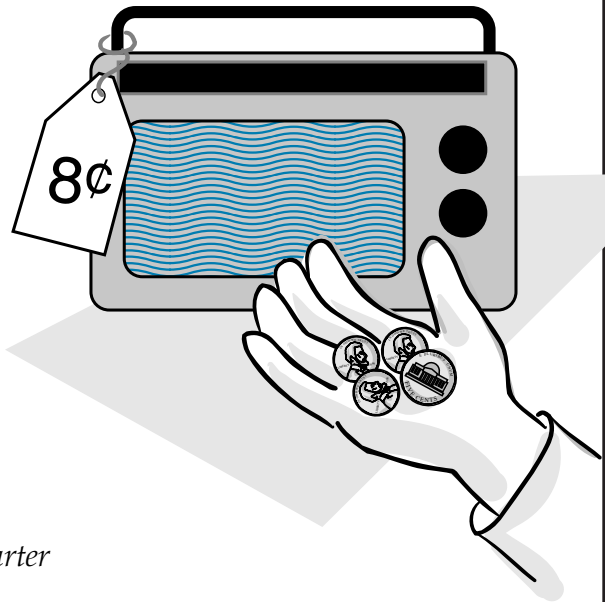


**Money,
Time and
Fractions**

Shop and Buy

In this activity, your child will pretend to shop and buy using real objects and real money.

(Grades K–1)



Category: Money

Vocabulary: Penny, nickel, dime, quarter

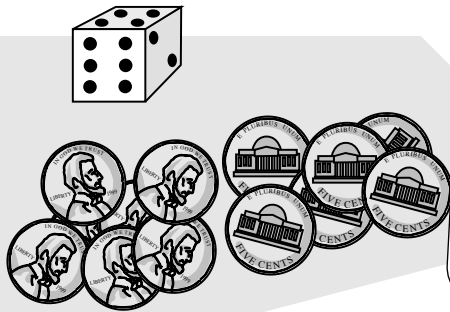
Format: Activity

What you need: Index cards or paper squares, household items, collection of pennies, nickels, dimes, quarters

What to do:

- 1 Have your child gather five different small objects from around your home that he or she would like to pretend to purchase.
- 2 Use index cards or paper squares to make a price tag for each object. Adjust the prices to match your child's skill. For kindergarten, you may wish to label objects with prices between 2¢ and 5¢. For first grade, you may wish to tag objects with prices up through 25¢. For second grade, objects may be tagged with amounts up to 99¢.
- 3 Invite your child to be the shopper while you are the clerk. For example, your child may choose an item tagged with a price of 8¢ and pay for it with eight pennies. As each item is purchased, you may wish to ask your child if he or she can pay for it using a different coin collection. Your child may suggest buying an 8¢ item with a nickel and three pennies.
- 4 If time and interest permit, you may switch roles and let your child be the clerk. Be sure to suggest that your child watch carefully as you pay for each item to make sure you make no errors!

Money Trade-Offs



This game reinforces a variety of skills, including identifying the value of coins and coin collections.

(Grades K-1)

Category:	<i>Money</i>
Vocabulary:	<i>Penny, nickel, dime (optional)</i>
Format:	<i>Game</i>
Who can play:	<i>2 or more</i>
What you need:	<i>10 nickels, 20 pennies, 1 die</i>

What to do:

- 1** Tell your child that the object of the game is to get a total of 20¢. Place the pennies and nickels between players for use as the “bank.”
- 2** The first player rolls the die and takes the number of pennies shown from the bank.
- 3** Take turns rolling the die and taking pennies reflecting the number shown from the bank. When five pennies are accumulated, they are traded in for a nickel.
- 4** The first player to reach 20¢ wins the round.
- 5** Play additional rounds of Money Trade-Offs. When your child is comfortable with the format, you may wish to vary the game by setting a new goal amount or adding dimes to the game.

Fractional Parts of a Dollar

In this activity, your child can make the connection between coin values and the fractional meanings of their names.

(Grade 2)



Categories: Money, Fractions

Vocabulary: Dollar, half-dollar, quarter, dime, one-half, one-fourth, one-tenth

Format: Activity

What you need: Dollar bill, half dollar, quarter, dime, paper, pencil

What to do:

- 1 Show your child a one-dollar bill. Have your child tell everything he or she knows about it. Sketch a rectangle on a piece of paper. Tell your child to imagine that the whole shape represents one dollar.
- 2 Display a half dollar and have your child tell everything he or she knows about it. If necessary, help your child describe the half dollar as having a value exactly half of that of one dollar. Have your child lightly shade the rectangle to show the value of the half dollar. Ask your child to explain his or her response. Your child should note that half the rectangle is shaded because the half dollar is worth half as much as a dollar.
- 3 Display a quarter, sketch a new “dollar” rectangle, and repeat the procedure outlined in Step 2. Make sure your child shades a quarter of the rectangle to represent the quarter, since a quarter is worth exactly one-fourth, or one quarter, of a dollar.
- 4 If your child is comfortable with the fractional representations of the half dollar and quarter, draw a new rectangle and repeat the procedure for a dime. Help your child separate the rectangle into ten equal sections—the object is for your child to see that one dime is equivalent to one of the ten sections, or one-tenth of one dollar.

Relating the concepts of money and fractions strengthens understanding of both ideas. Your child will understand both the verbal terms of “half dollar,” “quarter,” and “dime,” and one real-life application of fractions that occurs everyday.

Coin Collections



This activity reinforces methods for counting coins and helps your child find ways of making a coin collection for a specified amount.

(Grade 2)

Category: *Money*

Vocabulary: *Penny, nickel, dime, quarter*

Format: *Activity*

What you need: *Newspapers or magazines, scissors, pennies, nickels, dimes, quarters, paper, pencil*

What to do:

- 1 Display a collection of quarters, dimes, nickels, and pennies. Provide your child with a newspaper and scissors.
- 2 Have your child cut advertised food or snack items priced under one dollar from the newspaper. Or ask your child to cut coupons with face values of less than one dollar.
- 3 Count out a collection of coins worth the face value of the ad item or coupon. Count one coin at a time as you place them on a table in front of your child. Point out that coins of the greatest value are to be counted first and all coins of one value should be counted before moving to coins of another value.
- 4 After several examples, ask your child to make a coin collection worth the face value of the ad item or coupon. Have your child count the coins one at a time as he or she places them on a table. Your child may wish to count the collection twice to make sure it is equal to the price shown on the ad or coupon. Have your child keep track of the amount on a piece of paper.
- 5 Encourage your child to find other coin collections that could be used to show the same amount or value.

Small Coin Collections

In this game, players will make a coin collection using fewer and fewer coins.

(Grade 2)



Category: Money

Vocabulary: Penny, nickel, dime, quarter

Format: Game

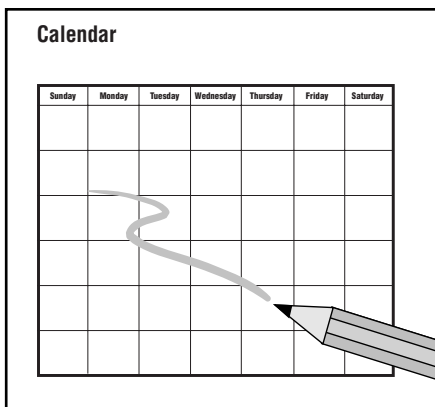
Who can play: 2 or more

What you need: Pennies, nickels, dimes, quarters, paper, pencil

What to do:

- 1 Players sit in a circle. Player A chooses a money amount between 26¢ and 49¢ and records it on paper so that all players can clearly see.
- 2 Player B (or the player's opponent) uses coins to show the money amount recorded.
- 3 Player C (or Player A, if there are only two people playing) tries to make the same amount of money using fewer coins than in the previous collection.
- 4 Players continue taking turns, trying to use the fewest possible coins to make a collection worth the recorded amount. Play ends when a player cannot make the money amount with fewer coins than the person before used. Then the previous player scores 1 point and gets to choose and record a new money amount. Then play continues, following Steps 2 and 3.
- 5 The first player to get 5 points wins the game.

Calendar Capers



Calendars can be used for a variety of activities. This simple activity helps your child get acquainted with the calendar.

