



Boredom-
busting fun
for elementary
grades

The EVERYTHING KIDS'

Learning Activities Book

145 entertaining
activities and learning
games for kids

Amanda Morin



THE
EVERYTHING
KIDS'

**Learning
Activities
Book**

145 Entertaining Activities and Learning Games for Kids

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*In memory of my grandmother Ethel Cohen
Raskin, who always told me I had a book in me.*

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Top 10 Materials to Have Handy for Learning Activities

1. **Pencils:** A sharpened pencil with a good eraser is a must-have for most activities. Try to keep small golf pencils on hand for younger children, as they are easier to grasp.
2. **Index cards:** Index cards can be used for many different things, from making flipbooks to making flash cards. Be sure to buy them in white, lined, and multicolored.
3. **Markers:** Permanent markers are useful for making your projects last longer and in labeling all types of materials, while a package of multicolored felt-tip markers can help in personalizing and decorating your child's work.
4. **Scissors:** Have a pair of adult scissors on hand to cut through cardboard and other sturdier-than-normal materials, but also keep a few pairs of inexpensive safety scissors around for your beginning learner.
5. **Heavyweight paper:** Card stock, poster board, construction paper, or watercolor paper are more durable for making posters, game boards, and other learning materials.
6. **Paper clips and brass fasteners:** These everyday office supplies can be used in a number of noneveryday ways to help teach everything from literacy to electricity.
7. **Glue:** You can use white school glue for most activities, but other options, like hot glue or craft glue, will sometimes work just as well or better. Choose what is safest for your child.
8. **String:** String is a very versatile material, although twine, yarn, embroidery floss, and craft thread can all be used interchangeably in

these learning activities.

9. **Duct tape:** Duct tape not only fixes everything, but it can also help to create and hold together many things, too. Please note: If you wish to be able to remove tape from an object or project, cello tape or masking tape are better choices.
10. **Plastic cups and sandwich bags:** Keep zip-top sandwich bags on hand, not only as materials for activities, but also to store finished projects. Plastic cups or other small containers come in handy for science experiments and math activities.

Introduction

The Everything® *Kids' Learning Activities Book* is a complete guide for keeping kids entertained with fun things to do that also promotes important learning concepts in the key areas of reading, writing, math, science, and social studies. The games and activities in this book help you and your child practice storytelling skills, creative writing, money sense, backyard science, and eco-friendly play, as well as teaching your child about earth and outer space, diversity, and more. The activities are geared for a wide age range (five to twelve), and within each section, activities for older children build on skill sets learned in the activities for younger children. This guide is all you need to get kids up and learning.

There's almost nothing more frustrating than sitting down to do an activity with your child only to discover that the directions are hard to follow, the project is mostly adult-led, or that you don't have all the materials you need to complete the activity. Learning activities shouldn't be a burden or cost a fortune, nor should they be so tedious that your child loses interest.

With that in mind, the activities in *The Everything*® *Kids' Learning Activities Book* are a mix of games and projects that aim to use materials you already have around the house, and activities that don't require any materials at all. Whether they require materials or not, the activities are designed to encourage children to be active learners, using their brains and bodies as tools for learning.

Though each section's activities build upon the skills of previous activities, there is no right order in which to do the activities. While in school, math, reading, writing, science, and social studies can be divided into separate subjects, in your child's daily life all of these subjects co-mingle. In fact, it makes perfect sense to combine Grocery Store Scavenger Hunt activities from [Chapter 6](#) with the Grocery Store Math found in [Chapter 12](#), or to pair the Backyard Nature Journal in [Chapter 18](#) with the nature walk you'll be taking for the Story Stone Soup activity in [Chapter 8](#).

Secondly, *The Everything® Kids' Learning Activities Book* aims to help your child become a more active learner, not make you a better teacher. By letting your child get involved with the preparation and execution of each activity, you're helping him discover he can learn through doing, not just by listening or watching. It may be hard to step back and watch him do things differently than you might, but even your child's mistakes and messes offer learning opportunities. If nothing else, he'll learn how to ask for your help in fixing mistakes, and learn that when he makes a mess, he's responsible for cleaning it up!

Lastly, know that this book is only a starting point to engage your child's interest. Each game and activity can open a discussion, lead you on a hunt to find more information, and give you the opportunity to share learning with your child in ways that are new and fun to both of you.

CHAPTER 1

The Five Key Learning Areas

Children learn best when they're motivated to make sense of the world around them. They learn on their own terms, at their own pace, and they learn best when they're trying to make meaning of the world. Although that may sound as though parents, teachers, and caregivers don't have any role when it comes to children's learning, that's far from true. By providing children with stimulating activities full of learning opportunities and taking advantage of teachable moments, parents and caregivers can create an environment in which children learn new skills without even really trying.

Reading

When a child begins to read, it can seem as though it happened overnight. One day he's trying to sound out the words of his favorite book and the next day he's reading fluently. It may seem that simple, but it's not. Learning to read is a process that begins from the moment your child starts listening to language.

Though not all children learn the same way, there are some essential skills that contribute to your child becoming a fluent reader. That is, one who can easily read the words on the page as well as make sense of their deeper meaning.

Early Reading Skills

Early reading skills, or prereading skills, as they are sometimes known, don't really look like reading at all. The simple abilities to rhyme words, to understand that you start reading a book at the front cover, or even being able to recognize the logo of a familiar store are the skills that create a reader.



What's a "teachable moment"?

A teachable moment occurs when a child's curiosity is piqued enough for you to grasp the opportunity to use his interest as a springboard for learning. It can be something simple, like a conversation, or bigger, like a national event that gets him thinking. Whatever the catalyst, teachable moments happen spontaneously; you just have to keep alert and be ready to help him explore.

When your child tells you he wants a certain brand of cereal because he recognizes the box, or that he wants to go to the fast-food restaurant whose sign he sees down the street, he's "reading" the environmental print around him. When he sings the "Banana Fanna Fo Fanna" song ("The Name Game") or listens to Dr. Seuss books, he's practicing phonemic awareness by playing with sounds. When he "reads" you his favorite book until it is so worn the pages are falling out, he's learning to recognize words by sight.

Building Fluency

Those early reading skills bring your child to the next phase of reading, one in which she is ready to start recognizing sight words, begin using word families, and even bring home spelling words to practice. This is an exciting time for readers. Your child will begin slowly and painfully, but as she gains confidence in her ability to read words and learns to go back to correct her mistakes, she will become a more fluent reader.

A fluent reader no longer reads word for word or sounds out every word on the page. Fluent readers can read smoothly, both silently and aloud. Once she's fluent, your child uses inflection when she reads, can make sense of the text, and is well on her way to becoming a great writer and storyteller.



Here are some signs of a nonfluent reader. He reads slowly, with discernible difficulty, and doesn't use inflection when reading aloud. He reads one word at a time, and uses only the "sound it out" strategy to read new words. A nonfluent reader doesn't go back to self-correct, and just tries to "get it over with." He usually whispers text to himself or mouths the words as he's reading.

A Parent's Role in Creating a Reader

Your child may have become a fluent reader with the help of a teacher, but he's going to learn his attitudes about reading from you. If he lives in

an environment where he sees people reading, in which there are books, and where you are willing to play word or literacy games, he's much more likely not to just be good at reading, but interested in it, too.

Writing

Learning to write is more complicated than just knowing how to tell a story or using correct punctuation. The process of learning to write actually begins before your child even knows how to read or write words. That's because writing isn't just an intellectual skill, it's a physical one, too.

Scribbles Are the Start of Writing

In order to be able to write, your child needs to be able to hold a pencil correctly, and manipulate it well enough to make the different shapes that make up words. That's not as easy as it sounds.

If you've ever seen your toddler or preschooler color, you'll notice that she tends to grasp the writing instrument straight up and down in her fist. This limits her ability to move both her hand and the tool, limiting the range of what types of marks she's able to make on the page. However, that doesn't mean your child doesn't begin writing before she can form actual letters. If your child is a reader, she's probably a writer, too. Many kids will start making uniform scribbles across a page of paper and tell you it's a story, a list, or people's names. Don't disregard her efforts! It means she's beginning to get a sense of where writing is placed on the page and in what direction it goes.



When kids start learning to write, it's easier to use golf pencils rather than regular-size pencils. The size of the pencil is more proportionate to their hands, making it easier to grasp appropriately.

Take a Note, Please

A concurrent step in the writing process is dictation; that is, having your child tell you a story that you write down, then showing it to her. (In fact, this may be the only time in your child's life that it's okay to let her be a dictator!) Your child may be proud of her ability to "squiggle" across the page, but she's probably frustrated by the inability of those squiggles to tell the stories she has in her head.

Asking parents or caregivers to write down stories serves two functions for your child. It helps her get the story down on paper, and it helps her see what the words of her story looks like. Once you've written down what she has to say, you can sit down with her and read it word by word. As you point to the words, she'll recognize them as her own and take a special interest in what those words look like.

Phonics, Sight Words, and Inventive Spelling

Much like when kids learn to read, as they learn to write there are a whole lot of things going on simultaneously. The next step in the writing process isn't actually a step at all; it's a series of learning experiences, the

first of which is learning about sight words. From the very first day of kindergarten your child will be introduced to the concept of sight words, words that he'll gradually be expected to recognize every time he sees them, which is different from learning to sound them out.

Sight words are words so commonly found in books that your child will actually learn to recognize the shape and letters of the word at a glance, learning them without having to sound them out. Once he can read them, he can most likely write them, too.

Still, there will be words your child isn't able to spell and write correctly, which is where phonics and inventive spelling come in. Though they are similar concepts, they're not quite the same.

Phonics relies on your child having the ability to match letters to their sounds and is used as a technique to teach reading. Inventive spelling is a similar process, but in writing. Though his sentences may look indecipherable to you, if your child is using his ability to put sounds together to sound out words and assign letters to them, he's writing.



What is inventive spelling?

Inventive spelling is a technique used when kids are just starting to write. Basically, inventive spelling allows kids to write the sounds they hear when they say a word out loud. It makes for some strange spellings of words, but encourages kids to write without anxiety about "being right."

Writing Is an Ongoing Process

One of the last steps in the writing process is learning technical skills like grammar, paragraph formatting, genre, and technique. This process starts with your child understanding all the elements of a story. After that he's ready to move on to learning how different types of writing are used for different purposes. Writing a story, for example, uses a very different format than an essay.

It's a process that continues to be refined as your child gets older and his ability to comprehend more complex abstract ideas grows. As a parent, you can support this by continually asking him questions about what he's writing, encouraging him to add detail, and doing some of the activities in this book so he doesn't feel as though writing is a chore.

Math

Math is a subject that strikes fear in the hearts of kids and parents alike. Kids often complain that math is hard or they're just "not good at" math, but more children (and parents) are capable of handling math than they think.

Math isn't just about numbers, and it's not just found in textbooks. The types of math that kids complain about are often the complicated formulas and math facts that they are expected to memorize. If that's what your child thinks math is, it's no wonder she complains about it.

Math Is All Around You

Interestingly enough, your child starts learning math concepts before she even knows what numbers are or what numerals look like. Early math

concepts aren't about number sets, they're about sorting and patterning, which help to build an understanding of how numbers relate to each other.

Patterns are everywhere in your child's world. They're the words of the rhyming books she reads, they're the stripes on her favorite shirt, and they're the tiles on the bathroom wall.

Sorting, too, is a part of your child's everyday life. When she separates her pants from her shirts in her drawers, she's sorting. When she puts all the green LEGO bricks in one pile and the blue LEGO bricks in another, she's sorting. She watches you sort laundry, and she sees you sort out groceries as you put them away. All of these daily activities are preparing her to work with numbers.

Why Math Is Hard

If math is all around you, it would stand to reason that math would be easy to learn, and fewer kids would have trouble with it. In actuality, it's often not the math that kids are having trouble with, but learning it. There are a few factors that contribute to kids finding math difficult.

- **Math phobia.** The idea that math is hard is a myth that many kids buy into before they even give it a try. It seems overwhelming to them, and they freeze up when it comes to doing math.
- **Learning style differences.** Kids don't all look the same, and they don't all learn in the same ways, either. Some kids need lots of practice to understand a concept, while others get it immediately. Many textbooks aim to teach the learner in the middle of the spectrum, and as a result the kid who

needs a little extra help as well as the kid who needs enrichment get lost in the shuffle.

- **Constantly changing programs.** Not all schools keep the same textbook or program from grade to grade. If your child's program changes, the method of teaching math could be a little different than it was before. Instead of being able to build upon a solid base of skills, your child ends up spending time relearning skills in a different way before moving on.

Luckily, as a parent, your job isn't to choose the curriculum or textbook, it's to show your child how math can be used in everyday life. From playing card games to cooking with your child, there's always a way to sneak math into the day.

Science

Like math, science is all around you, too. Science is more than just doing experiments; it is learning how to observe the world around you, learning how to ask questions, finding ways to answer those questions, and then asking more questions to begin the process all over again.

Science is a broad term, encompassing everything from life to technology, making it one of the easiest subjects to introduce to children, because there *are* so many different branches to learn about. When it comes to the types of science kids explore in elementary school, there are seven main areas:

1. **Biology:** The branch of science that deals with living organisms, including plants and animals.

2. **Chemistry:** The branch of science that studies substances, combinations of substances, and analyzes the reactions of chemicals and materials.
3. **Earth Science:** The branch of science that looks at the earth. It's a large area of science that includes everything from weather and climate to geology and paleontology.
4. **Electricity:** The branch of science that explores electricity to see how it works and can be controlled.
5. **Astronomy:** The branch of science that studies the entire universe including planets, meteors, stars, and other phenomena of outer space.
6. **Engineering:** The branch of science that deals with the design and creation of machines, as well as studying their functions and how they work.
7. **Physics:** The branch of science that looks at matter and energy, including sound, light, motion, and even magnets.

While that list may sound like an overwhelming number of areas to cover, keep in mind that science as inquiry means your child is exploring the world to find ways to make sense of it. As a parent or caregiver, it's not your responsibility to know all the answers, just to guide your child in finding them.

Social Studies

On its surface, the subject area of social studies sounds very boring. After all, who wants to spend all that time learning about the past, how to read a map, or about how different types of governments work? Kids—and their

parents—might be surprised to learn that those things are only a small part of what is considered to be social studies. The National Council for the Social Studies (NCSS) is working hard to change this view.

As our society continues to grow into one that relies more and more heavily on technology, the world is coming together as one big global community. One day your child could find herself working a project with students or colleagues from all around the globe, without ever leaving her home. It's important, then, that she has a strong understanding of herself, how to relate to other people, and the history and customs of other cultures.

Themes of Social Studies

The NCSS identifies ten major themes of social studies that help kids learn how to live in a global society. Some of the ones your child will learn about include:

- **Culture:** The current and historical study of the customs of different groups of people, looking at how cultures compare to each other and change over time.
- **Time, Continuity, and Change:** Learning about the past as a way to understand the evolution of human experience and how it has led us to where we are now.
- **People, Place, and Environment:** A study of climate, geography, and natural resources to learn more about the world's population and how location affects culture.
- **Individual Development and Identity:** A look at how the culture you live in shapes who you are, and what you need

to learn to be successful in that culture. This includes things like social skills and personal growth.

- **Individuals, Groups, and Institutions:** A study of the formation and maintenance of social, religious, and political institutions and how they reflect (and can be influenced by) societal beliefs.
- **Power, Authority, and Governance:** An overview of the different types of government, their purpose and structure, and the power and authority each type of government and its citizens hold.
- **Production, Distribution, and Consumption:** A study of resources, trade systems, supply and demand, and the effects of each on economics.
- **Science, Technology, and Society:** Learning about how science and technology has advanced and changed society.
- **Global Connections:** A look at the way societies are connected now, how they've been connected in the past, and how that may change in the future.
- **Civic Ideals and Practices:** An overview of the values and practices of various cultures and how following these practices help people become participating members of society. This also includes learning about what it means to be a citizen of a democratic nation.

Like science, social studies encompass a lot of information. Again, your role in doing activities with your child is not to lecture her about all of these things, but to help her explore new things about herself and the global society in which she lives.

CHAPTER 2

Phonemic Awareness

A phoneme is the smallest sound in spoken language that has meaning in its context. You can think of phonemes as “mouth moves.” For example, the word “go” has two phonemes: /g/ and /o/. Without both of them, “go” is a no go. Phonemic awareness is the ability to understand, hear, recognize, and manipulate those sounds. It may sound like a lot of work, but for most kids it comes pretty naturally. You’ll know your child has phonemic awareness when he can hear the small pieces of a word, know when those pieces are missing, or change little sounds to make a new word. Those silly little songs he sings in the car with nonsense rhyming words may drive you crazy, but next time you hear it, you can cheer. Your child has mastered phonemes!

Sounding Off to the Beat Game

Your child is probably already experimenting with word sounds. She’s likely playing around with changing the beginning sounds to make silly rhymes, so why not encourage her by adding a little backbeat to her efforts? In the Sounding Off to the Beat Game, all you need is a little bit of rhythm and the ability to hear how words sound the same.

If you remember any of the circle games from you were little, many of them were based on the chant-clap-slap combination that goes something like this: “Name of the game!” (clap, knee slap), “Ready to play?” (clap,

knee slap), “Then I say ...” (clap, knee slap) “Let’s play!” (clap, knee slap).

This game is played the same way as those classic games, but instead of asking you to remember certain words or add something that you would take on a trip, it practices manipulating the sounds of words. Adding the rhythm makes the game more challenging, but also a little more exciting.

Skills Being Practiced

- Rhythm
- Sound recognition
- Word-sound correspondence
- Sound manipulation

How to Play

1. Start a rhythm. It’s probably best to start with something slow, like clap-slap, clap-slap, clap-slap, clap-slap.
2. Once both you and your child are able to maintain the rhythm, choose a sound. It can be the ending sound of a word or the beginning sound. Just make sure your child knows whether you want him to come up with a word that rhymes with yours or one that begins the same way.
3. Begin by saying in time to the rhythm: “Let’s start with the ____ sound. It’s time! Let’s go!”

Here’s how a round might go if you choose rhyming words:

*Player One: “Let’s start with a rhyme. It’s time, let’s rhyme!”
(clap-slap, clap-slap, clap-slap, clap-slap)*

Player One: “Cat”

(clap-slap, clap-slap, clap-slap, clap-slap)

Player Two: “Bat!”

(clap-slap, clap-slap, clap-slap, clap-slap)

Player One: “Sat.”

(clap-slap, clap-slap, clap-slap, clap-slap)

Player Two: “Mat!”

Here’s how a round with a beginning sound might go:

Player One: “Let’s start with the ch sound. It’s time, let’s go!”

(clap-slap, clap-slap, clap-slap, clap-slap)

Player One: “Chat!”

(clap-slap, clap-slap, clap-slap, clap-slap)

Player Two: “Chin!”

(clap-slap, clap-slap, clap-slap, clap-slap)

Player One: “Church!”

(clap-slap, clap-slap, clap-slap, clap-slap)

Player Two: “Change!”

EXTEND THE LEARNING

To make things a little more challenging, consider having each player say the word that the player before them just said. That way, you’re not only working on sound manipulation, but concentration and memory, too.

Letter-Sound Laundry Games

Your child might be able to recognize the letters of the alphabet, and he might be able to recognize the sounds those letters make, but can he put those two skills together? Playing these games will help him make the connection between letters, the sounds they make, and hearing them in the names of everyday objects.

Skills Being Practiced

- Letter-sound correspondence
- Phonemic recognition
- Fine motor skills

What You Need

- 26 wooden clothespins
- Permanent marker
- Paper (optional)
- Tape (optional)
- Scissors (optional)

Get Ready to Play

Prepare the clothespins by writing one letter of the alphabet on each clothespin. If there's not enough space to write it with a marker, write the letters on small pieces of paper and tape them to the clothespins. Young children have a hard time with clothespins, because the small muscles in their hands aren't always developed enough to complete fine motor tasks. Don't let your child get frustrated by the clothespins—that's not the object of the game. If necessary, help him to squeeze the clothespin open.

Outdoor Beginning-Sound Clothespin Game

1. Review the letters and letter sounds with your child while looking at the clothespins. Split them into two groups, with each of you taking half.
2. Find a “home base” (the porch or stoop works well), and challenge your child to find things outside that begin with the sounds of the letters on his clothespins, and you do the same with your clothespins. When you find something that begins with the sound, attach your clothespin to the object.
3. The first one to use all his clothespins correctly and make it back to home base wins!

Ending-Sound Laundry Clothespin Game

1. The next time you’re folding laundry, have your set of labeled clothespins handy. Give the clothespins to your child and let him know you’re going to name each piece of laundry as you fold it.
2. Tell him that he needs to listen carefully to the *last* sound of each word you say, and when he hears a sound he recognizes, he should clip the pin on the item. For example, if you’re folding a shirt, he should clip on the clothespin labeled with the letter *T*.

Middle-Sound Laundry Clothespin Game

1. It’s actually more difficult for kids to hear the sound in the middle of words than it is to make sense of the beginning and the end, which is why it’s best to play this version of the game last. Since the middle

sound in words is more often than not a vowel sound, give your child only the *a*, *e*, *i*, *o* and *u* clothespins.

2. As you are putting away folded laundry, make sure to enunciate the name of the item of clothing very carefully.
3. Tell your child that as he listens, if he hears a sound in the middle of the word he recognizes, he should clip on the correct clothespin.
4. When all his clothespins are used up, take them off and let him begin again. You might be surprised how excited he gets about putting away laundry!

EXTEND THE LEARNING

If your child is really struggling with using clothespins, you can help him practice the fine-motor aspect of this game by clipping the clothespins around the edge of a paper plate when they're not in use. He can practice taking them on and off the plate without having to think about any of the phonemic aspects of the game.

Paper Plate Slide Phonics

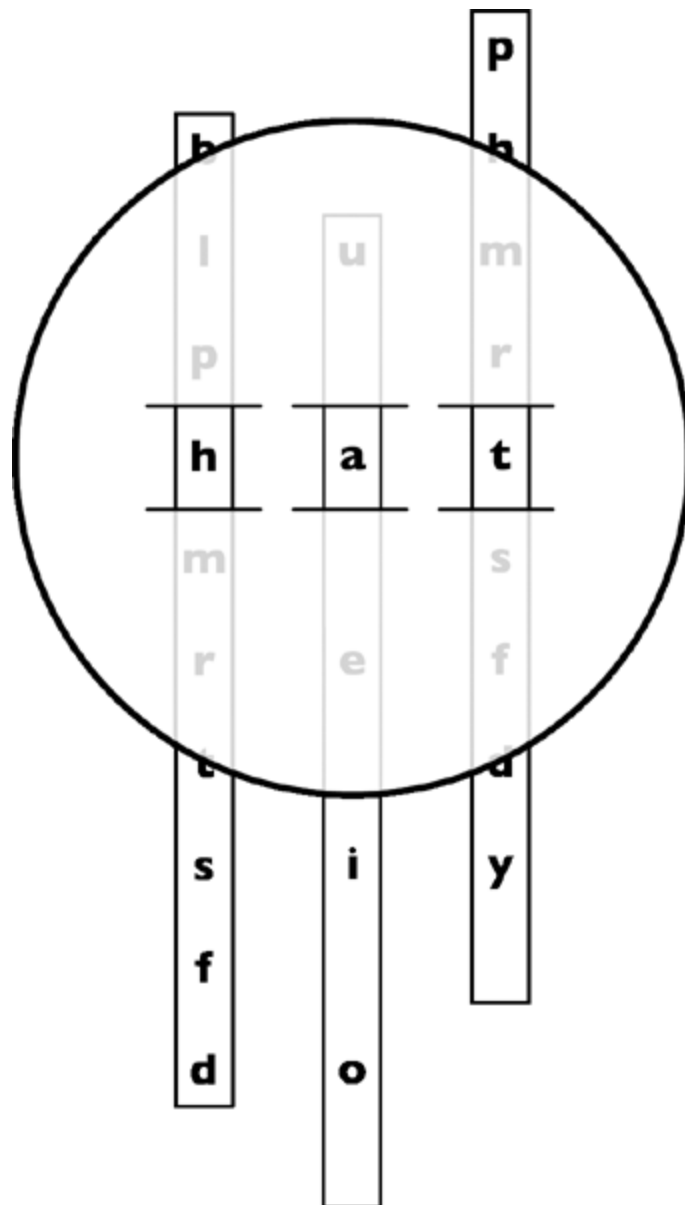
Phonemic awareness and phonics are related, but not the same. Phonemic awareness is your child's ability to recognize the sound segments in words. Phonics starts connecting sounds to written letters and, eventually, words. What is the big difference? Phonics is about writing, and phonemes are about rhyming. This game is very flexible, and can be played with kids who are just learning letter sounds as well as kids who are just learning to read.

Skills Being Practiced

- Phonemic awareness
- Fine motor skills
- Letter–sound correspondence
- Word building

What You Need

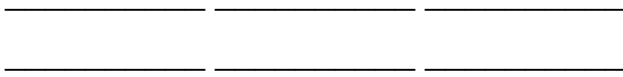
- Paper plates
- 8.5" × 11" paper or 3 strips of ½" × 12" fabric ribbon
- Permanent marker
- Scissors



Paper Plate Slide Phonics

Make a Paper Plate Slide

1. In the middle of each paper plate, draw two rows of horizontal lines, like this:



Each line segment is $\frac{3}{4}$ " long, with a $\frac{1}{2}$ " space between them. The rows themselves need to be 1" apart.

2. Cut on the lines to create six slits in the paper plate.
3. Cut three strips of paper, $\frac{1}{2}$ " wide by 11" long, or use your lengths of ribbon.
4. Starting about 2" from the top of one of the strips, use the permanent marker to write all the vowels (*a, e, i, o, and u*). The letters should be about an inch apart.
5. Weave this strip through the middle set of slits in the plate, starting from underneath, going over the section between the upper and lower slit, and then back down through the other slit. Test the sliding function by gently pulling on either end of the strip to make sure it slides to show one of the vowels framed between the slits.
6. On one of the other two strips of paper, write the consonants: *b, l, p, h, m, r, t, s, f, d, w, and c*. These are the twelve most commonly used consonants. Weave this strip through the slits on the left side of the plate.
7. On the last strip of paper write the same consonants and the letter *y*. Weave this strip through the slits on the right side of the plate.

How to Play: Build Words One Letter at a Time

1. Pull the first strip so that one of the letters is framed in the slits on the left side of the plate.

2. Ask your child to identify the letter and then the sound it makes.
3. Do the same with the middle strip and the last strip.
4. Once all the slides are in place, have her put all the letter sounds together. What word has she made?
5. Can she make one slide move to change that word into a new word? What word has she made now?

How to Play: Make a Rhyming Word

Challenge your child to read the word to you, and then pull the slides to create all the words she can think of that rhyme with the original word.

How to Play: Build a New Word

Have your child read you the word, then ask her to use only one slide to make a new word, but one that doesn't rhyme. For example, the word "hat" can be changed to "hit" with only one slide. It could also change to "ham" or "hay."

EXTEND THE LEARNING

Ask your child to explain why you have to change the middle or last slide to make a nonrhyming word. (Hint: The answer has to do with word families.)

Sound Scavenger Hunt

As your child starts getting a better grasp on the phonemes that make up words, he may start noticing that there are some sounds he can't easily

attribute to one letter. That's because there are some sounds that aren't made up of one letter; instead, they are created with a combination of letters. These sounds, known as blends, digraphs, and sometimes chunks, are very common. A blend is two or more consonants that make one sound together, but you're still able to hear both sounds. For example, the "bl" in "blend" makes the /bl/ sound, but you can still hear both /b/ and /l/. A digraph is two letters that make one phoneme when put together. There are consonant digraphs, like "ch," and vowel digraphs, like "ay." Going on a scavenger hunt to find these sounds should be a task he can accomplish! Use the following table for ideas for what to hunt for:

Blend/Digraph	Example Words
bl-	blue, black, blanket, blocks
cl-	clock, clothes, clay, cleaner
ch-	chain, chair, chocolate, checkers
cr-	crayons, cream, crust, crystals
dr-	drawer, drain, drink, dryer
fl-	flip-flops, floor, flag, flashlight
gr-	green, grapes, grass, gravel
pl-	plate, plush toy, playthings, plane
sh-	ship, shape, shadow, shirt
sc-	scar, scarecrow, scooter, scanner
sl-	sled, slippers, slide, sleeves
sm-	small, smooches, smile, smooth
sn-	snail, snack, snaps, sneaker
sp-	space, spade, sparkly, spots
st-	star, stick, stickers, stencils
sw-	sweet, sweater, swings, switch
tr-	tree, trellis, train, truck
th-	thin, throat, thirteen, there
wh-	whiskers, white, whisk, whiffle ball

Skills Being Practiced

- Phonemic awareness
- Blend/digraph recognition
- Sound-object matching

What You Need

- Sticky notes
- Pen or marker
- Transparent resealable plastic container
- Timer

How to Play

1. Brainstorm with your child all the beginning blend and digraph sounds you can think of. As you come up with them, write one each on a sticky note. When you're done you should have sticky notes that have that have some of the following consonant blends on them: *bl*, *br*, *ch*, *cl*, *cr*, *dr*, *fl*, *gr*, *pl*, *sh*, *sc*, *sl*, *sm*, *sn*, *sp*, *st*, *sw*, *tr*, *th*, and *wh*.
2. Review the sounds each blend or digraph makes, giving your child examples of words if necessary. Then place the sticky notes in the plastic container so your child can still see them and carry them around with him on the hunt.
3. Tell your child that he will be given a specific amount of time to place all the sticky notes on items in the house (or outside) that start with that sound. How long you give him depends on how confident you are in his ability to grasp the sounds. It may be helpful to give him some examples of each sound.

4. Start the timer and set your child loose. When the timer goes off, ask him to come back. If he still has sticky notes left, set the timer again and let him finish. If he has used them all, let him take you on a tour to show you where they are. He gets a point for every blend/digraph he's used correctly.

EXTEND THE LEARNING

Have your child brainstorm as many words as he can think of that match each blend/digraph on the sticky notes. He may not be able to find all the things at home, but he'll certainly be practicing sound recognition.

Sorting the Mail: A Picture–Sound Matching Game

Phonemic awareness isn't just being able to recognize the beginning sounds in words, it's being able to recognize all the sounds. In this game, you'll combine your child's love of imaginative play with phonemic awareness to make her the letter-sound mail carrier. Since this game is practicing single sounds, not blends or digraphs, be careful not to cut out pictures of items that have those sounds in them. For example, avoid pictures of things like chairs, shoes, or trees.

Skills Being Practiced

- Letter-sound recognition

What You Need

- Index cards
- Marker
- Envelopes
- Magazine or clip-art pictures
- Scissors
- Glue

How to Play

1. Go through the magazines or clip art with your child to find pictures of common, recognizable items. For example, you may cut out a picture of a cat, a foot, a car, or a hand. Cut out twenty to twenty-five items.
2. Glue each picture to an index card. Turn the index card over, and write the name of the object on the card.
3. Designate three or four sounds you want your child to be able to practice hearing, both at the beginning and the end of words. Write each of those letters on the outside of one of the envelopes.
4. Decide whether you want to start with beginning sounds or ending sounds, and let your child know which version of the game you'll be playing.
5. Give your child the index cards. Ask her to deliver the mail to the correct envelope, using the sounds she hears when she says the word out loud. For example, if she is "delivering" beginning-sound mail, the pictures of the cat and the car should be placed in the envelope marked with the letter C.