(Grades K–1)

- Categories:** *Time, Patterns and Relationships*
- Vocabulary:** *Calendar, day, week, month*
- Format:** *Activity*
- What you need:** *Commercially pre-made monthly calendar or Calendar (p. 77)*

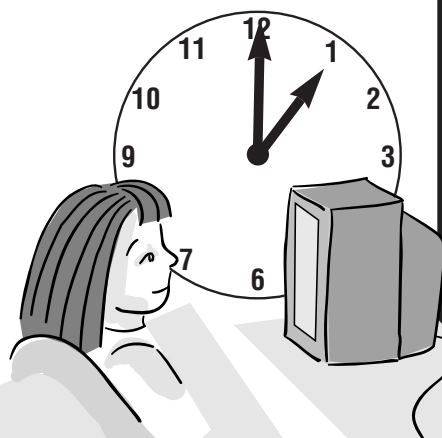
What to do:

- 1 If you have a commercially-made calendar, have your child point to the word on the calendar that tells the month. If not, use the Calendar page to make a calendar for the current month.
- 2 Have your child point to the words beneath the month name on the calendar as you say the names of the days of the week. Repeat the process many times so that your child hears the pattern created by reading or saying the days of the week. Point to the day of the week that identifies the current day. Have your child read that day aloud.
- 3 Point to the current date and ask your child to say the number name. Have your child say the entire date, including the day, month, and year, as he or she points to the words or numbers on the calendar. For example, your child may point to “Wednesday,” “December,” and “6” as he or she says, “Wednesday, December 6.”
- 4 Choose a date later in the month than the current day. Try to choose someone’s birthday, a family gathering, a friend’s party, or a day home from school. Ask your child to find out how many days until the day you’ve chosen. Ask your child to tell how he or she arrived at an answer.

How Long Does It Take?

Your child will develop a sense of elapsed time as he or she completes this estimation activity.

(Grades 1–2)



Category:

Time

Vocabulary:

Hour, minute

Format:

Activity

What you need:

Clock face with hour and minute hands

What to do:

- 1 Have a brief discussion with your child about activities that take about one minute and activities that take about one hour. You might wish to use referents such as: washing your face takes about one minute; watching one (or two) television show(s) takes about one hour.
- 2 Throughout the day, have your child estimate whether an activity will take closer to one minute or one hour. Ask questions such as, "About how long do you think the activity took? What makes you think so? What other activities take about the same time?"
- 3 At the end of the day, have children draw pictures or write a list to describe activities that take about one minute or one hour.

Time for Fractions

In this activity, your child will relate fractions to concepts of time as he or she discovers the relationship between commonly known times and their fractional roots.

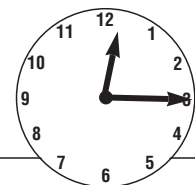
(Grades 1–2)

Categories: Time, Fractions

Vocabulary: Hour, half hour, quarter hour, half-past, quarter-past, quarter to

Format: Activity

What you need: Clock Face and Hands (p. 78), paper fastener.
2–3 light-colored crayons



What to do:

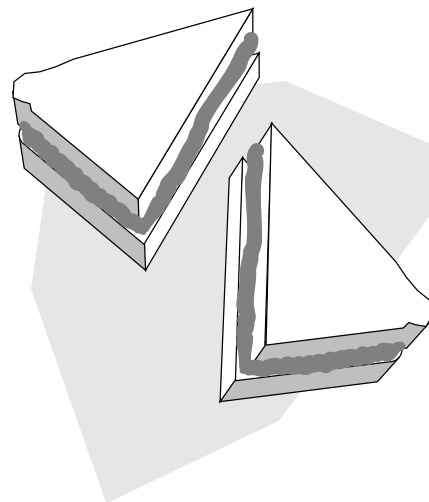
- 1 Construct the clock by fastening the hands of the clock to the center of the clock face.
- 2 Have your child describe the clock face. If necessary, help your child describe the minute hand's trip around the whole circle as one hour.
- 3 Have your child set the clock to 9:00. Point out that the minute hand is on the 12. Then ask your child to move the minute hand until it reaches the 6. Ask your child to tell the time shown. In addition to stating the time as 9:30, make sure your child names it "half-past 9."
- 4 Ask your child to lightly color the section of the clock showing the movement of the minute hand between the "o'clock" and "half-past" times. Your child should lightly color the right half of the clock face between 12 and 6. Help your child discover that the time is called "half-past" because the minute hand has moved halfway around the clock.
- 5 To repeat the procedure for quarter hours, have your child move the minute hand back to show 9:00. Then ask your child to move the minute hand so that it shows 9:15, or "quarter-past 9." As your child lightly colors the area between the two times, he or she will see that a quarter of the circle is affected. Help your child discover that the time is called "quarter-past" because the minute hand has moved a quarter of the way around the clock.
- 6 If your child is comfortable with the "quarter-past" time, follow Step 5 to help your child discover the origin of the "quarter to" time.

Relating the concepts of time and fractions strengthens understanding of both ideas. Your child will understand both the verbal terms of "half-past," "quarter-past," and "quarter to" and a real-life application of fractions that occurs everyday.

Find a Fraction

In this activity, the goal is for your child to gain an understanding of the meaning of fractions. Your child should grasp the concepts of both parts of the fraction, as well as how the parts relate to one another.

(Grades 1–2)



Category: *Fractions*

Vocabulary: *Fractions, half, third, fourth*

Format: *Activity*

What you need: *Crayons or magazines, scissors, paste, paper, pencils*

What to do:

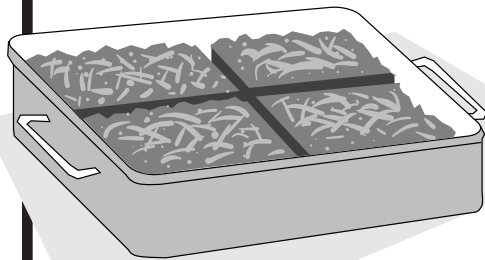
- 1 Have a younger child find examples of halves around the house. You may wish to have an older child look for thirds and fourths.
- 2 Ask your child questions about each item to make sure he or she understands what the fraction means. If your child chooses a sandwich as an example of halves, you may ask, “How many equal parts does the sandwich have? What fractional part is each piece of the sandwich?” and “When unfolded, how many equal parts are in a napkin? What fractional part do you see when it is folded and placed on the table when it is set?”
- 3 Your child may wish to make his or her own picture book showing halves, thirds, or fourths. Your child may either cut and paste pictures from magazines or draw his or her own pictures.

At this stage of concept development, writing the fraction is unimportant. Your child needs to develop a firm foundation of the meaning of fractions, the concept of equal parts of a whole, and the sizes of fractions relative to whole numbers.

Fair Shares at Mealtimes

1

4



In this activity, your child will practice making fair shares for family members at mealtimes. As an added bonus, your child will learn how to compare and estimate fractional parts.

(Grades 1–2)

Category: Fractions

Vocabulary: Fraction, fractional part, less than, greater than

Format: Activity

What to do:

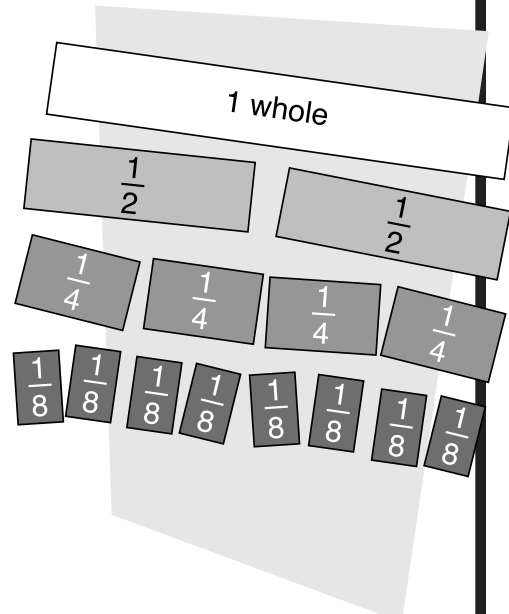
- 1 Discuss with your child the number of people generally eating at mealtimes in your home (do not include infants who will not likely share the traditional meal prepared).
- 2 Ask questions relating fractional parts to the meal, such as, “If everyone eats a fair share of the meal, into how many equal parts will the meal be separated? What fractional part of the whole meal would you eat? What fractional part would I eat?”
- 3 Ask your child to help you separate some parts of the meal into fair shares. For example, if a casserole is part of the meal, guide your child as he or she cuts it into same-size pieces. Try to expose your child to making fair shares of “regions,” such as casseroles and uncut breads, and “sets,” such as french fries or slices of meat.
- 4 Once the meal is sectioned so that it can be shared fairly, allow family members to take what they might usually take. Then discuss each family member’s actual share. For example, if a meal has been separated into four equal shares, you might ask, “Who eats more than one-fourth? Who eats less than one-fourth? Who eats about one-fourth? Who eats most? Who eats least?”

Repetition of this activity provides valuable experience for children. They have hands-on, practical, authentic experiences that help them understand the fraction concepts.

Fraction Bar Set

In this activity, your child will again practice making fair shares for family members at mealtimes. In addition, your child will learn how to compare and estimate fractional parts.