6. Once all the mail is delivered, ask your child to check one envelope at a time to make sure all the mail is correct. She can do this by turning the card over and matching the first (or last) letters in the name of the object to the letter on the outside of the envelope.

EXTEND THE LEARNING

Once your child has the hang of sounding out individual sounds, mix it up a little by adding some blends into the game.

CHAPTER 3

Word Families

Word families are sets of words that have chunks of letters in common at the end of words, making rhymes. Being able to rhyme is a big part of learning how to read. Once your child is able to recognize rhyming words and even manipulate sounds to make them himself, he's well on the way to being able to see them in print. When he's able to sound out a new word because he recognizes the word family pattern, he's actually learning to decode and analyze words, whether he knows it or not.

Word Family Puzzles

Sometimes the best way for kids to learn how sounds fit together and are related to each other is to show them. Making Word Family Puzzles is a great way to help kids see—quite literally—how the pieces fit together to make rhyming words. In this activity you will use some of the most commonly used word families to help your child puzzle out new words. Here is a list of the most common word families:

▼ The 37 Most Commonly Used Word Families

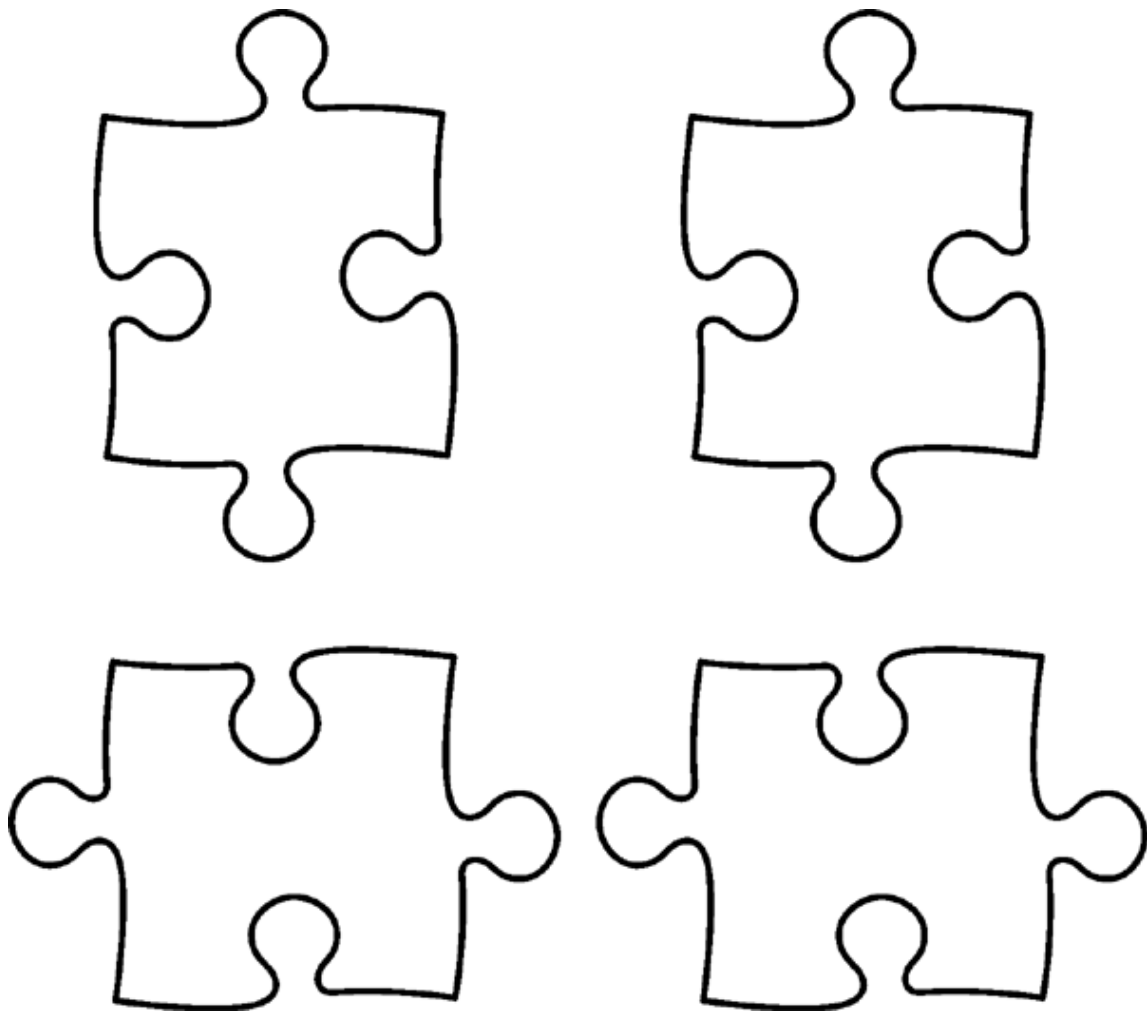
-ack	-ain	-ake	-ale	-all
-ame	-an	-ank	-ap	-ash
-at	-ate	-aw	-ay	-eat
-ell	-est	-ice	-ick	-ide
-ight	-ill	-in	-ine	-ing
-ink	-ip	-it	-ock	-oke
-op	-ore	-ot	-uck	-ug
-ump	-unk			

Skills Being Practiced

- Phonemic awareness
- Beginning reading skills
- Rhyme recognition
- Sound manipulation

What You Need

- Word Family Puzzle Piece Template (optional)
- Construction paper/card stock
- Markers
- Scissors



Word Family Puzzle Piece Template

How to Play

1. Trace seventeen puzzle pieces on construction paper or card stock and cut them out. If you'd rather not trace and cut out puzzle pieces, you can just cut 3" × 3" squares of paper instead.
2. Turn twelve of the puzzle pieces vertically (tabs up) and use a dark colored marker to write the consonants *b, l, p, h, m, r, t, s, f, d, w*, and

- c* on them.
3. Turn the remaining puzzle pieces horizontally (tabs to the side) and use a bright marker to write the five vowels (*a*, *e*, *i*, *o*, and *u*) on them.
 4. Create one of the word family chunks by attaching a vowel to a consonant and ask your child to identify what the chunk is. For example, you could attach *a* and *t* to make “-at.”
 5. Ask the following types of questions to get the game started:
 - These letters say /at/. Can you name a word that ends in that sound?
 - What letter is at the beginning of the word you said?
 - Can you add the right letter to the beginning of the puzzle to build that word?
 6. Once your child has built a word, tell her you know a rhyming word. Ask her to switch the first letter of the puzzle to make the word you name, then ask her to tell you a word she wants you to make. Once you run out of words in that family, switch to a new word family.

EXTEND THE LEARNING

Have your child read a word you’ve built and change it into a new word by switching one letter, either a vowel or a consonant.

Sixty-Second Word Family Naming

The Sixty-Second Word Family Naming game is an easy game to play to keep your child occupied when you’re standing on a line somewhere or in the car. Once you’ve introduced the game to your child and played it a few

times, you'll probably be able to play it in the car without even saying you're going to play the game!

Skills Being Practiced

- Phonemic awareness
- Rhyme recognition
- Sound manipulation

What You Need

- Timer or a watch with a second hand

How to Play

1. Explain to your child that you're going to play a game in which both of you will try to think of as many rhyming words you can in one minute. The catch is they all have to rhyme with the first word somebody says.
2. One of the things kids like best about this game is that there's no turn taking and anybody can keep track of the time. Once the beginning word has been said, then anybody can jump in with a rhyming word. Designate your timekeeper, shout out a word, and begin!

Game Variation

Once your child has gotten really good at coming up with rhyming words, you can make the game a little more complicated. It's time to introduce sentences into the game. Tell your child you're going to start a

sentence and he needs to complete it with a word that rhymes with one of the words in that sentence. Once you start, you take turns changing one of the rhyming words in the sentence until you run out of rhymes or sixty seconds is up. Here's what that might look like:

You: "Have you ever seen a mop that can ..."

Child: "Shop!"

You: "Have you ever seen a mop that can shop?"

Child: "No, I've never seen a mop that can shop, but have you ever seen a mop that can hop?"

You: "No, I've never seen a mop that can hop, but I have seen a top that can hop. What about you?"

Child: "I've never seen a top that can hop, but have you ever seen a top that goes plop?"

Since the object of the game is see how well your child manipulates the beginning sounds of a word family to make rhyming words, it is okay to allow him to use nonsense words.

EXTEND THE LEARNING

Take the timer out of the game and see how long you can keep a single rhyme going. With nonsense words allowed, it could go on a long time!

Word Family Flipbook Games

Once your child has a good sense of the different word families that there are to work with, it's time to combine sound recognition with letter recognition. Making flipbooks is good way to visualize how changing just one letter at the beginning of a word can change it into an entirely different word.

Your child may already know that from manipulating the sounds when she speaks, but now it's time for her to manipulate them in print as well. There are a couple of different ways you can make flipbooks. They work equally well; it just depends on what materials you have in the house. Making them is the most complicated part of the activity.

Skills Being Practiced in the Fast Flipping Word Family Game

- Phonemic awareness
- Beginning reading skills
- Word family recognition
- Sound–letter correspondence

What You Need for the Fast Flipping Word Family Game

- Small spiral-bound notebook or a package of spiral-bound index cards
- Scissors
- Red marker

- Blue marker
- Ruler

Get Ready to Play the Fast Flipping Word Family Game

1. Turn the notebook or index cards so that the binding is up. Flip over the cover to expose the first blank page (or index card). Measure lengthwise and divide the page into thirds. Mark these sections by making lines from the spiral to the bottom of the page. Cut on those lines, using heavy-duty scissors to cut several pages at a time. When you are done, the notebook should have three sections that move independently of each other.
2. In the middle section, use the blue marker to write each of the vowels on a separate page. Flip to the letter *a*. You should be looking at a page with an *a* in the middle and a blank section on either side of it.
3. Move to the last section (on the right). Still using the blue marker, write one letter or letter combination per page that, when coupled with the *a*, makes a word family. (Examples include: -t to make –at; -ck to make –ack; -p to make –ap).
4. When you can't come up with any more word families that begin with *a*, flip to the next vowel. Try out the combinations you already have to make word families with that vowel, and add any new letter combinations to the last section.
5. On separate pages of the first section (on the left), use the red marker to write the consonants *b, l, p, h, m, r, t, s, f, d, w*, and *c*.

How to Play the Fast Flipping Word Family Game

Have your child manipulate the middle and last section of the book to create a small word or word family she recognizes. Have her flip the letters in the first section of the book to add on a new letter, making a new word that she can read to you. She can maneuver any of the sections of the book to make new words, new word families, or to make rhyming words.

Skills Being Practiced in the Round-the-Ring Word Family Game

- Phonemic awareness
- Beginning reading skills
- Word family recognition
- Sound–letter correspondence

What You Need for the Round-the-Ring Word Family Game

- Index cards
- Scissors
- Single-hole punch
- 3 (2") metal loose-leaf rings
- Red marker
- Blue marker
- Stickers or clip art depicting common word family words (for example, pictures of a hat, a bat, and a cat, or a bug, a rug, and a mug)

Get Ready to Play the Round-the-Ring Word Family Game

1. Take one index card and turn it lengthwise. Punch three evenly spaced holes at the top, and place a loose-leaf ring into each hole. This will be the back cover of your flipbook.
2. Next, take twelve index cards, turn them lengthwise, and cut them into thirds. You should now have three piles of twelve cards each.
3. Leave one of the three piles blank, punch a hole in the top, and attach them to the loose-leaf ring on the left-hand side of the index card.
4. On the next pile of cards, use a red marker to write the consonants *b*, *l*, *p*, *h*, *m*, *r*, *t*, *s*, *f*, *d*, *w*, and *c*, each on a separate card. Punch a hole in the top of the consonant cards and attach them to the middle loose-leaf ring.
5. Use a blue marker to write twelve of the thirty-seven most commonly used word families (see list in Word Family Puzzle game) on the last set of cards. Punch a hole in the top of these cards and attach them to the right-hand loose-leaf ring.
6. Your flipbook should now have an index card back and three separate sections, one with blank cards, one with consonants, and one with word family endings.

How to Play the Round-the-Ring Word Family Game

Give your child the clip art or stickers that represent common word family words. Ask her to identify one of the items and then use the flipbook to make that word. Once she has done it correctly, have her stick or glue the picture on one of the blank cards in the first section of the book. Continue this until you run out of pictures. Now your child can either make words and flip to find the matching picture, or find a picture and flip the letters to make the corresponding word.

Word Wheels

It only seems right that you make Word Wheels as your child starts connecting sounds and letters. After all, once she is able to recognize consistent patterns at the beginnings and endings of words, it's just a matter of time before the wheels start turning in her head, and her reading skills take off.

The part of a word or syllable that comes before the first vowel is called the *onset*. Not all words have onsets. For example, in the word “grand,” the onset is “gr.” The word “and” does not have an onset. A *rime* is the group of letters at the end of a word or syllable. Rimes always begin with a vowel.

Using word wheels to play with the onsets and rimes of words can help your child move beyond phonemic awareness into the realm of phonological awareness. That is, she'll no longer just be able to recognize that the sounds in some words are the same, but that the letters that make those sounds are always the same, too.

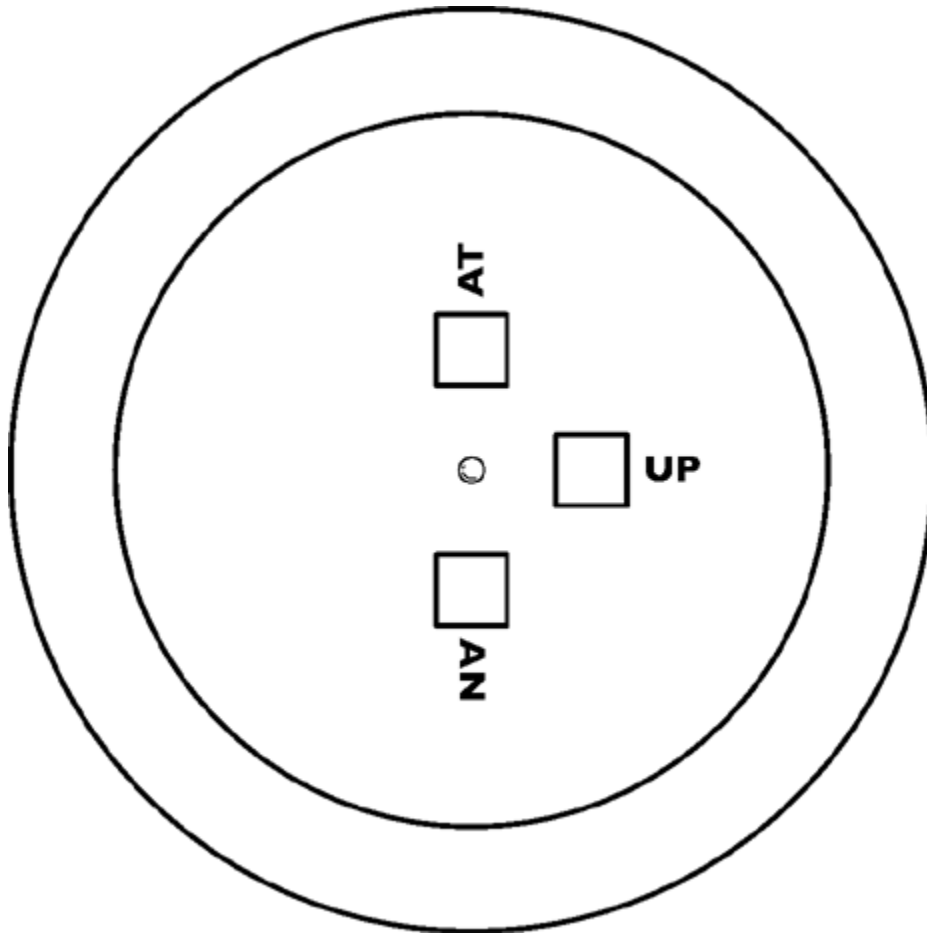
Skills Being Practiced

- Onsets and rimes
- Phonological awareness

What You Need

- Large circular paper plate
- Small circular paper plate
- Scissors
- Ruler

- Colored markers
- Brass fastener



Word Wheel

How to Play

1. Place the small paper plate on top of the large paper plate and poke a hole through the middle of both of them. Take the plates apart.