(Grade 2)



Category: *Fractions*

Vocabulary: *Fraction, halves, thirds, fourths, sixths, eighths*

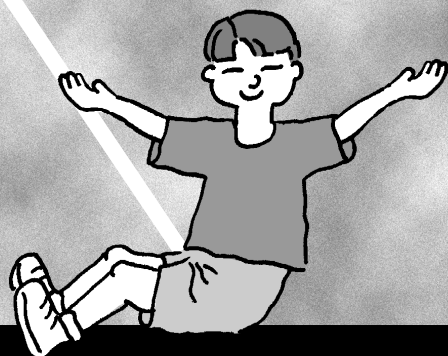
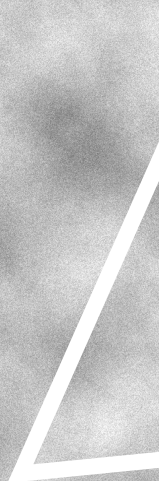
Format: *Activity*

What you need: *Construction or plain white paper, scissors, crayons*

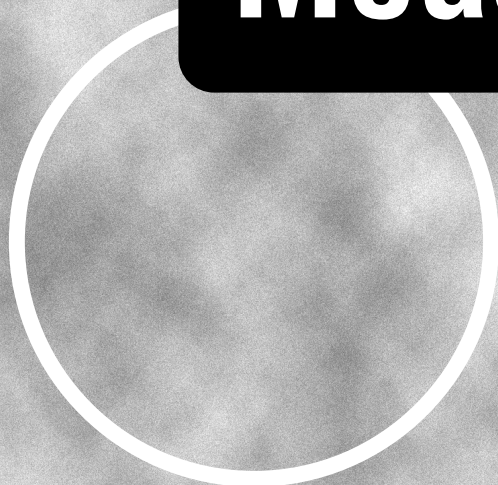
What to do:

- 1 With your child, cut six two-inch strips from different color construction paper or two pieces of plain white paper. If using plain white paper, color each strip a different color.
- 2 Have your child keep one strip whole.
- 3 Have your child fold and cut one strip in half and label each piece by writing " $\frac{1}{2}$."
- 4 Have your child fold one strip in half, then fold it in half again. Ask, "How many equal pieces are in the strip? How should each strip be labeled?" Have your child cut each piece and label it " $\frac{1}{4}$." Repeat the process for eighths by having your child fold the strip in half three consecutive times.
- 5 When your child has completed the fraction bar set, allow time for exploration. Your child will make valuable discoveries such as: $\frac{1}{2}$ is larger, or greater than, $\frac{1}{4}$; and $\frac{1}{2}$ is the same size as, or equivalent to, $\frac{2}{4}$.

oz.



Geometry and Measurement

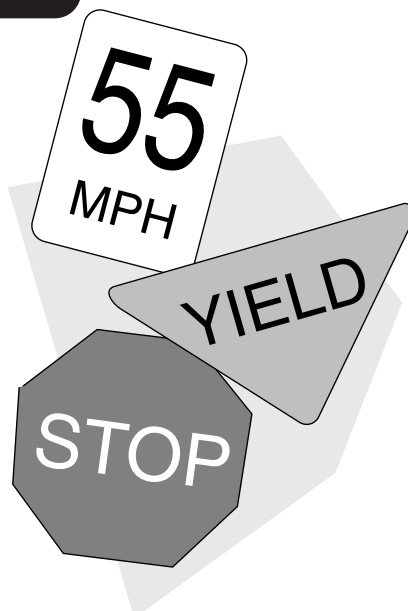


inch

Travel Sign Trips

Use travel time in the car to focus on basic geometry concepts. Adjust the activity to suit your child's ability level.

(Grades K-2)



Category: Geometry

Vocabulary: Shape, side, corner, triangle, rectangle, circle, similar, congruent, tally table, pictograph, bar graph

Format: Activity

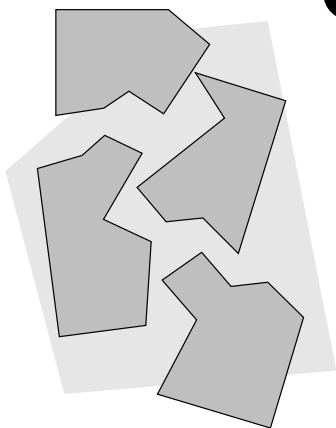
What you need: Paper, pencil (optional)

What to do:

- 1 While traveling in the car, ask your child to describe the shapes of the street signs. Help him or her by using vocabulary terms such as *rectangle*, *triangle*, and *circle*. Your child may wish to count sides and corners, or may simply enjoy noting signs that are similar or congruent in shape.
- 2 On a more lengthy car ride, you may wish to have your child make a tally table, bar graph, or pictograph showing the number of each type of street sign he or she sees. Your child may keep track until one shape has met a specific "target" number, or for a specified period of time.
- 3 You may wish to engage your child in a discussion about the patterns and relationships he or she sees between sign shapes and purposes. For example, your child may observe that speed limit and mileage signs are all rectangular, yield signs are triangular, and other noteworthy signs are round.

It's never too early to call attention to geometric shapes and how they are used on the road.

Jigsaw Puzzle



In this activity, your child will make his or her own jigsaw puzzle. This activity reinforces spatial reasoning and part-whole relationships.

(Grades K–1)

Categories: *Geometry, Spatial Sense*

Format: *Activity*

What you need: *Paper, cardboard, scissors, pencil*

What to do:

- 1 Have your child trace around a piece of cardboard onto a larger sheet of paper. Make sure that the paper outline traced is the same size as the cardboard.
- 2 Have your child cut the cardboard into two pieces that are different sizes and shapes to form a two-piece puzzle. Ask your child, “If you put the cardboard pieces together again, will they form the shape you started with? Why do you think that?”
- 3 Have your child put the puzzle pieces together to verify that the original size and shape of the cardboard piece did not change.
- 4 Ask your child how a three- or four-piece puzzle could be made. Be sure to ask your child to explain his or her response. Then have your child pick up one of the puzzle pieces and cut it into two pieces of different sizes and shapes.
- 5 Have your child mix the pieces and place them back on the paper outline so they fit exactly. Then repeat the process with the other large piece to form a four-piece puzzle.
- 6 If your child is particularly interested, continue the procedure to create a puzzle with five, six, seven, or eight pieces. Each time, have your child mix the pieces and rearrange them on the paper outline.

The understanding of spatial reasoning and part-whole relationships will be beneficial later as your child learns more about geometry and number operations.

A Solid Guess

In this activity, your child will sharpen his or her vocabulary by describing solid shapes without actually seeing them.

(Grades 1–2)



Category: Geometry

Vocabulary: Side, corner

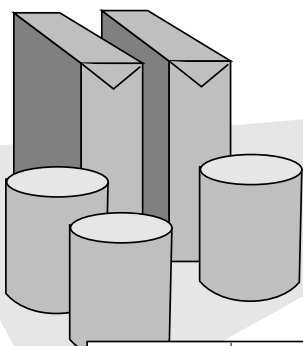
Format: Activity

What you need: Large paper bag, food and household items, Blank Basic Facts Table (p. 75), Solid Shapes Chart and Plane Shapes Chart (p. 81)

What to do:

- 1 Place several food or household items in a large paper bag. You may wish to include items such as a box of facial tissues, a roll of bathroom tissue, a can of soup, a box of pasta, an orange or grapefruit, a roll of tape, and so on. Make sure each item is a simple solid figure, such as a cube, a rectangular prism, a sphere, or a cylinder.
- 2 Display the drawings of plane figures.
- 3 Have your child reach into the bag without looking and choose an object to hold and describe. Ask him or her to describe the entire object without removing it from the bag. Encourage the use of words such as *round*, *flat*, *sides*, *edges*, *corners*, *roll*, *longer*, *shorter*, *equal*, and so on.
- 4 When your child has completed his or her “blind” description, ask him or her to point to the figure on the Solid Shapes Chart that will most closely match the object.
- 5 Have your child remove the object from the bag and decide if the prediction is correct. Encourage your child to explain his or her reasoning.
- 6 When your child is comfortable with this activity, challenge him or her to try “A Plane Guess.” When describing an object without looking, this time your child should describe the shape of each side. In so doing, your child identifies which plane figure(s) comprise the faces of the object. Your child should then remove the object and check his or her prediction against the Plane Shapes Chart.

Sort It Out



Can	III
Box	II

In this activity, your child will discover that space figures are easy to find in food containers and in everyday foods.

(Grades 1–2)

Category: *Geometry*
Vocabulary: *Space figure*
Format: *Activity*
What you need: *Paper, pencil*

What to do:

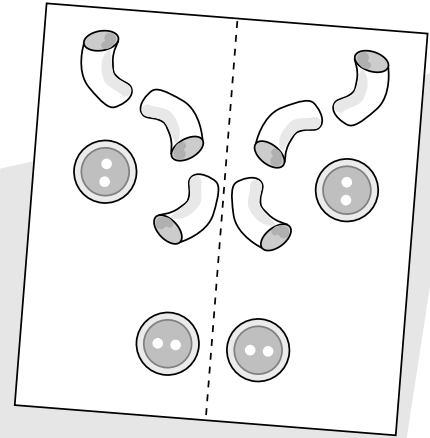
- 1 Work with your child to gather a collection of boxes and cans of food from your cupboard. Add some round fruits, such as apples or oranges, to the food collection.
- 2 Have your child sort the items into groups that are the same space figure. Items should be sorted to form groups of cubes, spheres, cylinders, and rectangular prisms.
- 3 Have your child count the number of space figures in each category. Ask him or her to make a chart or table to record the findings. For example, a tally chart may show that the collection contains five cans or cylinders, two fruits or spheres, one square box or cube, and four long, thin boxes or rectangular prisms.
- 4 Ask your child to think of a new way to sort the food collection. Have your child describe the categories and make a new table or chart.

Note: At this time it is not important for your child to be able to name the figures. At this point, it is better for your child to see the similarities between two like space figures and to be able to describe the characteristics of each type of figure.

Partner Art

Your child will learn more about symmetry as he or she creates a design with you.

(Grade 2)



Category: Geometry

Vocabulary: Symmetry, line of symmetry

Format: Activity

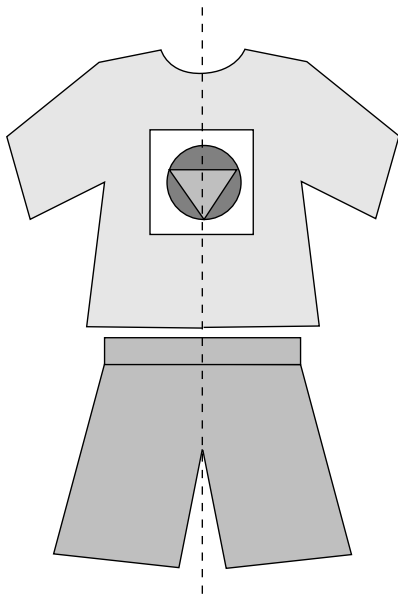
What you need: Paper or cardboard, pencil, glue, buttons, pasta shapes, nuts and bolts, other household items

What to do:

- 1 Fold the paper or cardboard in half, either horizontally or vertically.
- 2 Unfold. Draw a line on the fold.
- 3 Ask your child to place one or two items touching one side of the fold.
- 4 Place the identical items on the other side of the paper to form a mirror image. Ask your child to describe what he or she sees.
- 5 Take turns. This time, place an object on one side of the paper. Have your child place the same object in the same location on the other side of the paper. Continue in this manner until you and your child agree that the picture is complete. Glue into place.
- 6 Ask your child to describe what he or she notices about the design. Help your child discover and describe that the drawn line divides the design into two parts, with one side a “mirror image” of the other. If you wish, you may explain that the fold line is called a *line of symmetry*.

While it is not important for your child to be able to recall the meaning of a line of symmetry at this time, being exposed to the appropriate mathematics terminology will help your child to have a better conceptual understanding at a later date.

Household Symmetry



In this simple activity, your child will observe that symmetry is everywhere.

(Grade 2)

Category:	<i>Geometry</i>
Vocabulary:	<i>Symmetry, line of symmetry</i>
Format:	<i>Activity</i>
What you need:	<i>Length of string, pants, shirt, shoes, socks</i>

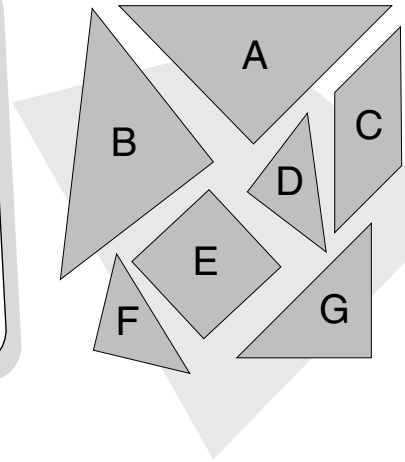
What to do:

- 1 Look in each room of your home. Help your child find examples of symmetry in that room. For example, you might find symmetry in a bathroom tile design. The lines of symmetry may be those that separate the tiles, or may be within each tile.
- 2 Have your child find lines of symmetry in his or her clothing. Besides the symmetrical designs in the fabric, your child may note that the garment itself is symmetrical.
- 3 Have your child place a shirt, pair of pants, pair of socks, and pair of shoes on a bed or table so that the outfit forms a line of symmetry. Then ask your child to place the string to show the location of the line of symmetry. Show your child how to prove that it is a line of symmetry by folding along the string and seeing that the halves of the shirt and pants fit exactly on top of each other.

Tangram Puzzles

In this activity, your child will explore tangrams. Tangram puzzles will help your child to solidify concepts in spatial and visual reasoning as well as in basic geometry.

(Grade 2)



Categories: *Geometry, Visual Reasoning*

Vocabulary: *Tangram, triangle, square, parallelogram, similar, congruent*

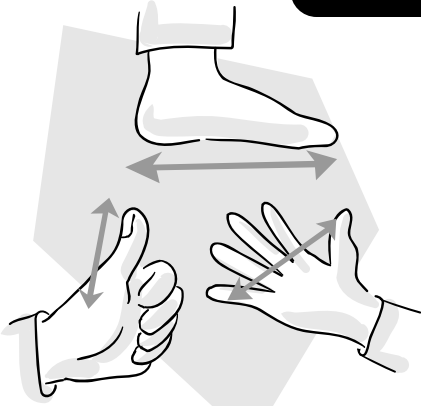
Format: *Activity*

What you need: *Tangram Piece Set (p. 79), scissors, plain paper, pencil*

What to do:

- 1 Have your child carefully cut out the tangram pieces. Discuss the pieces together. Ask your child to identify the triangles, square, and parallelogram. Have your child describe how the triangles are alike and how they are different. Make sure your child sees that there are three sizes of triangles—two pairs of congruent triangles and one triangle of a third size.
- 2 Challenge your child to rearrange the tangram pieces so they form a square again. You and your child may wish to use the picture above to help.
- 3 Have your child rearrange the tangram pieces on top of a piece of plain paper to make his or her own designs. For each design, have your child use all seven pieces to make a letter, an animal, or any shape at all. Encourage your child to record the outline of each completed figure by sketching around its outside edge.
- 4 Once your child has made several designs, challenge him or her to recreate them. It's harder than you think!

Choose a Tool



In this activity, your child will decide which tool is best for each measuring task.

(Grades 1–2)

Category: *Measurement*
Vocabulary: *Length, distance*
Format: *Activity*
What you need: *Paper, pencil, household items*

What to do:

- 1 Help your child make a chart like the one shown at the right.
- 2 With your child, gather the items noted on the chart.
- 3 Ask your child to choose which measuring tool—his or her thumb, handspan, or foot—would be best for finding the fork’s length. Encourage your child to explain his or her response.
- 4 Have your child estimate the number of lengths of the selected tool that would be needed to measure the fork. Ask your child to record the estimate on the chart.
- 5 Now have your child measure the fork and record the result.

Item to Measure	Tool	Estimate	Measure
Fork			
Radio			
Bedroom floor			
Bed			
Hairbrush			

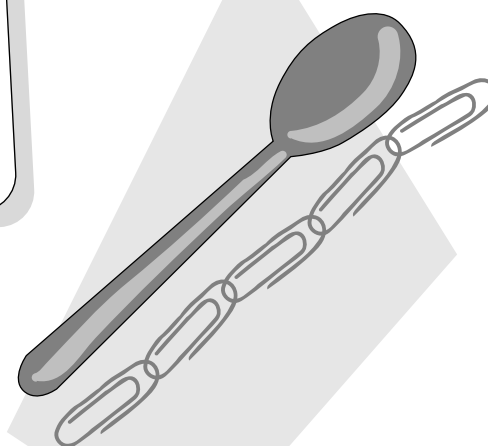
Repeat the procedure for the other items on the chart. Then, with your child, find three more items that can be measured using one of the three tools. Estimate and measure.

Children enjoy measuring with their own “tools,” and gain the conceptual understanding needed for measurement with standard units. You may wish to help your child make generalizations such as: 1) larger objects require larger measurement tools; and 2) the smaller the measurement unit, the more units are needed.

Paper Clip Chains

In this activity, your child will compare lengths of objects in your home.