2. On the smaller plate, measure an inch to the right of the hole and cut a window approximately 2" square. (Adults only, please!) Do the same above the hole and below it. (Depending on how tough the paper plates are, you may need to use a utility knife to cut the windows.) You should now have a plate with three small windows in it.
3. Use a marker to write a rime after the window on the right-hand side, such as "and" or "up." (See list in Word Family Puzzle Game for more rime suggestions.) Then turn the plate so the top window is now on the right-hand side of the plate. Use a different color marker to write another rime after that window. Turn the plate once more, so that the last window is on the right-hand side of the plate. Use a third color to write another rime.
4. Put the small plate back on top of the large plate. Place a brass fastener through the hole in the middle to attach the plates.
5. Orient the top plate so that the window to the right of the brass fastener and its rime are in place. In the window—using the same color marker as the rime—write an onset that, when added to the rime, makes a word. (The letter or letter combinations will actually be written on the bottom plate, framed by the window cut in the top plate.)
6. Turn the top plate clockwise until there's blank space in the window again. Write another onset. Continue this until the first onset you wrote appears in the window again.
7. Rotate the entire Word Wheel so that one of the other windows and its rime can be read correctly. Again, use the same color marker as that rime to write an onset in the window. Turn the top plate and repeat the process until you come back to the original onset. Rotate the Word

Wheel one last time and do the same for the last window and rime, matching the color of the onset to the color used for that rime.

8. Let your child loose with the Word Wheel to see what words he can create and sound out! Just remind him that when he wants to switch word endings, he needs to turn the whole wheel before turning the top plate.

Pizza Pan Word Magic

While magnetic letters are a great way to teach kids how to read and make words, you've probably discovered that the refrigerator is not the best place for your kids to use them. Not only do the letters slide right off, but children don't usually read while they're standing up! Before you find yourself digging underneath the fridge for stray letters, try this Pizza Pan Word Magic activity. The letters stick perfectly to the pan or a cookie sheet, and can be laid flat in front of your child just like a book. It would be ideal for all the vowels to be the same color, one that's different from the rest of the letters. You may have to buy an extra set of magnetic letters to make that happen. Keeping the vowels a distinct color is a good way to make them stand out visually as much as they do aurally.

Skills Being Practiced

- Word family recognition
- Rhyme recognition
- Letter–sound correspondence
- Word decoding
- Fine motor skills

What You Need

- At least 1 complete set of magnetic alphabet letters
- Clean pizza pan or cookie sheet
- Masking tape or a permanent marker

How to Play

1. Dump out the magnetic letters and have your child help you sort the vowels (*a, e, i, o, and u*) from the consonants.
2. Stick the vowels in a row at the top of the pizza pan. Stick the consonants in rows or a bunch on the side of the pan.
3. In the middle of the pizza pan draw or make a square out of tape, just big enough to hold one letter. That's your Magic Letter box.
4. Have your child choose a vowel-consonant pair that is a small, standalone word. This word should be able to be made into a new word by adding some letters in front of it. Examples include: *it, at, up, in, an, am, or*.
5. Have your child place the vowel-consonant pair after the empty Magic Letter box and read it to you.
6. Sort through the remaining consonants to find letters that can be put in front of the small word to make new words.
7. One of you can put a letter in the Magic Letter box to make a new word. For example, if you have the word *it* and put the letter *s* in the Magic Letter box, you've made the word "sit."
8. Whoever created the word has to read it, and then challenge the next player to make a new word by changing the letter in the Magic Letter box. The challenge can be to make a specific word told to the next player, or for the player to make his own word. The round ends when

nobody can think of any more words to create. A new round begins by clearing the Magic Letter box and beginning with a new vowel-consonant pair.

EXTEND THE LEARNING

Instead of the player who created the word reading it, the next player has to read the word and change it to a new one, or the players can draw a picture on a piece of scrap paper (or sticky note) to show what word to make.

CHAPTER 4

Sight Words

Sight words are known by many different names, including core words, high-frequency words, and even popcorn words (that's because your child is supposed to be able to recognize the words so quickly that they just "pop" right out of his mouth). There are two main sight word lists your child may be learning, the Dolch sight word list and the Fry Instant word list, or his teacher may combine the two. Both lists include the top 100 words that, surprisingly, make up 50 percent of all the words found in written material.

The Top 100 Sight Words

The top 100 sight words are also known as the 100 "Magic Words." The words listed here are, in order, the words most frequently used in books. Your child will most likely be able to read all of them before the beginning of fourth grade.

The Top 100 Sight Words				
the	of	and	a	to
in	is	you	that	it
he	was	for	on	are
as	with	his	they	I
at	be	this	have	from
or	one	had	by	word
but	not	what	all	were
we	when	your	can	said
there	use	an	each	which
she	do	how	their	if
will	up	other	about	out
many	then	them	these	so
some	her	would	make	like
him	into	time	has	look
two	more	write	go	see
number	no	way	could	people
my	than	first	water	been
called	who	am	its	now
find	long	down	day	did
get	come	made	may	part

(Source: Fry, Edward B, and Kress, Jacqueline E. *The Reading Teacher's Book of Lists*, Fifth Edition. Jossey-Bass, 2006. Print.)

Environmental Print Books

Environmental print is made up of the words that can be found all around you. It's the logo of your child's favorite cereal or restaurant, it's the familiar phrase stamped on your child's favorite brand of toy, and it's the

stop sign down the street. Kids start “reading” environmental print before they read books because it’s so recognizable.

Making an environmental print book is an easy way for your child to create a book that he can “read” to you before he can truly read. You might be surprised by how many words he recognizes just from everyday life.

The nice thing about environmental print is that it really can be found in every facet of your child’s life, which makes it easy to make a number of different kinds of environmental print books. The easiest one to make is an ABC (or alphabet) book, but you could also make a “Foods I Like to Eat” book, a “Signs I Know” book, or even a “Stores I Like to Shop At” book. An ABC book can combine all of those books into one.

Skills Being Practiced

- Prereading
- Word recognition
- Sorting and categorizing
- Fine motor skills

What You Need

- 3-ring binder or a spiral-bound notebook
- Paper
- Scissors
- Glue
- 3-hole punch
- Sales flyers, picture menus from restaurants, food labels/boxes, and/or digital camera

How to Make an Environmental Print Book

1. Write one letter of the alphabet on a sheet of paper or one on each page of your child's spiral-bound notebook. To help your child recognize both uppercase and lowercase letters, write them side by side, or write a capital in the top corner of the page and a lowercase in the bottom corner of the page. If you are not using loose-leaf paper, punch holes in each page and place them in a binder.
2. Let your child look through the labels, flyers, and other print materials you have gathered to find something she is able to recognize and "read" for each letter. Have her cut the logo out and paste it on the correct page. It is okay if she finds more than one logo or word for each letter; the more she has in the book, the more she can practice reading. Once your child has exhausted the materials you have gathered, have her read the book to you.
3. Take note of the pages that don't have anything glued on them and ask her if she knows of something that starts with that letter. If she can name something (for example, a stop sign for *S*), it's time to take a field trip with your child and your camera. You can take a picture, print it out, and have her add it to her book.

Sight Word Twister

Some kids learn better when they're physically active, and this game is definitely one that will require your child and his friends to be active! It can be played outdoors by drawing a chalk playing board, but if you're concerned that rain might get to the chalk before your child does, you want to be able to play another day, or you only have grassy areas to play on, it's

a good idea to make a backup board on an old bed sheet, too. As your child starts reading more, the sight words he'll need to learn will change. In order to make the game sheet last longer, write the words on labels that you can stick to the squares instead of writing them in permanent marker. That way, as his sight words change, so can the game.

Skills Being Practiced

- Sight word recognition
- Fine and gross motor skills
- Left/right differentiation

What You Need

- Sidewalk chalk
- 4 colored markers
- Large flat area of sidewalk or an old light-colored flat sheet
- Index cards
- Large resealable zip-top bag

Get Ready to Play

1. Designate an area of space at least 4' wide by 5' long. Draw a rectangle on the ground in brightly colored chalk. If you're using a sheet, use a permanent marker to draw it.
2. Inside the rectangle, draw four columns. They will each be about one foot wide.

3. Divide those columns into five rows. You will now have a grid with twenty spaces.
4. Write one of your child's sight words in each space.
5. Choose a marker color and write the same sight words on a set of index cards. Repeat this three more times with three new colors. When you are done you will have written the sight words four times in four different colors. Each color stands for a different body part: right hand, left hand, right foot, left foot.
6. Shuffle the index cards so the words and colors are all mixed up, and place them in a large resealable zip-top bag.

How to Play

1. Review the sight words on the grid. Show your players the bag with the index cards, and have them work together to decide which body part each color stands for. Make a quick key on the bottom of your grid so the players can remember that, for example, a word written in red means they'll be working with the right hand.
2. Choose an order of players and draw the first card. The player must read the card, find the corresponding sight word on the game grid, and place the correct hand or foot on that word. After he has accomplished this, play moves on to the next player, and so forth.
3. A player is out of the game when he falls over, or cannot manage to contort himself into a new position. The last player on the board wins.

Label the House

Learning to read the names of everyday objects is not only part of learning to read, but also a part of learning to be a fluent reader. Here are some signs of a fluent reader:

- She decodes new words easily.
- She knows many core or sight words.
- She has the ability to figure out a new word via phonics and context (known as “word attack skills”).
- She reads smoothly, using good intonation.
- She self-corrects when something sounds wrong.
- She does not read under her breath.
- She understands, makes predictions about, and interprets what she has read.

Though not all the objects in your house are likely to be on your child’s sight word list, they are likely to play a role in her beginning attempts at writing. Kids write about what they know, and there’s nothing that your child knows better than her own house! There are a number of ways to have fun with this game. Sentence strips, which can be found in the office supply section of most chain stores, are ideal for this activity. They often have one side that is blank and one side printed with handwriting lines. Using the side with handwriting lines adds the component of helping your child see how the written letters fit within the lines.

Skills Being Practiced

- Word recognition
- Word matching
- Descriptive skills

- Fluency

What You Need

- Index cards or sentence strips
- Permanent marker
- Tape

How to Play

1. Walk around each room of your house with your child. As she names the household items, use a permanent marker to write the names on index cards or sentence strips. Attach them to the item, with tape, in an unobtrusive place. (After all, those cards may be there awhile!)
2. Each time your child sits on, opens, sleeps in, or otherwise uses one of these household items, draw her attention to the card and ask her to read it.
3. To make the game a little more interesting, you can even ask your child to use the word in a sentence, such as, “This is Mom’s chair and I’m not supposed to sit in it,” or “I hate using this toothbrush every night!”

Matching Items

Once your child seems to have a good handle on the household labels, it’s time to make the game a little more complicated. Make a second set of cards with the names of the household items, hand them to your child, and see if she can match them to the original items. Then, once she seems to

be able to do that, remove the original labels and ask her to put her set of cards in the right places.

Describing Items

You can up the ante once again by asking her to come up with a word that describes each of the items. Whether it be a “blue toothbrush” or a “itchy sweater,” let her find exactly the word she wants to use, write it on a card, and have her attach it in front of the item’s name.

It may be hard for her to read, but it will help her learn to add details when she tells stories, either out loud or in writing. As your child develops a stronger sense of storytelling, you may want to encourage her to mix the labels up a little and ask her to tell you under what circumstances you might have an “itchy toothbrush.”

Sight Word Wall Wallball

In a classroom, a word wall is a wall designated to display all the sight and core words children have learned (or will learn) over the course of the year. Some teachers make walls with removable sight words, from which a child who needs to know how to spell a certain word can take the word and put it back when he’s done, while other teachers’ sight word walls are static. They change only by addition, not subtraction.

It’s impractical for you to devote an entire wall of your home to sight words, but it’s not out of the realm of possibility that you could make a temporary sight word wall to get in a little learning and exercise. This game is best played outside against a flat wall with no windows, but you could also play inside with a softer ball. If you can’t find a good wall to

use either inside or outside, you can always tape the cards to the floor or ground, but it's easier for your child to read the words if they are oriented to his line of sight.

Skills Being Practiced

- Hand–eye coordination
- Gross motor skills
- Sight word recognition

What You Need

- Index cards or sentence strips (you can repurpose cards used in the Label the House game)
- Markers
- Masking tape (painter's tape if you're working inside)
- Ball (tennis ball for outside, softer ball for inside)

How to Play

1. Use the markers to write 20–25 sight words on index cards (see the table at the beginning of this chapter for sight word suggestions).
2. Attach the index cards to an outside wall using masking tape, or to an inside wall using painter's tape. Tape them far enough apart both horizontally and vertically that it's easy to see which word your child is aiming at.
3. Call out one of the words. When your child locates the word on the wall, let him throw the ball at the correct card. Repeat this until he's

had a chance to try to hit all of the words.

4. Next, let your child decide which words to aim at. Have him point to and read a word and try to hit it with the ball.

Sink the Sight Word Ship

This is played the same way as the game Battleship, but instead of sinking ships, the object of the game is to sink words. It's a game of strategy and spelling. If you don't have graph paper, it's easy enough to make some on a computer. Use a word processing program to make a table with 26 rows and 20 columns. When you print, make sure to choose the "landscape" orientation instead of "portrait," and check the "Fit to Page" box.

Skills Being Practiced

- Problem solving
- Word recognition

What You Need

- 2 manila folders
- 4 pieces of 26" × 20" graph paper
- 2 pencils
- 2 markers
- Sight word list
- Stapler

Get Ready to Play

1. Orient the manila folders lengthwise, with the crease at the top. When you open a folder, it should open up like a laptop. Place a piece of graph paper inside each of the folders so that when you close them, the graph paper is hidden. Staple the graph paper in place.
2. Locate the top row of boxes on the graph paper. This is the row just under the crease of the folder. Use a marker to write one letter of the alphabet in each box. This is your x-axis.
3. In the first column of boxes on the graph paper (the boxes going down the left-hand side), use the marker to write the numbers 1 through 20 in each box. This is your y-axis.

How to Play

1. Agree upon a set of no more than five sight words you will be using for the game. (As you and your child get more comfortable with this game, you can make it more challenging by adding more words to each round.) Each player should write the agreed-upon list on a piece of paper or index card, and keep it handy for reference.
2. Next, each player uses a pencil to write all of those words on the graph paper in his folder, using one box per letter. Since the object of the game is to make sure the other player doesn't sink your words first, it's best to use some strategy to make the words harder to find. It's okay to write the word vertically, horizontally, or diagonally. Writing the words backward is off-limits.
3. Take turns guessing coordinates and letters. For example, Player One may say "B4, A." If Player Two has the letter A in the correct box, he says "Hit." If there's no A in that box, he says "Miss." Once all the

letters of a certain word have been hit, a player must tell his opponent the word and that it has been sunk. The first player to discover all his opponent's words wins the game.

CHAPTER 5

Vocabulary

As your child begins to move beyond just recognizing and reading basic words, he's moving into a realm where context matters, and having a strong vocabulary makes it easier to understand words in their context. While technically learning vocabulary is about gaining knowledge about words and their meaning, there's much more to having a good vocabulary than just being able to define a word. It's also about knowing things like how to find out the meaning of words, understanding word roots, knowing that words can be combined to make new words, understanding that words can have multiple meanings, and that some words sound the same and mean totally different things.

Word Catchers

As your child begins to learn sight words, practice vocabulary, and look for high-frequency words in the world and print around her, she needs a way to do it without it feeling like work. It can be more than a little frustrating for both you and your child to use flash cards as a go-to learning tool, and it may even make your child less willing to read.