(Grades K–1)



Category: *Measurement*

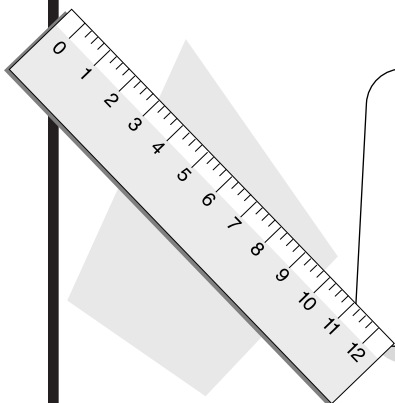
Format: *Activity*

What you need: *30 or more paper clips*

What to do:

- 1 Have your child gather five different items from around your home whose length can be estimated. Suggested items include a comb, a spoon, a crayon, a pencil, and a toothbrush.
- 2 Have your child order the objects from shortest to longest.
- 3 To measure the objects, have your child make paper clip chains the approximate length of the shortest object. When measuring, make sure your child aligns one end of the paper clip chain with one end of the object.
- 4 Have your child tell the approximate length of the object. For example, your child might say, "The crayon is about three paper clips long."
- 5 Encourage your child to use the length of the shortest object to estimate the lengths of the other objects. Then invite your child to make more paper clip chains to test his or her estimates.
- 6 Discuss what happened with your child. Make sure he or she understands that the longer an object is, the more paper clips will be needed to measure it.
- 7 As an extension, you may wish to repeat this activity using an inch or centimeter ruler.

Measure Up



In this activity, your child will predict the size of common household objects. Then he or she will measure to check each prediction.

(Grade 2)

Category: *Measurement*
Vocabulary: *Length, distance*
Format: *Activity*
What you need: *Paper, pencil, inch ruler*

What to do:

- 1 Help your child make a chart like the one shown at the right.

Item to Measure	Estimate	Exact Measurement
Length of sink		
Length of bathtub		
Length of bed		
Height of bed		
Width of refrigerator		
Width of front door		
Your height		

- 2 With your child, examine the inch ruler. Have your child try to find three items that are about one foot long. Then have him or her measure to check. Make sure your child has a “feel” for one foot before proceeding.
- 3 Find each item listed in the chart. First, have your child estimate the length, width, or height of each item to the nearest foot or half-foot. Have your child record the estimates on the chart.
- 4 After your child has estimated each length or height, have him or her use the ruler to check. Your child should record measurements on the chart.
- 5 With your child, compare measurements to estimates. Say “What did you find? Is there a pattern? If so, describe and discuss it.”
- 6 Have your child find two more things to measure, enter them in the chart, and estimate their lengths, widths, or heights. Then have your child do the actual measurement.
- 7 Compare these to the first group of estimates and measures. Ask “Are the measurements closer this time? Why do you think so?”



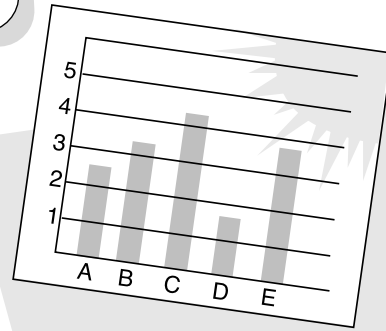
Data

Reading the News

In this activity, you and your child will read, analyze, and discuss a graph in the newspaper.

(Grade 2)

Category: *Data*
Vocabulary: *Graph*
Format: *Activity*
What you need: *Newspaper*

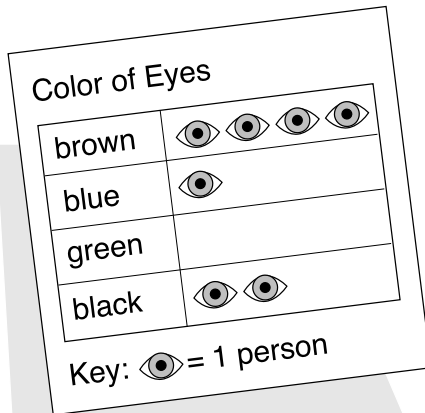


What to do:

- 1 In a newspaper, find a simple bar graph or pictograph that conveys data on a topic that your child will understand. You may wish to start with the weather page. (Finding just the right graph may take several days.)
- 2 Cut out both the graph and the accompanying article or caption. Share the clipping with your child.
- 3 Ask your child to describe what he or she sees in the graph. Encourage all reasonable responses. If necessary, prompt your child by asking questions such as, "Which item (category) shows the greatest amount? The least amount? What is the title of the graph? If there is no title, what do you think the title should be? What does each part of the graph show? What can you tell by reading this graph?"
- 4 As an extension, have your child make up two questions that can be answered using the data shown in the graph. Try to answer the questions, and discuss the correctness of the response with your child.

It is important for children to see the use of graphs in everyday life. Graphs help people absorb a great deal of information in a simple picture or graphic. It also shows relationships among topics that could not as easily be conveyed if written in words.

We Are a Family



In this activity, you and your child will discover how much the members of your family are really alike.

(Grades 1–2)

Categories: *Data, Patterns and Relationships*

Vocabulary: *Pictograph*

Format: *Activity*

What you need: *Family snapshots (group pictures, if possible), Graphing Grid (p. 80), pencil, crayons*

What to do:

- 1 With your child, gather a collection of family snapshots. Place the snapshots on a table or workspace so that they can all be seen at the same time.
- 2 Together, decide on a question that can be answered by looking at the photographs. You may wish to use one of the following, or make up one of your own.
 - What hair colors do our family members have?
 - What eye colors do our family members have?
 - Are our family members short, about average in height, or tall?
- 3 Have your child make a pictograph to show the answers to your questions.

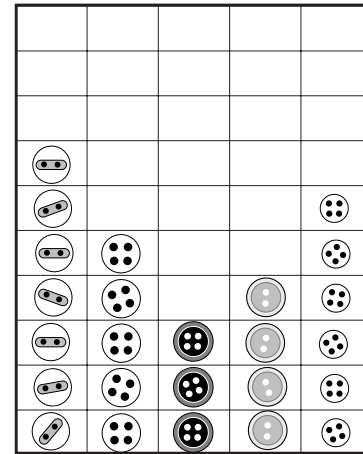
This activity is especially valuable for your child. As your child constructs the pictograph, he or she learns what makes the family special. In addition, your individual family's "traits and treasures" are bound to result in smiles for both of you.

Button Sort

In this activity, your child will discover that things can be sorted in many ways.

(Grades K–1)

Graphing Grid



Categories: *Data, Patterns and Relationships*

Format: *Activity*

What you need: *Buttons, Graphing Grid (p. 80)*

What to do:

- 1 Gather a handful of buttons.
- 2 Have your child decide on a way to sort the buttons. You may suggest common sorting rules such as color, size, shape, or number of holes, but tell your child to sort the buttons without telling you the rule chosen.
- 3 Have your child place the sorted buttons on the Graphing Grid. Be sure he or she uses a different column for each group of buttons.
- 4 Now, it's time for you to guess the rule. Ask for clues if you need them.
- 5 Once the rule has been established, discuss the graph created by the button arrangement. Ask your child questions such as, "Are there more buttons of one size or color than another? What else can you say about the buttons on the graph? Tell me what you are thinking."
- 6 Remove the buttons from the grid. This time, you sort the buttons and let your child guess the rule.

Calendar Graph

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						
						
						
						
						
						

Reinforce reading a calendar and sharpen graphing concepts with this activity. It takes only a moment a day.

(Grades 1-2)

Categories: *Data, Patterns and Relationships*

Vocabulary: *Bar graph, pictograph*

Format: *Activity*

What you need: *Commercially pre-made monthly calendar, Graphing Grid (p. 80)*

What to do:

- 1 Have children keep a record of the weather conditions for a month's time. On the calendar, have your child draw a sun, a cloud, raindrops, or a snowflake to depict each day's weather.
- 2 On or after the last day of the month, have your child count the number of sunny, cloudy, rainy, or snowy days.
- 3 Have your child use the Graphing Grid to make a bar graph or pictograph.
- 4 When the graph is completed, ask your child to analyze the data by answering questions such as, "Which type of day did we have most of this month? How many more (or fewer) sunny days than rainy days did we have? What number would you predict we'd have if we counted all of the days recorded on the graph? Why do you think so?"

Coupon Rules

This simple activity reinforces sorting rules.

(Grades K–2)



Categories: *Data, Patterns and Relationships, Numeration*

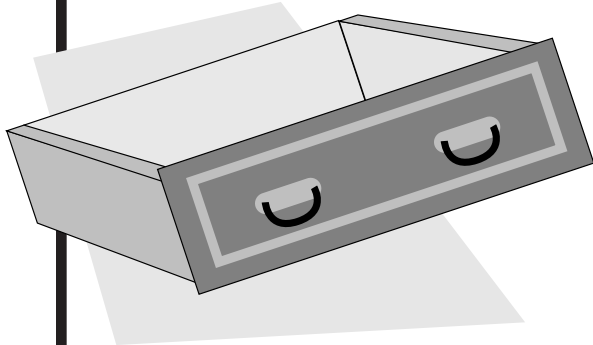
Format: *Activity*

What you need: *Magazines or newspapers, scissors*

What to do:

- 1 Have your child clip coupons from a newspaper or magazine.
- 2 Ask your child to sort the coupons using his or her own rule—by food group, price, expiration date, or any other criteria that your child selects.
- 3 Help your child organize the coupons so they make a coupon bar graph.
- 4 Ask questions about the sorting rule such as, “What is the rule you used? Did any coupons fall into more than one category? Explain. If you used another rule, would you need to sort the coupons again? What would change? Why?”
- 5 Your child may wish to draw a bar graph showing all the sorted coupons and then make up his or her own questions about the graph.

Unburied Treasures



In this activity, your child will reinforce sorting skills as he or she sorts a junk drawer.

(Grades 1–2)

Categories: *Data, Patterns and Relationships*

Format: *Activity*

What you need: *Junk drawer*

What to do:

- 1 Have your child go through a junk drawer and remove several or all of the items.
- 2 Ask your child to sort and classify as many items as he or she can. Have your child sort using his or her own rule or rules. For example, pens and pencils may be classified as writing instruments; rubber bands and clips may be grouped together because they keep items connected.
- 3 Ask questions such as, “How did you sort the objects? Could you sort them another way? How would the new arrangement look?”
- 4 After sorting, your child may make a tally table or graph to show the contents of the drawer. Once the table or graph is made, your child can compare quantities or find the total number of objects in the drawer.
- 5 Ask your child to tell everything he or she can say about the graph. Encourage him or her to describe the items of which there are most or fewest, or tell the items that match in amounts.

This activity is especially useful since it combines sorting concepts, graphing skills, and real-life applications.

$$1 + 8 = 9$$



Math Hooks Aids

$$1 + 2 = 7$$

$$4 + 8 = 12$$

Hundred Chart

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Game Board

Number Bank					
1	2	3	4	5	6

2	4	6	9	10	5
3	7	8	5	6	4
3	5	4	6	7	11
10	9	8	10	8	3
4	8	7	11	9	5

Addition Facts List

$0 + 0 = 0$ $0 + 1 = 1$ $0 + 2 = 2$ $0 + 3 = 3$ $0 + 4 = 4$ $0 + 5 = 5$ $0 + 6 = 6$ $0 + 7 = 7$ $0 + 8 = 8$ $0 + 9 = 9$ $0 + 10 = 10$	$1 + 1 = 2$ $1 + 2 = 3$ $1 + 3 = 4$ $1 + 4 = 5$ $1 + 5 = 6$ $1 + 6 = 7$ $1 + 7 = 8$ $1 + 8 = 9$ $1 + 9 = 10$ $1 + 10 = 11$	$2 + 1 = 3$ $2 + 2 = 4$ $2 + 3 = 5$ $2 + 4 = 6$ $2 + 5 = 7$ $2 + 6 = 8$ $2 + 7 = 9$ $2 + 8 = 10$ $2 + 9 = 11$ $2 + 10 = 12$	$3 + 1 = 4$ $3 + 2 = 5$ $3 + 3 = 6$ $3 + 4 = 7$ $3 + 5 = 8$ $3 + 6 = 9$ $3 + 7 = 10$ $3 + 8 = 11$ $3 + 9 = 12$ $3 + 10 = 13$
$4 + 1 = 5$ $4 + 2 = 6$ $4 + 3 = 7$ $4 + 4 = 8$ $4 + 5 = 9$ $4 + 6 = 10$ $4 + 7 = 11$ $4 + 8 = 12$ $4 + 9 = 13$ $4 + 10 = 14$	$5 + 1 = 6$ $5 + 2 = 7$ $5 + 3 = 8$ $5 + 4 = 9$ $5 + 5 = 10$ $5 + 6 = 11$ $5 + 7 = 12$ $5 + 8 = 13$ $5 + 9 = 14$ $5 + 10 = 15$	$6 + 1 = 7$ $6 + 2 = 8$ $6 + 3 = 9$ $6 + 4 = 10$ $6 + 5 = 11$ $6 + 6 = 12$ $6 + 7 = 13$ $6 + 8 = 14$ $6 + 9 = 15$ $6 + 10 = 16$	$7 + 1 = 8$ $7 + 2 = 9$ $7 + 3 = 10$ $7 + 4 = 11$ $7 + 5 = 12$ $7 + 6 = 13$ $7 + 7 = 14$ $7 + 8 = 15$ $7 + 9 = 16$ $7 + 10 = 17$
$8 + 1 = 9$ $8 + 2 = 10$ $8 + 3 = 11$ $8 + 4 = 12$ $8 + 5 = 13$ $8 + 6 = 14$ $8 + 7 = 15$ $8 + 8 = 16$ $8 + 9 = 17$ $8 + 10 = 18$	$9 + 1 = 10$ $9 + 2 = 11$ $9 + 3 = 12$ $9 + 4 = 13$ $9 + 5 = 14$ $9 + 6 = 15$ $9 + 7 = 16$ $9 + 8 = 17$ $9 + 9 = 18$ $9 + 10 = 19$		

Blank Basic Facts Table

+/-	0	1	2	3	4	5	6	7	8	9	10
0											
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											

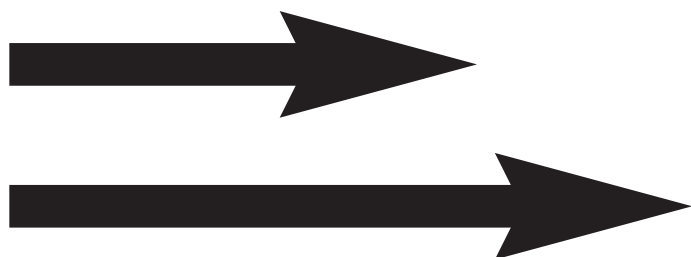
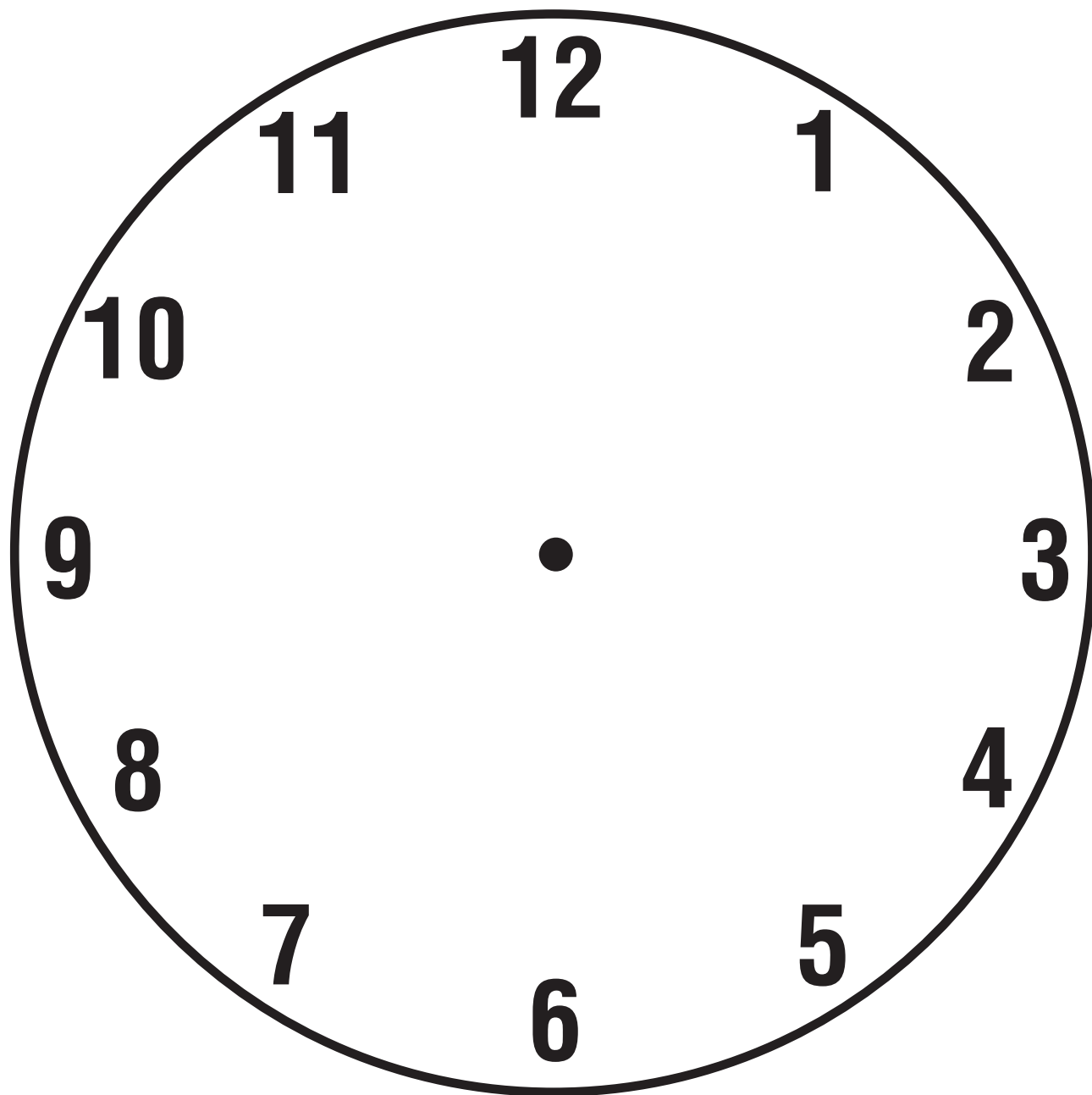
Basic Facts Table