That's where a Sight Word Catcher comes in. Though to you a Sight Word Catcher might just look like a fly swatter with a hole in the middle of it, to your child it's a prop that gives her a creative way to learn those words. The practice book called for here should be a book in which the

print is the size your child normally reads. You'll need to have it handy to make sure you're cutting the window of the Sight Word Catcher the correct size.

Skills Being Practiced

- Word recognition
- Fine motor skills

What You Need

- Plastic fly swatter (unusually shaped or colorful is more appealing to your child)
- Ruler or a straight edge
- Marker
- Scissors
- Practice book

How to Make the Sight Word Catcher

1. Measure and mark a rectangular frame in the middle of the fly swatter. Remember that the window needs to be able to frame one word in your child's books, so you may also want to measure the average length and height of a word in the practice book. If you're unsure how large to make the window, try marking off a 2" × 1" rectangle—that's typically the correct size.
2. Poke your scissors in a hole near the edge of the rectangle you've drawn, and cut out the piece.

3. Try the Sight Word Catcher out on the practice book to see if you can “catch” a word in the window.

How to Play

1. Once you have the catcher made, you’re not going to be able to hold your child back from “catching” or swatting at words. After all, that’s the best part of the Sight Word Catcher.
2. You’ll need to be prepared to play along by pretending the word your child is trying to catch is going to fly away like a bug. That way you can give her permission to swat at the word quickly so it doesn’t get away. Here are some other ways to play along:
 - Keep a copy of your child’s latest spelling or sight word list handy. As you read books together, make sure both of you have access to the word list and the Sight Word Catcher. Whenever you see one of the words in the book, see who can catch the word first.
 - Frame the words of a story as you read to your child. It may slow down the book, but it will help her to understand that each word on the page helps to make up the sentences that tell the story. Don’t forget to stop once in a while and see if she can tell you what word you’ve caught.
 - Pick a word from the list. As your child reads the book and catches the word, count how many times it appears. Keep a weekly list of the books she reads, the word you’ve chosen, and how many time it appeared in each book. At the end of the week, you and your child

can see which book wins the Chosen Word Award. You can do this with multiple words at a time, too.

- Let her bring the Sight Word Catcher to the breakfast table. Once the meal is over and anything that could spill is out of the way, set her loose with her Sight Word Catcher, the cereal box, and the morning paper. See how many familiar words she can swat.
- Carry the Sight Word Catcher in the grocery store. Though you may worry about your child being a disruption as she catches words she knows on signs and packages, you can make staying calm and not knocking things over a condition of bringing it to the store. You might be surprised by how well behaved she is when she's on a mission!

Vocabulary Memory Game

This game is best played when your child has a set of vocabulary words he needs to learn. In school, this frequently happens when there are words that are specific to a theme or are found in a book he's reading. In real life, it might be a good way to introduce a vacation you're going on, or to teach your child about what you do for work.

Skills Being Practiced

- Word recognition
- Concentration
- Word–definition matching

What You Need

- Set of vocabulary words
- Markers
- Index cards

How to Play

1. Have your child write his vocabulary words on a set of index cards, marking the back of the card with an *X*.
2. Ask him to define each word, assisting him if he has trouble. Write the definitions on another set of index cards, marking the back of those cards with an *O*.
3. Have your child use each word in a sentence, in a way in which the meaning of the word can be gleaned from the context of the sentence. Write these sentences on a third set of index cards and mark the back of those cards with an exclamation point.
4. Pile all the index cards together and shuffle them well. Set them facedown on the floor in rows and columns of equal numbers, just as you would if you were setting up any other type of Memory game. The object of the game is to see who can gather the most sets of matching cards, in which each set contains the word, its definition, and the sentence in which it was used.
5. Player One turns over three cards, one with an *X*, one with an *O*, and one with an exclamation point. If any of the three cards match each other, the player may leave those cards facing up. If all three of them are a match, the player can take them all.
6. Player Two can either choose to look for the missing card in a set, or turn over three new cards. When all the cards are gone, the player

with the most cards wins.

Antonym or Synonym

Here are some essential words to know. *Antonym*: A word whose meaning is opposite to that of another words (e.g., “up” and “down”). *Synonym*: A word or phrase whose general meaning is the same as another word (e.g., “kind” and “nice”).

Many kids have trouble remembering the difference between antonyms and synonyms. Once they do remember, it still can be incredibly difficult to come up with ones for certain words. Playing the Antonym or Synonym game can help your child think more quickly on her feet. It’s a game that can be played formally at home, with paper and pencil, or just casually when you’re out and have a little time to spare.

Skills Being Practiced

- Vocabulary recognition
- Synonyms and antonyms

What You Need

- Pencil
- Paper
- Timer

How to Play: The Opposite or Same Brainstorm Game

1. This version of the game can be played with or without paper and pencil, and has no winners or losers. If you're trying to help your child learn antonyms and synonyms to a specific set of vocabulary words, then writing down the answers is a good idea. Otherwise, you can just have some fun with random words.
2. Begin with a word, and decide whether you'll be naming antonyms or synonyms.
3. Say the word, start the timer, and see how many opposite (or similar) words or phrases you and your child can brainstorm in one minute.
4. If you're using pencil and paper, you can each take your own piece of paper, write them down quietly, and compare when the time is up. If not, just shout out the words as they come to your mind.

How to Play: The 3-Minute Super Synonym-Awesome Antonym Game

1. This version of the game is a little more competitive and works particularly well if you have enough players to split into teams. Give each player or team a piece of paper and pencil. Divide the paper into two columns, and title them "Antonyms" and "Synonyms."
2. Decide on a starting word, either by having a neutral player name a word or by placing word cards in a stack and drawing one randomly.
3. Set the timer for 3 minutes. In those 3 minutes, each player or team has to write down as many opposite words and similar words as they can in each column.
4. When the timer goes off, choose one team to read its list. If the other team also has that word or phrase, both teams cross it off their list.

5. The team that has the most words the other team didn't think of is the winner.

How to Play: Am I Attracting Opposites or Staying the Same? Game

1. This version of this game is to be used with a list of spelling or vocabulary words. Give each player a copy of the vocabulary list, or post one where all the players can see it.
2. Player One chooses a word without telling any of the other players what the word is. Then he begins naming either antonyms or synonyms of the word.
3. The first person to figure out the word *and* identify whether Player One was using antonyms or synonyms gets a point and takes the next turn.
4. The game ends when someone reaches ten points.

The Portmanteau Game

A portmanteau word is made by combining the sounds and the meaning of two words. For example, *smog*, a smoky fog, is a portmanteau combining the words “smoke” and “fog.” In a world filled with words like smog and labradoodle, it's sometimes hard to know which words are real and which are made up. In this game, your child will not only decide whether words are for real or not, but also make up of his own unusual words.

Skills Being Practiced

- Vocabulary-building
- Understanding of semantic language
- Phonological awareness

20 COMMON PORTMANTEAUS

Component Word 1	Component Word 2	Portmanteau Word
Labrador	poodle	labradoodle
smoke	fog	smog
biographical	picture	biopic
emotion	icon	emoticon
glamour	ritz	glitz
fan	magazine	fanzine
car	hijack	carjack
breakfast	lunch	brunch
jeans	leggings	jeggings
spoon	fork	spork
web	log	blog
education	entertainment	edutainment
situational	comedy	sitcom
information	commercial	infomercial
net	etiquette	netiquette
friend	enemy	frenemy
tangerine	pomelo	tangelo
electronic	mail	e-mail
motor	hotel	motel
guess	estimate	guesstimate

How to Play: Name the Portmanteau

1. To play this version of the game you may have to do a little research, though the previous table provides you with some words that may help. First give your child two words that are actually part of a real portmanteau.
2. His goal is to guess what the word is when the two words are combined, and what is the definition of the new word.
3. If he gets stuck, give him the definitions of the original words. He may be able to work backward.

How to Play: Can You Name the Original Words?

1. This game is the exact opposite of the previous game. This time, you give your child the portmanteau word and its definition.
2. His job is to guess the words that were combined and the definitions of each word. Keep in mind that while amalgams of names like *Brangelina* (Brad Pitt + Angelina Jolie), are technically portmanteau words, it will be very difficult for your child to come up with definitions for the original words!

How to Play: What Am I Saying?

1. This version of the portmanteau game is bound to be your child's favorite, as it's his chance to come up with mangled words.
2. Each player has a chance to come up with his or her own unique portmanteau word. Player One says his word out loud and the other players must guess what it means and what words were combined to make the word. Any player who guesses correctly earns a point.

3. At any time, a player may challenge another player to use his word in a sentence to get a sense of context. As long as your child (or you) can defend your word, it can be counted.
4. For each word successfully defended, a point is earned. If a player is not able to use his word in a sentence, or explain how he created the word, he forfeits his turn to the next player.

Vocabulary Parade

Positional words are a part of your child's vocabulary that you may take for granted. After all, she may already know what you mean when you ask her to look for the toy *under* her bed or pick up the crayons *behind* the couch. There are more positional words than you might think of, so playing these vocabulary parade games can help your child learn some words you never even thought to teach.

Skills Being Practiced

- Understanding of positional words

What You Need

- Stuffed animals, plastic animals, or toy people
- Toy flag
- Tape
- Positional words to work with: *above, after, around, behind, beside, between, in, in front of, left, on, over, right, under, underneath*

How to Play: Outdoor Positional Parade/Scavenger Hunt

1. Take your child to a local park and set up an obstacle course. It doesn't need to be complicated; most playgrounds have all the equipment necessary for an obstacle course already. However, you may want to place some items (like sticks or balls) under, above, in, and behind picnic tables, slides, or trees.
2. Once you're all set up, tell your child she's going to play a game that is a little like Follow the Leader, but instead of following a person, she needs to follow your directions.
3. Review with her all the positional words she can think of, asking her to tell you what she thinks they mean. Remind her of any words she might have missed, and explain or demonstrate the concept.
4. Next, begin your parade. It might go something like this:

Climb up the stairs and sit on the slide to the left of you. What is behind you? Is there anything under you? Slide down the slide and go around the nearest tree. Look to the right of the tree and check behind the picnic table. What did you find? Now, run between those two sticks, throw the ball over the table, and crawl underneath the closest slide.

How to Play: Indoor Stuffed Animal Parade

1. Make sure your child has at least five animals to work with. Name the different types of animals with her to ensure you are both talking about the same animal when you speak.
2. Set two chairs a few feet apart in an open space in your home. These chairs represent the beginning and end of your parade. Ask your child to tape the toy flag to the chair that will be the *front* of the parade.

3. Now it's time to set up the parade. You can do this in a variety of different ways, but assuming your child has a cat, monkey, dog, lion, and tiger, your parade directions might go something like this:

Put the cat at the front of the parade and let the dog be last. The lion should be between the cat and the dog, but after the monkey. Place your tiger behind the lion.

EXTEND THE LEARNING

Play stuffed animal hide-and-seek to practice positional words. Hide your child's stuffed animals and direct her to find them using positional words to describe where they are.

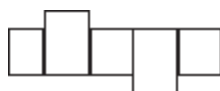
Word Shapes

Your beginning reader uses a number of skills to learn new vocabulary, but one you may not know about is the overall shape of the word. The overall shape the letters of a word makes, also known as a Bouma shape, is often distinctive enough that if a child can recognize the pattern the word makes, he can fit the letters into place.

It's not as complicated as it sounds. When you look at a word written on handwriting paper, some letters stay between the lines, some go above the line, and some go below the line. This provides the shape of the word.

The letters that stay within the lines are represented by a square, those that go above the line are represented by a rectangle that towers above the box, and the letters that go under the line are represented by a rectangle

that dips below the box. For example, the word “shape” itself looks like this:



Skills Being Practiced

- Visual vocabulary recognition

What You Need

- Pencil
- Paper
- Vocabulary/spelling list

How to Play

1. Have your child look at his vocabulary or spelling word list and draw the word shape around each word.
2. Draw an empty word shape for each word or visit a website like A to Z TeacherStuff (<http://tools.atozteacherstuff.com/printable-word-shapes-worksheets>) and use their online word shape generator.
3. Cut out each word shape, give your child a fresh copy of his word list, and see if he can match each word to its shape.

4. Take away the word list and see if he can figure out which word each shape represents.

CHAPTER 6

Reading Comprehension

As your child grows comfortable with being able to identify words when she reads them, she moves into a more complicated phase of reading in which she is expected to make sense of the words she reads as they fit together. Your child may be able to read “Read blue apple Monday sit” and know what each word means individually, but looking at the sentence as a whole, she’s not able to make meaning of it. That’s because it doesn’t have any meaning. A child who has good reading comprehension skills will be able to tell you that, as well as be able to tell you the meaning of sentences, paragraphs, and entire books that *do* make sense.

Make a Book Mobile

Your child's first book report assignment can be very stressful. It's hard to know what elements go into a book report, how much detail to go into, and how to present the information. You can circumvent this anxiety by practicing book reports at home with him. Making a Book Mobile to describe a book you've read together can be a fun way to explore the book further, and is a good way to prepare him for his first book report.

Skills Being Practiced

- Reading comprehension
- Analytical thinking
- Fine motor skills
- Written communication

What You Need

- Chapter book you and your child have read together
- 10 index cards
- Pencil
- Scissors
- String/yarn
- Coat hanger
- Hole punch

How to Play

1. Choose a simple chapter book to read with your child. Books like Barbara Parker's Junie B. Jones series or Mary Pope Osborne's Magic Tree House books are good ones to start with, because they have strong characters, memorable plots, and capture a child's imagination.
2. Read the book together, a few chapters at a time. When you've finished the book, talk about it a little bit. Ask: *Who are the main characters? What happened in the book? Where did it take place? What problem did the character(s) have to solve? What did you like about the book? What did you not like about the book?*
3. Tell your child that in answering your questions he has talked about all the things that make a good book report. Explain that you're going to put all that information together in one place so that someone who has not read the book will have all the information he needs to decide whether or not he would like to read it.
4. Gather the materials to make a Book Mobile. Give your child an index card and ask him to write the title of the book and the author on it. Punch holes in the top corners of the card and cut two pieces of string of equal length. String a piece through each hole and tie the card inside the coat hanger. Each piece of string should be tied to one arm of the hanger.
5. Ask your child how many main characters were in the book (typically it's one, but some, like the Magic Tree House books by Mary Pope Osborne, have two). Give him an index card for each character and ask him to draw a picture of the character on one side of the card.
6. Turn the card over and label it "Main Character." Have your child write the character's name and then dictate a few sentences that

describe the character's personality. Punch a hole in the top of the card and use a piece of string to tie it to the far left of the bottom bar of the hanger.

7. Give your child two more index cards, explaining that these are for the setting of the book, or where it took place. Have him draw a picture of the setting on one card. Label the other card "Setting" and have him dictate where and when the book took place.
8. Punch a hole in the bottom of the card with the drawing and one in the top of the card with the description. Use a small piece of string to tie these cards together, then punch a hole in the top of the drawing card and string it from the bottom bar of the hanger next to the Character card.
9. Grab three more index cards. These are for the plot of the book. Label the cards "Beginning," "Middle," and "End." Ask your child to tell you in three sentences or less what happened in the beginning of the book, and write it on the correct card. Do the same for the middle and end of the book. Punch holes in the top and bottom of the cards, and string them together in order. Tie them to the hanger next to the Setting card.
10. Make a "Conflict" index card. Have your child describe the problem in the story, and write down what he has to say. Punch a hole in this card and tie it to the hanger next to the plot cards.
11. Lastly, label an index card "Evaluation." This card is the one on which your child gets to express his thoughts about whether or not the book is worth reading. Tell him that you want him to convince you that you should (or should not) read this book. Write down his thoughts, punch a hole in the card, and tie it to the hanger.