+/-	0	1	2	3	4	5	6	7	8	9	10
0	0	1	2	3	4	5	6	7	8	9	10
1	1	2	3	4	5	6	7	8	9	10	11
2	2	3	4	5	6	7	8	9	10	11	12
3	3	4	5	6	7	8	9	10	11	12	13
4	4	5	6	7	8	9	10	11	12	13	14
5	5	6	7	8	9	10	11	12	13	14	15
6	6	7	8	9	10	11	12	13	14	15	16
7	7	8	9	10	11	12	13	14	15	16	17
8	8	9	10	11	12	13	14	15	16	17	18
9	9	10	11	12	13	14	15	16	17	18	19
10	10	11	12	13	14	15	16	17	18	19	20

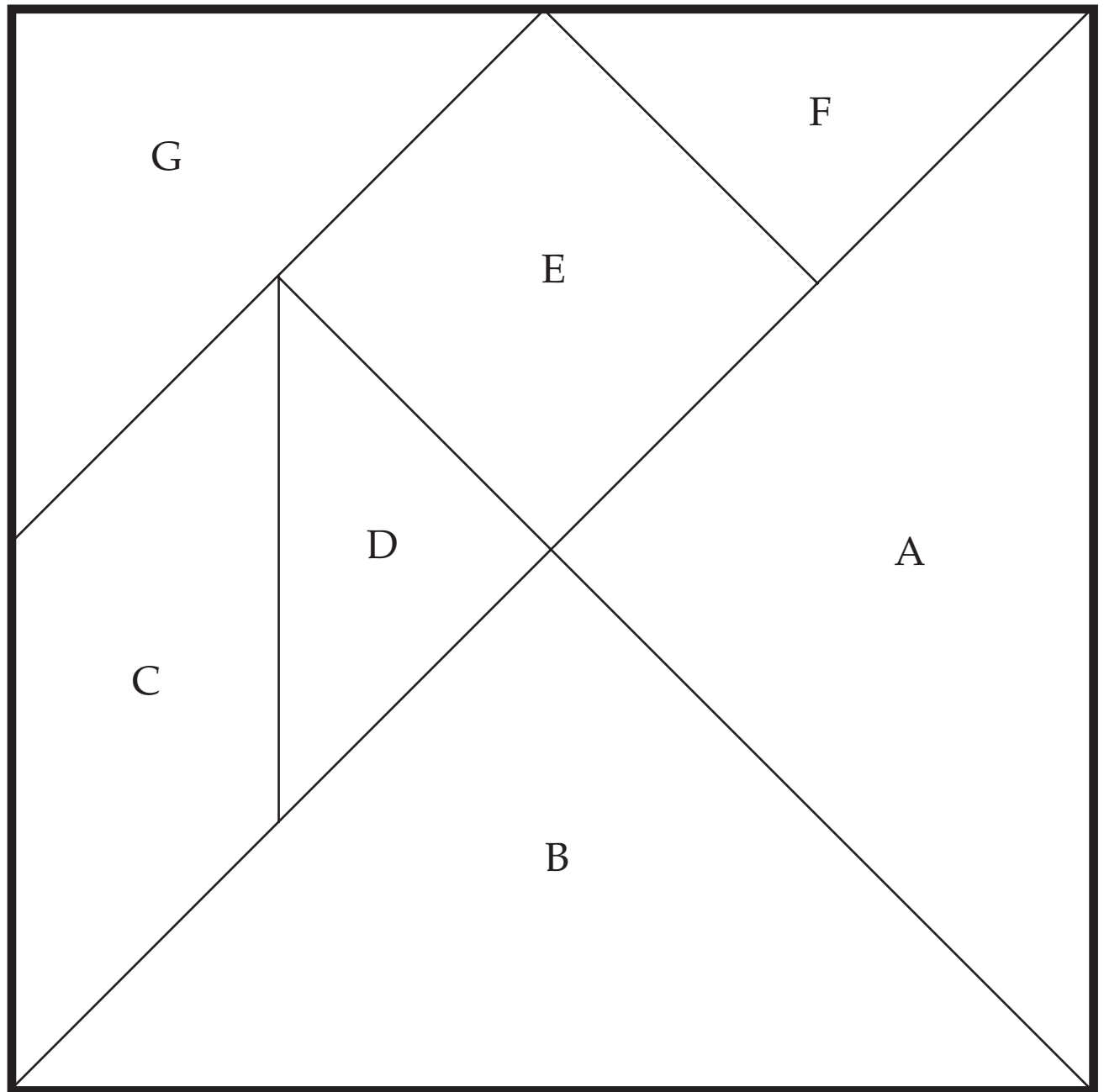
Calendar

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday

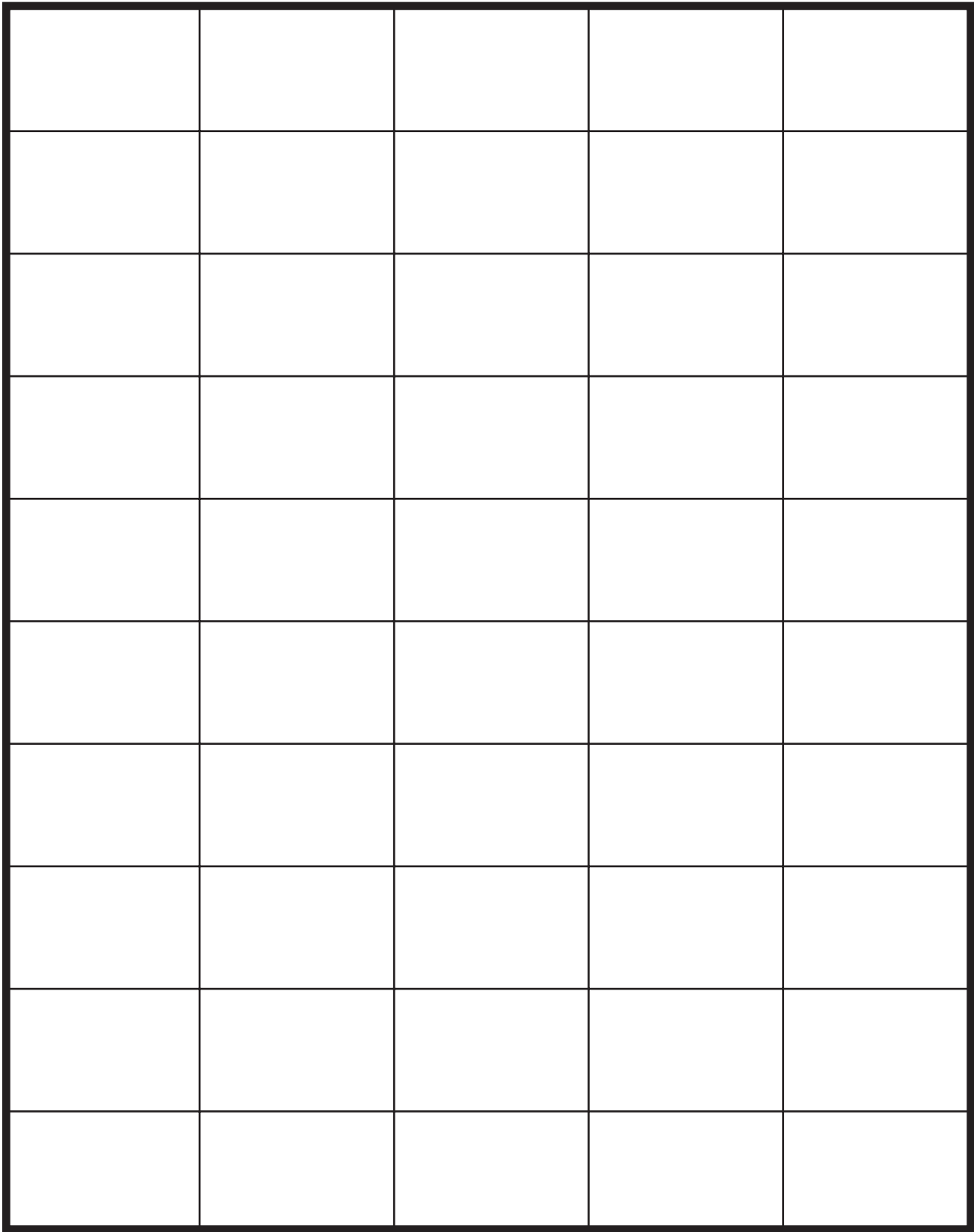
Clock Face and Hands



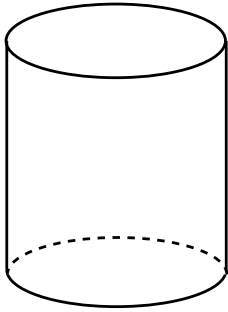
Tangram Piece Set



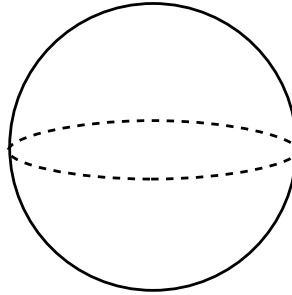
Graphing Grid



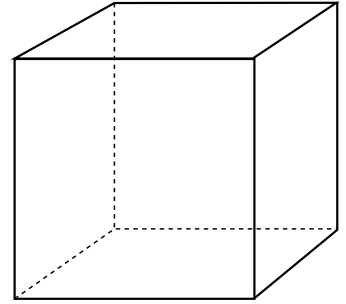
Solid Shapes Chart



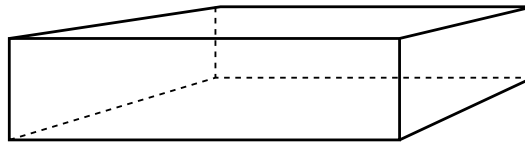
cylinder



sphere

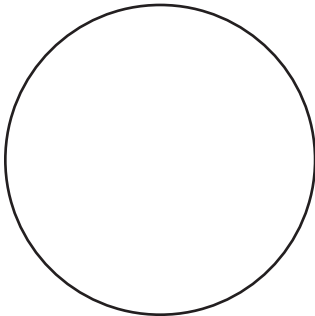


cube

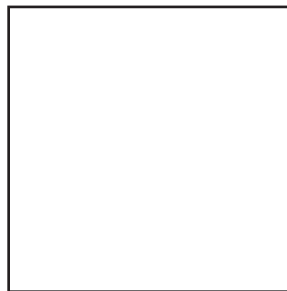


prism

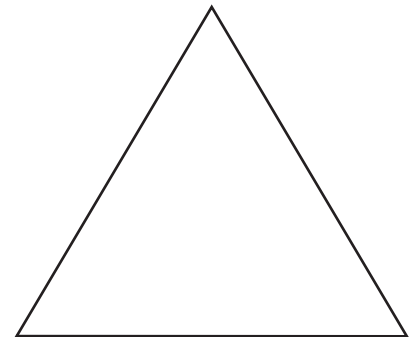
Plane Shapes Chart



circle



square



triangle



rectangle

Glossary

Addend: a number added to find a sum. In $2 + 7 = 9$, 2 and 7 are the addends.

Addition: an operation that gives the total number when you put together two or more numbers.

After: later than. In the sequence 1, 2, 3, 4, 5, 3 comes after 1.

Bar graph: a graph that uses bars to compare data.

Before: earlier than. In the sequence 1, 2, 3, 4, 5, 2 comes before 5.

Between: in a middle position. In the sequence 2, 3, 4, 3 is between 2 and 4.

Calendar: a table showing the days, weeks, and months of a given year.

Circle: a plane figure that has all points equal in distance from a center point.

Congruent: plane figures with the same shape and size.

Corner: the intersection of two sides of a plane figure.

Data: information used to make calculations or analyze.

Day: a period of time lasting 24 hours, or the time it takes the Earth to complete one rotation around its axis.

Difference: the number that is the result of subtracting one number from another.

Digits: the symbols used to show numbers: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9.

Dime: a coin worth 10¢.

Distance: the amount of space between two things.

Dollar: a paper bill or coin worth 100¢.

Eighth: one out of eight equal parts of a whole; the ordinal number corresponding to the numeral 8.

Estimate: to find and name a number that is close to an exact number or answer. $40 + 19$ is about 60.

Even: a whole number that has 0, 2, 4, 6, or 8 in the ones place; a whole number that is divisible by 2.

Fact family: a group of related facts using the same set of numbers. $3 + 4 = 7$, $4 + 3 = 7$, $7 - 4 = 3$, and $7 - 3 = 4$ is a fact family.

Fourth: one out of four equal parts of a whole; the ordinal number corresponding to the numeral 4.

Fraction: a way to compare equal parts to a whole. In $\frac{3}{5}$, 3 equal parts are compared to 5 equal parts.

Fractional part: part of a whole region or set of objects.

Graph: a special kind of picture that shows information, or data, in an organized way.

Greater than: the relationship of one number being farther to the right on a number line than another; having a greater magnitude. 7 is greater than 3.

Half: one out of two equal parts of a whole.

Half dollar: a coin worth 50¢, or half the value of a dollar.

Half hour: a period of time lasting 30 minutes, or half an hour.