Story Sticks

There are a number of different kinds of story sticks that can be used to increase reading comprehension and help your child learn to summarize the important elements of a story. These story sticks can also be used in a couple of ways. They are made from multicolored craft sticks, and can be used to retell a story your child has already read, or to tell her own story.

Skills Being Practiced

- Reading comprehension
- Analytical thinking

What You Need

- Multicolor craft sticks
- Permanent marker
- Small containers or resealable zip-top bags

How to Play

1. Separate craft sticks by color, and choose a different color to represent each element of a story: Plot, Character, Beginning, Middle, End, and Setting.
2. Place each color in a separate container or small resealable bag. You can use these sticks in one of two ways:
 - You can give your child one stick of each color after she has read a book, and ask her to write the

corresponding information on the stick. She then uses a small elastic or piece of string to tie the bundle together. Once she has a number of bundles, she can choose one, open it up, and try to remember what story it tells.

- You can use the story sticks to write information that doesn't correspond to a known story. Your child then takes one stick from each container and has to tell a story based on the information on the sticks.

Story Wands

Story wands are tools that you can use to check for understanding during or after reading a story with your child. They'll capture your child's imagination because they look like magic wands. Before you know it, she will be waving those wands at you, asking you to tell her about the book you're reading!

Skills Being Practiced

- Reading comprehension
- Analytical thinking

What You Need

- 8 fly swatters or foam wands (often found in multipacks at your local dollar store)
- Construction paper

- Markers
- Heavy-duty tape

How to Play

1. Cut eight circles of construction paper, using as many colors as you can, making sure the circles will fit on your foam wands or fly swatters.
2. On each circle, write one of the following questions/phrases:
 - What is the story about?
 - Who are the characters in the story?
 - Where does this story take place?
 - Can you guess what's going to happen next?
 - What's the problem in this story?
 - Can you talk about your favorite character/part of the book?
 - How did this story begin and end?
 - What happened in the middle of the story?
3. Tape each circle to one of the wands or fly swatters.
4. You can use the Story Wands while you are reading with your child by taking a quick break, holding a wand in the air, and waiting for her answer. Or, if you prefer, you can go over each question one by one when you've finished reading the story.

Comprehension Cube Dice Game

Reading comprehension cubes are great tools to get your child talking about what he's reading, and for you to talk to him about what you are reading. Remember, one of the best ways to raise a reader is to make your home a literacy-friendly environment. That doesn't just mean letting your child catch you reading; it also means sharing about your reading experiences with your child.

Skills Being Practiced

- Reading comprehension
- Analytical thinking

What You Need

- Reading comprehension cube template (see following)
- Markers
- White paper
- Glue or tape

How to Play

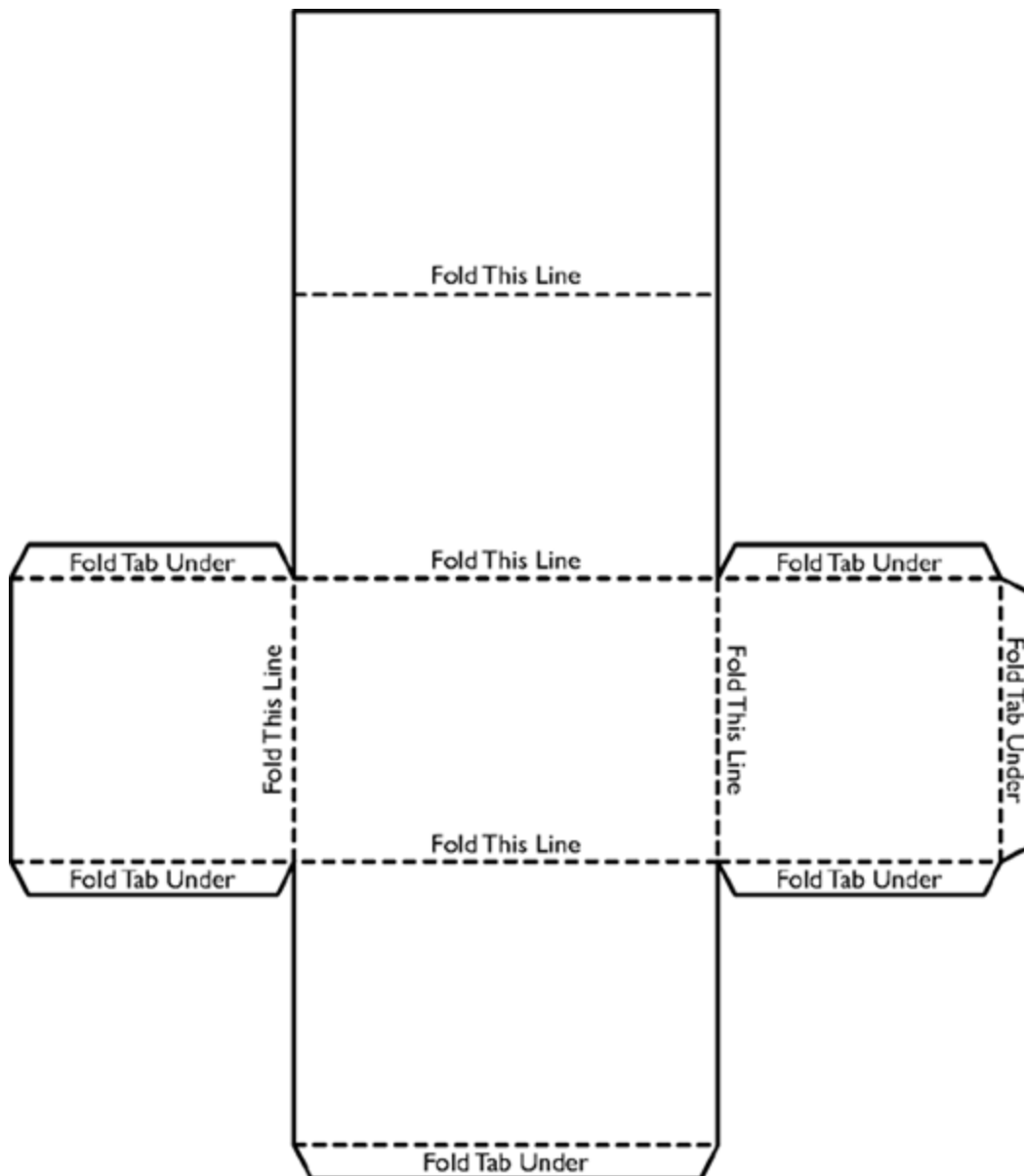
1. Make a copy of the reading comprehension cube template. Choose five of the following questions to write in the squares. If you want to use more than five questions, you may want to make multiple cubes.

- What new vocabulary did you learn while reading this book?

- Would you recommend this story to a friend? Why, or why not?
- Did this book make you want to learn more about a certain topic?
- Summarize the book in five sentences or less.
- Did the illustrator make the characters look like you expected?
- Who is the main character in the story?
- Do you think this story could happen in real life? Why, or why not?
- Describe the setting of the story.
- What was your favorite part of this book?
- Did anything in the story make you cry? Make you laugh?
- Was there a character you identified with? Why?
- What was the main conflict of the story?
- How would you describe the genre?

2. Put the cube together by folding on the indicated lines and gluing or taping the tabs in place.

3. Take turns rolling the dice and answering the question that it lands on.



What's My Story?

This game is particularly a lot of fun to play if you have children of all ages who have grown up reading the same stories. You can play the game a

number of different ways, all of which can be combined to make allowances for the different abilities of different ages.

Skills Being Practiced

- Reading comprehension
- Analytical thinking
- Verbal communication
- Written communication

What You Need

- Pencil
- Slips of paper
- Bowl
- Timer

How to Play

1. Sit down with all the players and brainstorm stories or books that everyone has read. As you agree on each one, write the title on a slip of paper and put it in the bowl.
2. When the game begins, the first player picks a slip of paper from the bowl. He has 3 minutes to act out, describe, or draw the story.
3. If another player guesses the title of the story, that player gets a point and has the next turn. If, after 3 minutes, nobody has guessed the player's story, the other players can ask "yes/no" questions about the plot, characters, and setting to get more information. Any player who

is able to guess the story after the question-answer period gets a point. If nobody guesses the story, the player who stumped them gets a point.

4. The player who gets to five points first is the winner.

Venn Versions: Comparing and Contrasting Stories

One of the neat things about picture books like fairy tales and fables is that there are so many authors who have rewritten and recreated those stories with their own personal flair. For example, Jon Scieszka's book *The True Story of the Three Little Pigs* tells this version of the classic fairy tale from the perspective of the wolf, who happens to be a tabloid reporter. The basic components of the story are the same as the classic tale, but the reasons behind the wolf's actions are different. The wolf is an unreliable narrator—that is, a storyteller who can't be trusted. The unreliable narrator has his own biases or motives for misrepresenting the story. It is the reader's job to discover what is true and what is not true. Reading different versions of the same story can help your child learn about writing devices like perspective and unreliable narrators.

Skills Being Practiced

- Reading comprehension
- Analytical thinking
- Perspective-taking
- Visual organization skills

What You Need

- 2 markers, different colors
- Large piece of paper or poster board
- 2 versions of the same story

How to Play

1. Go to the library or bookstore with your child and find two different versions of the same picture book or story. Read the stories together, discussing the similarities and differences.
2. Use one of your markers to make a large circle on a piece of paper. Use the other marker to make another circle that overlaps the first one slightly. There should be an oval in the center where the two circles overlap. This is called a Venn diagram.
3. In the top of the first circle write the title of the first story you read. In the top of the second circle, write the name of the second story. In the overlap space, write “Things that are the same.” Begin with that section and brainstorm with your child all the things about the two stories that were the same. Write them in the oval.
4. Next, think about the things that were unique to, or different in, the first version of the story. Write those things in the first circle. Do the same with the second story and circle.
5. When you are done, your child will not only know but also be able to see how the two stories compare.

Grocery Lists

You may find going to the grocery store a chore, and that bringing your child with you makes it even harder. That may be the case, but with a little preplanning, going grocery shopping can be a little more exciting and a lot more educational for your child. There are a number of opportunities to help promote reading, writing, and sequencing skills.

Skills Being Practiced

- Environmental print
- Inventive spelling
- Handwriting
- Shape and color recognition
- Analytical thinking skills

What You Need

- Safety scissors
- Glue stick
- Blank paper
- Grocery store flyer
- Crayons
- Lined paper
- Pencil

How to Play: List Making

1. Give your child a pair of safety scissors, a glue stick, some blank paper, and a flyer from the grocery store. You may also want to have

some crayons handy in case your list includes things that aren't pictured in the flyer.

2. As you write your grocery list, say the items out loud so your child has an idea of what types of items you need to buy. Have him cut out pictures of items he thinks are on your list and glue them to his paper.
3. Compare his picture list to your written list and give it back to him.
4. Read off your items one by one and have him make a mark next to the item on his own list. Repeat your list slowly to give him a chance to find or draw pictures of items he missed the first time around.
5. When you go to the store, both of you can bring your lists. It cuts down on the chance you'll forget things, and keeps him involved while you're shopping.

How to Play: Write-Your-Own Lists

When your child gets a little older, cutting out pictures may seem too babyish. If he thinks he can handle it, give your child a piece of lined paper and a pencil and let him write the grocery list as you dictate. The younger the child, the more likely he is to use inventive spelling to make a list. If that's the case, you'll need to write a companion list to take with you. As your child gets older, his list will become more legible.

How to Play: Lists From Recipes

1. In order for this type of grocery store list to work, you'll need to do some meal planning ahead of time. You can do this with or without your child, depending on how much input you want, but once you have your meals planned, give your child the recipes for them.

2. Have him make a list of the ingredients you'll need to make the meals, and then check the house to see what you already have on hand.
3. Once he's done the research, he can write you a grocery list based on your meal plan.

Grocery Store Scavenger Hunts

The grocery store is a great place to have scavenger hunts. There are so many different things to look for and at, and there are so many different ways to organize a scavenger hunt. When you're looking at it from a perspective of literacy, the types of hunts you can do with your child practice skills she'll need to know for sequencing, and—if you're really ambitious—label-reading skills. Here are just a few ways to run your hunt.

Skills Being Practiced

- Environmental print
- Shape and color recognition
- Analytical thinking skills

What You Need

- Glue stick
- Index cards

How to Play: Color Hunt

1. The colors you ask your child to find in the store will vary depending on how old she is. However, no matter her age, it's probably a good idea to make it clear that she needs to point out the colors of items, not take them off the shelf to show you.
2. Younger children can be challenged to find at least five items each to match the colors in an 8-pack of crayons. Those colors are red, orange, yellow, green, blue, purple, black, and brown. Your older child might enjoy the challenge of looking for more unusual hues, like teal, cerulean, or aubergine.

How to Play: Shape Hunt

It may seem a little below your child's level to look for items of different shapes in the grocery store, but you can think beyond the obvious. Of course, it won't be hard to find circles, squares, triangles, and rectangles, but it may be a little more difficult to find the more complicated shapes like hexagons or decahedrons. If your child knows her geometric shapes, you can set her to work looking for cones, cylinders, and pyramids, too.

How to Play: Hunt for Food Labels

1. This type of scavenger hunt is a little more sophisticated and may take more planning on your part, but once you've done the groundwork you can save what you've done and use it over and over again. Start by saving the labels or logos from the foods you eat, and glue them onto index cards.
2. The next time you need to go shopping, scan through those index cards to see which items you know you'll need to buy. Give those cards to your child at the store and let her take her own grocery cart

to go find them. Make sure she understands it's not just the brand she needs to look at, but the size of the box or can and other specifics as well.

CHAPTER 7

Sentence Building

The next step for a fluent reader is to work toward becoming a fluent writer. Fluent writing is composed of just as many different elements as fluent reading. The first step to becoming a fluent writer is the ability to build a great sentence, and what separates a great sentence from a good sentence is detail. Sentence-building activities can help your child learn to add detail, and understand how important detail is for conveying a complete idea.

Sentence Stacks

There's no better way to teach your child about sentence building than by literally building sentences. Because LEGO bricks are stackable, it's very easy to show your child how you can "stack" details onto a basic sentence. However, the object of this activity is to help him learn to make better sentences, not to challenge his fine motor skills. If your child has difficulty with fine motor skills, it's better to use Mega Bloks than LEGO bricks. They are bigger and easier to manipulate.

Skills Being Practiced

- Sentence building
- Analytical thinking

- Basic parts of speech
- Fine motor skills
- Sorting

What You Need

- White sticky labels (or slips of white paper and tape)
- LEGO bricks or Mega Bloks
- Markers

Get Ready to Play

1. Have your child separate the blocks into piles by color. Once they are separated, have him sort each color into piles of small, medium, and large blocks.
2. Choose one color to represent verbs, one to represent nouns, one to represent adjectives, one to represent articles, and one to represent adverbs.
3. Brainstorm nouns with your child, writing each word on a label. Then do the same for the other parts of speech.
4. Stick the labels to the smooth side of the appropriately colored blocks. Make sure to leave a few blocks representing each part of speech unlabeled, so you can demonstrate how to build sentences later.
5. Ask your child to make noun towers, verb towers, adjective towers, article towers, and adverb towers.

How to Play: Building Sentences

1. Create small labels for articles such as a, an, the, this, and that. Stick these labels on the smallest blocks, so your child can visualize them as small parts of the sentence.
2. Demonstrate how to build a basic sentence, using an article, noun, and verb. For example, your sentence may say, “A dog runs.” If you have a LEGO table or LEGO mat, build sentences from left to right, just as your child would read them. Otherwise, build your sentences in stacks from top to bottom. In that case, your LEGO stack will have the word “runs” on the bottom, the word “dog” in the middle, and the word “A” on top.
3. Ask your child to build a basic sentence.
4. Next, ask her to think about building onto that sentence. For instance, if her LEGO stack says, “The alligator ate,” ask questions like: *What color is the alligator? What did the alligator eat? How did the alligator eat?* By the time you’re done asking questions, she may have built a sentence as complicated as, “The green alligator sloppily ate the quick fish.”