Half-past: the time that is exactly 30 minutes past the o'clock hour.

Hour: a period of time lasting 60 minutes.

Length: the extent of anything from end to end.

Less than: the relationship of one number being farther to the left on a number line than another; having a greater magnitude. 3 is less than 7.

Minute: a period of time lasting 60 seconds.

Month: a period of time lasting between 28 and 31 days; one of the 12 parts into which the calendar year is divided.

Next: immediately after. 2 and 3 are next to each other on the number line.

Nickel: a coin worth 5¢.

Glossary *(continued)*

Odd: a whole number that has 1, 3, 5, 7, or 9 in the ones place; a whole number that is not divisible by 2.

Order: to arrange numbers from least to greatest or from greatest to least.

Ordinal numbers: a number used to tell order. The ordinal numbers corresponding to 1 through 10 are first, second, third, fourth, fifth, sixth, seventh, eighth, ninth, tenth.

Outcome: a possible result of an experiment.

Parallelogram: a four-sided figure with both pairs of opposite sides parallel.

Penny: a coin worth 1¢.

Pictograph: a graph that uses pictures or symbols to compare data.

Place value: the value given to the place a digit has in a number. In 23, the place value of the digit 2 is 2 tens and has a value of 20.

Plane figure: a figure that lies on a flat surface and has length, width, and area.

Prediction: an educated guess about what will happen.

Quarter: a coin worth 25¢.

Quarter hour: a period of time lasting exactly 15 minutes or a quarter of a 60-minute hour.

Quarter-past: the time that is exactly 15 minutes past the hour.

Quarter to: the time that is exactly 15 minutes before the next hour.

Rectangle: a four-sided figure with four right angles and two pairs of parallel sides.

Related facts: facts that contain the same numbers; facts that are part of the same fact family.

Shape: a two-dimensional (plane) figure.

Side: the distance between two corners in a plane figure.

Similar: two or more plane figures that are the same shape but that differ in size.

Sixth: one out of six equal parts of a whole.

Space figure: a figure with length, width, depth or height, and volume.

Square: a four-sided figure with four right angles and four congruent sides.

Subtraction: an operation that tells the difference between two numbers, compares two numbers, or tells how many are left when some are taken away.

Sum: the number that is the result of adding two or more addends.

Symmetry: a figure that can be folded along a line to show two parts that are mirror images of each other. The fold line is called a line of symmetry.

Tally chart: a chart used to compare groups of tally marks.

Tally mark: a mark used to record data.

Tangram: a Chinese mathematical puzzle.

Tenth: one out of ten equal parts of a whole; the ordinal number corresponding to the numeral 10.

Third: one out of three equal parts of a whole; the ordinal number corresponding to the numeral 3.

Triangle: a plane figure with three sides and three corners.

Turnaround: two related addition facts containing the same addends and sums; the facts $3 + 2 = 5$ and $2 + 3 = 5$ are turnaround facts.

Week: a period of time lasting 7 days.

Year: a period of time lasting about 365 days; the period of time required for the Earth to make one complete revolution around the sun.