EXTEND THE LEARNING

Challenge your child to build sentence stacks as tall and as complicated as she can make them, connecting sentences to make paragraphs and short stories, if she is able.

The Incredible Expanding Sentence

Incredible Expanding Sentences (also known as sentence pyramids) are a good way for your child to visualize how adding information to a sentence

can make that sentence grow from the ordinary to the extraordinary. This activity can be done on paper or a whiteboard.

Skills Being Practiced

- Sentence building
- Analytical thinking
- Basic parts of speech

What You Need

- Large piece of paper/poster board or a whiteboard
- Markers/dry-erase markers

How to Play

1. Begin by writing the numbers one through six down the left-hand side of the paper or whiteboard. Write a small sentence on the first line, such as: “I saw a boy.”
2. Ask your child to add a word describing the boy. (“I saw a small boy.”) Write this sentence on the second line.
3. Next, add a word describing what the boy is doing (“I saw a small boy running.”) and write that sentence on the third line.
4. Continue taking turns adding words to the sentence until you’ve created six or seven sentences. When you are done, your child will see how building onto that sentence made the sentence expand. It should look like a set of stairs like this:

I saw a boy.

I saw a small boy.

I saw a small boy running.

I saw a small boy running away.

I saw a small boy running away from a dog.

I saw a small boy running away from an angry dog.

Senseless Sentences Game

The Senseless Sentences game shows your child that no matter how ridiculous a sentence sounds, as long as it has a beginning, middle, and end, it is still a complete sentence. She'll be giggling so hard she won't even notice she's learning.

Skills Being Practiced

- Sentence building
- Reading

What You Need

- 3 different colors of index cards or sentence strips
- Marker or pen
- Senseless Sentence Parts (see the following table or create your own)

How to Play

1. Write beginning parts of a sentence on one color card or sentence strip, the middle of a sentence on a second color, and a sentence ending on the third color.
2. Separate the cards into beginning, middle, and end piles, and shuffle them. Place the piles facedown in front of your child. Explain that sitting in front of her is everything she needs to make sentences. Tell her all she has to do is take a card from each pile to build a sentence.
3. Have her pick a card from each pile, and put the sentence together. Ask her to read the sentence to you and tell you whether or not it makes sense. If it doesn't make sense, ask her to tell you whether she believes it is a complete sentence. She may be surprised to realize that even though the sentence is senseless, as long as it has a beginning, middle, and end to it, it is still a complete sentence.
4. Turn all the cards over so she can read them, and challenge her to make the most senseless sentence she can.

SENSELESS SENTENCE PARTS

Beginnings	Middles	Endings
My mother	ate	to get to the moon
The cute boy	wanted	to run away
His grandma	decided to	make cookies
The goofy dog	ran to the door	to make the bus
A little rhinoceros	caught	in the snow
My father	rode my bicycle	to the mall
A blue car	drove down the road	without stopping
The pumpkin	made soup	in the rain
My best friend	slept in the dirt	to go to school
That big bowl	sang a song	to scare his sister
A tiny girl	grew	in the river
My annoying sister	fell to the floor	while I laughed
Your little brother	flies	to keep warm
My library book	meowed quietly	to get to work
An airplane	washes dishes	so she can go to the store
The truck	growled	under the bed
A strawberry	flew away	so I could see it
That girl	was in a hurry	to get to the restaurant
The teacher	waits	so she can go home
His cat	is sad	because he misses me

Transition, Comment, or Question

A transition is a word or phrase that is used to help connect ideas in sentences. They are not always easy for kids to identify. Examples of transition words and phrases include *for example*, *accordingly*, *for the most part*, *in other words*, and *as well as*. When it comes to sentences, one thing that parents often take for granted is that kids can tell the difference between various types of sentences. That's not always true.

In fact, many children have a hard time distinguishing between a comment, a question, and even a transitional phrase. This quick game doesn't require any materials and can be played wherever you are as a way to reinforce your child's understanding of transitions, questions, and comments.

Skills Being Practiced

- Parts of speech
- Sentence recognition

Get Ready to Play

1. Tell your child that you are going to play a game in which you say something and he has to decide if what you said is a transition, comment, or question. Explain to him that a comment is designed to provide somebody with information or an opinion. It may help to tell him that when you make a comment the sound of your voice stays the same throughout the entire sentence. (You can mention that the sentences you used to explain this were examples of comments.)
2. Next, remind him that a question is used to get information or find out someone's opinion; when you ask a question your voice lifts up at the end.
3. Lastly, tell him that a transition is used to join ideas together in a sentence. Explain to him that when you say things like "for example," or "in my opinion," you are using a transition phrase.

How to Play

1. Now you're ready to play! Simply say something to your child. It doesn't matter how silly it is or how ridiculous you sound. The object is to see if he knows whether what you said is a transition, comment, or question.
2. When he identifies ten in a row correctly, it's time to switch it up.
3. This time, you say one of the types of sentences to him (transition, comment, or question) and it's his job to give you an example of whichever one you've chosen.

Quick, Change This Sentence!

Like the classic game of Telephone, this game is more fun when it's played with a larger group of people, because the end result is so funny. It is a great game to play at the park, at the beach, or in the car. It doesn't require any preplanning or materials, and helps your child learn how changing just one word can change the entire meaning of a sentence.

Skills Being Practiced

- Concentration and memory
- Problem solving
- Word manipulation

How to Play

1. The object of this game is to keep a sentence in play as long as possible. The first player speaks a sentence. The next player can change only one word to make a new sentence.

2. This continues until you have a completely new sentence without any of the original words remaining, or until a player cannot think of a way to change the sentence. The longer a sentence you start with, the longer the game can stay in play. Don't be surprised if you are able to stick with the first sentence for a very long time.
3. Make sure you're clear about where you stand on using scatological references (off-color references, potty humor, etc.) or other bodily functions. The game can deteriorate quickly if you don't have a rule about these types of things.
4. Here's an example of how the game might go:
Player One: The girl sat in the chair reading a book.
Player Two: The girl sat in the chair reading a menu.
Player Three: The girl sat in the restaurant reading a menu.
Player One: The cow sat in the restaurant reading a menu.

Word Cootie Catchers

Cootie catchers (or origami fortunetellers, as they are sometimes known) have provided generations of children with hours of fun. This activity requires more adult help than most. The hardest part of making this type of cootie catcher is putting the words in the right place so that when the Word Cootie Catcher is folded, your child will find the words and directions under the correct flaps.

Skills Being Practiced

- Sight/spelling word recognition
- Fine motor skills

- Spelling
- Vocabulary use

What You Need

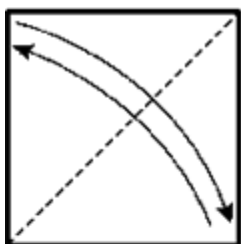
- Paper
- Pencil
- Scissors

How to Play

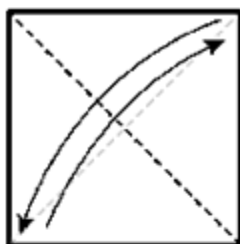
1. Use the directions on the following page to fold a cootie catcher.
2. Unfold the paper and place it on a flat surface. You will still be able to see the folds, which is important in writing the words in the correct spaces.
3. In the illustration, you will notice that the middle of the paper is folded into a diamond shape. Surrounding that diamond are the four squares that make up the corners of the paper. There are also six small triangles, one on either side of the four points of the diamond.
4. Beginning in the top left triangle, move clockwise to number the triangles 1 to 6. Ask your child to write one of his spelling words in each numbered triangle.
5. Look at the paper again. You'll notice that inside the middle of the large diamond is a square made up of four larger triangles. The points of those triangles are right in the middle of the paper.
6. In the top larger triangle (the one with the point down), write the phrase, "Use in a sentence." Turn the paper so the next triangle's point is down. Write: "Spell with your eyes closed." Turn again and

write: "Name a rhyming word." Turn the paper to write "Define the word" in the last triangle.

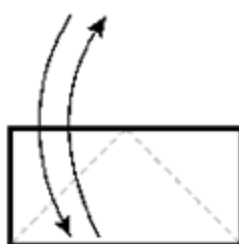
7. Turn the paper over so all the words are facedown, decorate the corner squares, and write a random number on each square.
8. Refold the fortuneteller, and have your child put his thumbs and forefingers in to hold it.
9. Pick a number from those your child has written and start playing the Word Cootie Catcher game. If you don't remember how to play, it's easy: You open and close the cootie catcher like a mouth, moving back and forth in rhythm as you count up to the number you picked.
10. On the last move, leave the Word Cootie Catcher open so you can see the spelling words your child wrote.
11. Ask your child to pick a word, say the word out loud, and then spell it, moving the Word Cootie Catcher with each letter he says.
12. Have him choose another word and pick up the flap to see one of the phrases you have written. The phrase revealed directs his next move.



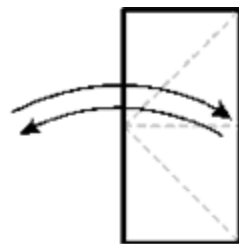
Step 1



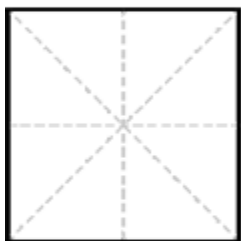
Step 2



Step 3



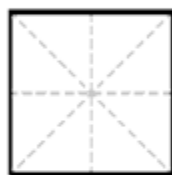
Step 4



Step 5



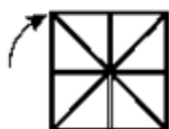
Step 6



Step 7



Step 8



Step 9



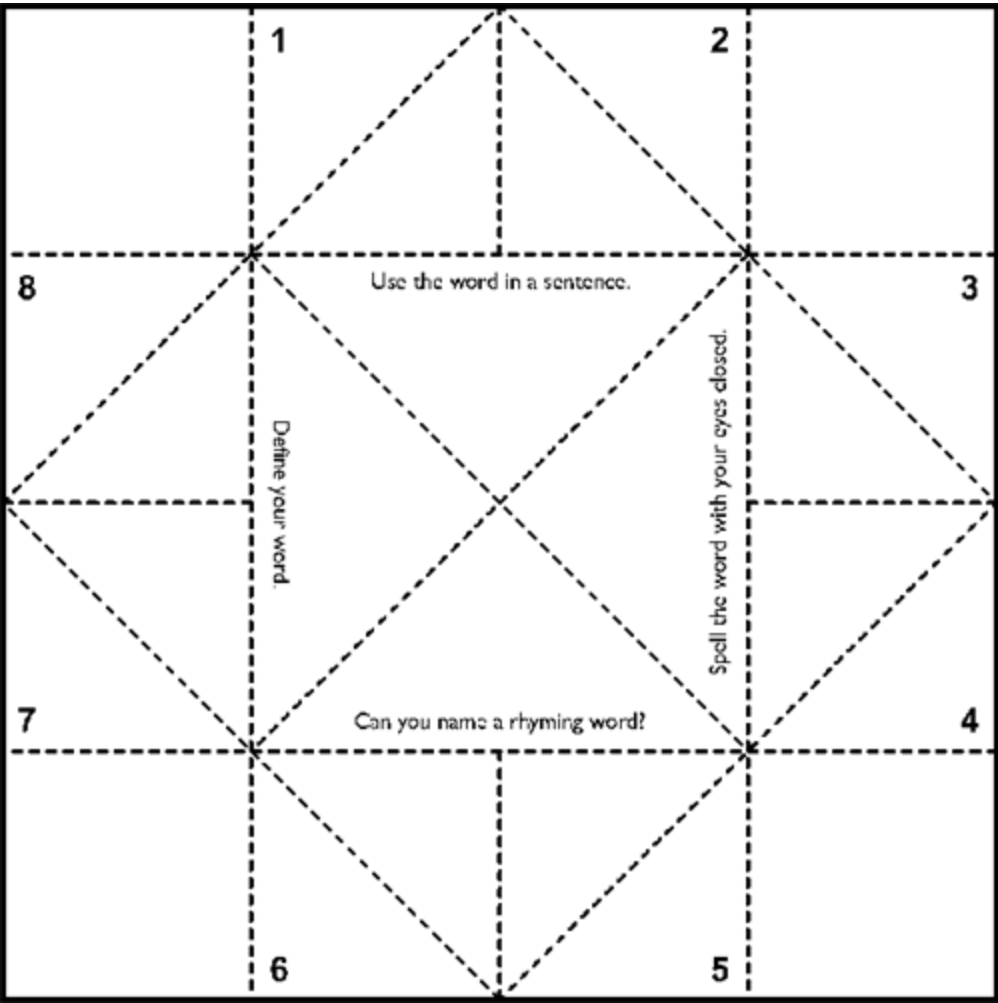
Step 10



Step 11



Step 12



CHAPTER 8

Storytelling

As your child gets more comfortable using language, both verbally and in writing, one of the more important skills she will begin to develop is the ability to tell a story. Storytelling isn't the same thing as creative writing; it's a key skill that helps your child develop as a writer. Good storytellers are able to tell *and* write a story, using lots of details to paint a vivid picture that makes the reader curious about the characters and what is going to happen to them.

All about Me Glyph

Glyphs are pictorial representations of stories or other data. A glyph is a fantastic way to communicate a story without actually telling the story. As you and your child draw pictures of yourselves in this activity, you will be telling the story of who you are in pictorial form. In the end, you'll both be able to learn new things about each other by interpreting the details found in your self-portraits.

Skills Being Practiced

- Data collection
- Data interpretation
- Critical thinking

- Storytelling
- Reading legends/keys

What You Need

- Paper
- Pencil
- Crayons or markers

How to Play

1. Explain to your child that you are each going to draw a self-portrait following a very specific set of directions. Let him know that when you are finished, he will be able to look at your picture and use the directions to tell a story about you, and that you will be able to do the same with his picture.
2. If your child is able to read well, give him a piece of paper and a copy of the All about Me Glyph Key that follows. If your child is a beginning reader, read the key to him, making sure to read only one direction at a time.
3. When you are finished with your drawings, exchange them and use the key to tell the other person's story.

All about Me Glyph Key

1. **Face Shape:** If you are a girl, draw a triangle shape for your head. If you are a boy, draw a square-shaped head.

2. **Eyes:** If you like getting up early in the morning, make big circles for your eyes. If you like to sleep late, draw small circles for eyes. Color the eyes the same color as your eyes. Draw glasses if you wear glasses.
3. **Eyelashes:** Draw the same number of eyelashes on each eye as the number of sisters and brothers you have. For example, if you have two sisters and one brother, each eye should have three eyelashes. If you are an only child, don't draw any eyelashes.
4. **Eyebrows:** If you like to play outside more than inside, make semi-circle (curved) eyebrows. If you like to play inside best, make triangular (pointy) eyebrows.
5. **Nose:** Draw a triangle nose if you have a pet. Draw a square nose if you don't have a pet.
6. **Mouth:** Draw a red smiley mouth if you are happy today. Draw a red frowning mouth if you are sad today. Make a red straight line for a mouth if you aren't sure how you feel today.
7. **Ears:** Draw round ears if you like chocolate ice cream best. Draw pointy ears if you like a different flavor of ice cream better.
8. **Hair:** Draw one strand of hair for each year of your age. (Moms and dads can count by fives or tens if it is easier.) If your hair is curly, make the strands like corkscrews. If your hair is straight, draw straight lines.
9. **Shirt:** Draw a shirt and color it your favorite color. Figure out the number that corresponds with the month in which you were born, and draw that number of buttons on your shirt. For example, if you were born in January, you need to draw one button. If you were born in May, you need to draw five buttons.

10. **Pants:** Draw a pair of pants and color them green if you are the oldest child in your family. Color them blue if you are the middle child. Color them brown if you are the youngest child. Color them red if you are an only child.
11. **Feet:** Draw shoes if you like springtime best. Draw bare feet if you like summer best. Draw sandals if you like autumn best. Draw boots if you like winter best.
12. **Accessories:** Add earrings if you have your ears pierced.

Comic Strip Sequencing

Comic strips provide a very organized way for your child to practice telling a full story by putting stories in order. With this sequencing activity your child can either tell the story the way the artist intended it to be told, or tell it her own way.

Skills Being Practiced

- Sequencing
- Critical thinking
- Storytelling

What You Need

- Comic strips from the newspaper (or printed from online sources)
- Envelopes
- Scissors

- Glue
- Blank paper

How to Play

1. Print or cut out a number of simple comic strips, looking for strips in which the story is clearly told by the dialogue or easily inferred by the pictures.
2. Cut each strip into individual squares. Put the squares of each strip in its own envelope.
3. Challenge your child to take the squares out of each envelope and reconstruct the comic strip in the correct sequence, using the dialogue and images as context clues.
4. When your child has put a comic back together, ask her to tell you the story in her own words. Keep in mind that a beginning reader who uses the pictures to sequence may not put the pictures in the order you expect. As long as your child can tell you a coherent story justifying how she has sequenced the pictures, there's no need to correct her.

Story Stone Soup

This activity combines a nature walk, a craft activity, and the concept of the classic tale *Stone Soup* to give your child a creative way to practice his storytelling skills. Since you'll need to gather and create your story stones before using them, when you first try this activity it may spread out over a couple of days. Once the stones are collected and made, though, you'll be able to pick them up anytime you're looking for something fun to do.

Skills Being Practiced

- Sequencing
- Critical thinking
- Storytelling
- Eco-mindedness

What You Need

- Old magazines, clip art, or stickers
- Collection of flat medium-sized stones
- Large pot
- Water
- Paper towels
- Glue gun
- Scissors

Get Ready to Play

1. Take a nature walk to gather stones for your Story Stone Soup. Bring a cooking pot with you to carry the stones. Explain to your child you're looking for stones that can fit in the palm of his hand and have a flat surface on one side. Collect approximately 10–20 stones.
2. Bring the stones inside, and fill the cooking pot with water. Let your child put his hands in the pot and “scrub” the stones until most of the dirt and debris has been removed. Drain the water and place the stones on paper towels to dry.
3. While the stones are drying, look through clip art images, catalogs, magazines, or newspapers with your child and help him choose a

- wide variety of animals, items, and settings to cut out.
4. Cut closely around the perimeter of the images. That way, when they are glued to the stones there won't be a lot of distraction in the background. Each stone should only represent the image on it. For example, if your child cuts out a turtle, make sure there isn't any water or sand in the background, just the image of the turtle.
 5. When the stones are dry, use a hot glue gun to glue one image to each stone. (Hot glue guns should only be handled and used by adults.) The glue itself gets very hot, so keep the stones away from your child until the glue cools.

How to Play

1. Remind your players of the story *Stone Soup* or read it to them, making sure to emphasize that each character made the soup better by adding his own ingredient.
2. Spread out the Story Stones and explain that each stone has its own way to add flavor to the story. Have the first player choose a stone and begin telling a story using the image on it. If, for instance, he picks up the stone with a turtle on it, the story might begin: "Once upon a time, there was a turtle ..."
3. As the player tells his story, each time he starts to falter or needs a little help, he can choose another stone to add a new element to his story. Once he takes a new stone, the first stone goes back into the cooking pot. At the end of his story, all of the story elements will be in the cooking pot.
4. Take the stones out and give them to a new player who can then tell a different story using the same "ingredients."

Round Robin Storytelling

Round robin storytelling isn't a new concept. It's used around campfires and in classrooms across the world. It's a simple way to tell a story from a number of different perspectives, requires no preparation or props, and can be played for hours on end. Before starting the game, set some ground rules about what type of information is acceptable to add to the story. You may, for instance, want to have a rule about not using bathroom words or related concepts, about how many sentences each player will add at a time, or that no player can change or criticize another player's contribution to the story.

Skills Being Practiced

- Narration/storytelling
- Creative thinking
- Turn taking
- Vocabulary building
- Memory

How to Play

1. Gather all your players in a circle. Explain that you are going to work together to tell a story, a few sentences at a time.
2. Begin your story with a clichéd phrase such as, "It was a dark and stormy night ..." or "Once upon a time, far, far away ..."
3. The next player then adds to the story in a way that maintains the flow and makes sense to the story. She must stop in the midst of an exciting part of her addition and pass the story on to the next player.

4. This continues until the story comes to a natural conclusion or devolves into a ridiculous mess that can't be redeemed.

CHAPTER 9

Creative Writing

Once your child has begun to become a more focused storyteller, he's probably becoming a more focused creative writer, too. Creative writing might be a little harder for your child than other types of writing because the story comes from his imagination, not from direct experience. When kids begin the creative writing process, they often need a lot of prompting to add detail to the story and the characters. The activities in this chapter can help your child learn those skills. If your imaginative child can tell wonderful stories but is struggling with creative writing, the problem may lie with the physical act of writing. Children whose fine motor or organizational planning skills are not as developed as those of their peers may have trouble physically writing down their thoughts. If you think this is the case with your child, see if dictating to you or writing on a computer breaks his writer's block.

Fortunately/Unfortunately

While some people play this game as a storytelling game, it can be used as a creative writing activity, too. The nice thing about the Fortunately/Unfortunately game is that it practices thinking on your feet more than anything else, which takes away some of the pressure of writing a coherent story line.

Skills Being Practiced

- Narration/storytelling
- Creative thinking
- Situational thinking
- Vocabulary building

What You Need

- Paper and pencil, or a word processing program

How to Play

1. Tell your child you are going to work together to write an adventurous story with lots of twists and turns. Ask your child if he knows what the words “fortunately” and “unfortunately” mean. If he doesn’t, explain to him that “fortunately” is a transition word used to introduce the idea of something lucky or good coming up, while “unfortunately” is a transition word that is used to introduce the idea of something unlucky or not so good happening.
2. Tell your child that in this story, when a fortunate thing happens to the character, an unfortunate event then occurs as well.
3. Work together to come up with the main character, each of you contributing some information about the character’s physical appearance and personality traits, so that you both know a little bit about whom you are writing.
4. Start your story on a piece of paper or the computer by writing a sentence of fact about the character. Read your sentence out loud,

- then pass the paper (or keyboard) to the next player, who must then add on to the story with a sentence beginning with “Unfortunately ...”
5. The next player then follows that sentence with one that starts with “Fortunately ...” This pattern continues until your story runs out of steam or the players do. Your story might start like this:

One day Henry bought a red balloon. Unfortunately, it was a very windy day and the balloon blew away. Fortunately, it got stuck in a nearby tree. Unfortunately, Henry was afraid to climb trees. Fortunately, his friend was right nearby.

EXTEND THE LEARNING

Challenge your child to write a biographical Fortunately/Unfortunately story based on the events of his day.

Character Building: What’s His Story?

When you hear the words “character building,” you might automatically think of activities that help your child to become a more sensitive and compassionate person. While that is one way of building character, when it comes to creative writing, there’s another kind of character building—literally building a character. This activity is a lot of fun, because it gives your child a chance not only to be a detective of sorts, but it also gives an opportunity to people watch, an activity that may not always be encouraged.

Children don’t always understand the nuances between subtle people watching and outright staring. Make sure to explain to your child that it’s

okay to watch people briefly to get a sense of how they dress, walk, or talk in order to get some ideas for story characters, but that being stared at makes most people feel uncomfortable.

Skills Being Practiced

- Observation
- Character creation
- Situational thinking
- Storytelling
- Data collection

What You Need

- Pencil
- Small notebook or a clipboard and paper

Get Ready to Play

1. Before embarking on your adventure, explain to your child that her mission today is to find at least one person about whom she could write an interesting story. Let her know that together, you'll be going to a place where there are a lot of different kinds of people (such as a park or a mall) and all you're is going to do is to find a spot to sit, observe, and take notes about some of the people you both see.
2. Explain to her that she is going to take notes on what the person looks like, what he is wearing, who he is with, what he is holding, and anything else of interest, but that she is not going to make any contact

with the person she sees. Instead, she's going to use her imagination to make up the rest of that person's story.

How to Play

1. Take two pads of paper and pencils to a park or mall. Set a limited amount of time to sit with your child—anywhere from 15–45 minutes, depending on her attention span—and each take notes about the people you see around you.
2. Go over your notes with your child and see if either of you noticed some of the same people. It's particularly interesting to see whether there are things one of you noticed about a person that the other missed.
3. Each one of you should choose the most interesting of the people you observed, and use your notes to start building a background for the character. It's time to put your child's imagination to work, so let her know there is no right or wrong answer. In addition to the traits she's already observed, ask her to write down:
 - What is the basic information about this character?
What is his name? What does he do for work? Does he have a family? What else does the reader need to know about him?
 - What is the problem her character is facing or needs to solve?
 - What are the traits the character has that will allow him to solve his problem, or that will interfere with him solving the problem? For example, does he need

to do something very physically challenging and he's usually very clumsy?

- Are there any villains, allies, or mentors her character may have to help or hinder him along the way?

4. Once you've both had a chance to create a full sketch of your characters, read them to each other. You can then either set the character sketches aside for another day, or, if your child is so inclined, use them to start writing stories right away.

EXTEND THE LEARNING

Ask your child to write another character sketch based on someone she saw, and then make a connection between that character and her first character. Are they related? Is one the other's archnemesis?

Wanted Posters

Creating a Wanted Poster is an imaginative and funny way to get your child thinking about writing for an audience. Whether he's creating a poster describing his sibling, a monster, or a different type of character, your child will have to combine vivid descriptive writing skills with budding art skills to create a clear picture both of the hunted and the so-called crimes that have been committed.

Skills Being Practiced

- Character creation

- Situational thinking
- Descriptive writing
- Imagination

What You Need

- Notebook paper or scratch paper
- Construction paper or poster board
- Markers or colored pencils
- Scissors
- Glue
- Ruler

Get Ready to Play

1. Have your child choose a storybook character, a friend, a sibling, a mythical creature, or a made-up monster about which to write. Have him write the name of the character in his notebook or on a piece of scratch paper, along with any nicknames or aliases the character may be known by.
2. If your child is creating a Wanted Poster for a mythical creature or monster, have him draw a sketch of the creature as well. It will be helpful to refer to the sketch when he is gathering details. If your child is creating a Wanted Poster of a friend or sibling, help him find a detailed picture from which he can gather information for a physical description. Ask your child to take notes that will answer the following questions:

- What crime has your character committed, or what is it wanted for?
- How tall is it, and how much does it weigh?
- For monsters, creatures, and nonhuman story book characters: Describe its skin. Does it have scales? Fur? Does it have a strange color and/or texture to its skin?
- What does your character wear? Is there anything unusual about its attire?
- Is the character likely to be in disguise? If so, what might that disguise look like?
- For monsters, creatures, and nonhuman story book characters: What kind of creature/animal is it?
- How will your character be traveling? Bus? Car? Walking? Flying?
- What language(s) does your character speak?
- Does your character have any unusual or identifying marks like tattoos, scars, or birthmarks?
- Where does your character like to hide?
- Does it have any weaknesses? For example, Superman is weakened by Kryptonite, and maybe your friend can be lured by chocolate.
- How could this character be caught without hurting it? Are there any specific traps you would recommend?
- Is there a reward being offered for its capture?
- How can people contact you to let you know they have found your character?

3. Using the notes he took when answering the questions, have your child write a few descriptive paragraphs about his character, using

action words that will capture the reader's attention. Remind your child that in order to keep a reader's attention, each paragraph must be made up of sentences about traits that go together. For example, he may want to dedicate a paragraph to what the character looks like, one to his crimes, one to his customary mode of travel and weaknesses, and one paragraph of information about how the character might be captured.

4. Cut the paper apart so each paragraph can be glued to the Wanted Poster.

How to Play

1. At the top of a large piece of construction paper or poster board, have your child write the word "Wanted" in big letters. Directly below it he should write the name of the character and its nicknames and aliases.
2. Using a ruler as a straight edge, have your child outline a box in which he can draw a final draft of his creature/character, or into which he can glue a picture of his friend or sibling.
3. Give your child a set of headings to choose from, such as "Physical Description," "Looks Like," "Wanted For," and/or "Crimes Committed." Have him choose the headings that best fit the paragraphs he wrote, write those headings on the poster, and glue the correct paragraphs underneath the heading.

The Missing Person

This activity is similar to creating a Wanted Poster, but it focuses more on the connection between memory and creative writing, as opposed to

imagination and creative writing. It's designed to be a lighthearted activity, one that gives your child a chance to see what she can remember about a person when she doesn't know she's supposed to be observing.

This is an activity that has to be taken lightly and is better to use with older children who are able to distinguish between reality and fiction. To ensure that your child understands that this is just an exercise and nobody is really missing, it's a good idea to write a Missing Person report for somebody who is in the room with you.

Skills Being Practiced

- Situational thinking
- Descriptive writing
- Observation skills

What You Need

- Notebook
- Pencil

How to Play

1. Pretend you are a detective and your child has called you because she wants to report a missing person. Make sure your child knows this is just a writing exercise, a chance to have a little fun to see how much she can remember about somebody she just saw.
2. Choose somebody who is in the room and, in your detective role, ask them to leave you and your child alone for a few minutes so you can

take your report.

3. Tell your child it is the person who just left the room who has been reported missing and you need her to write down everything she can remember about him. Ask her to answer questions like:

- How tall is the missing person?
- What color eyes does he have?
- What color is his hair? Is it short, long, curly, or straight?
- Does the missing person wear glasses?
- What was the missing person wearing when your child last saw him?
- What was he doing when she last saw him?
- Where does she think he might have gone?

4. After your child has written out her statement and you have looked it over, ask the “missing” person to return to the room.

5. Have your child compare her statement to the real person to see if she was able to remember all the details correctly.

EXTEND THE LEARNING

Have your child write the description once again, after she has had a chance to see the missing person. Compare the first description with the second one to see how they differ.

Journal Jars

Keeping a journal is a good way for your child to practice her writing skills. A Journal Jar can help your child be a little more self-directed when it comes to writing. Instead of complaining that she doesn't know what to write about or asking you for ideas, all she has to do is open up the jar, take out a prompt, and start writing in her journal.

At home, your child's journal can be what she wants it to be, but at school, she'll have to get used to writing to a prompt. She's either given a sentence or idea to write about, some parameters of what her writing needs to include, and then she's on her own. Using a Journal Jar can help her practice writing to a prompt, but without the pressure of being timed or graded.

Skills Being Practiced

- Writing to a prompt
- Written communication skills
- Grammar and spelling
- Handwriting
- Creating a "voice"

What You Need

- Large-mouth jar with a lid, like an empty peanut butter jar or a pickle jar
- Stickers, paper, markers, tape, and other decorative materials
- Colored paper
- Journal prompts (see the next section for suggestions)

- Composition book or a bound journal

How to Play

1. Make sure the jar is clean and dry. Let your child decorate it. Once it's decorated, it's time to turn your attention to filling the jar with journal prompts.
2. Print (or type) the prompts on a piece of paper, then cut them apart into single slips. To add a little more allure, you can glue each slip to colored construction paper or scrapbook paper before folding them in half and putting them in the jar. Some suggestions for prompts include:
 - Pretend you have met an alien who has never tasted Earth food. Describe your favorite foods. Remember to include details about what they look like, what they're made of, and how they taste.
 - Who is your best friend? What makes that person a good friend?
 - If you woke up with a superpower, what would you want it to be? Why?
 - How do you think other people see you? Talk about what you look like and your personality.
 - You have a chance to go back in time and change one event in history. What would it be, and how would you accomplish your goal?
 - Write about your favorite band or song. What's the appeal?

- Describe a time that you were really, really angry.
What happened?
- List five things you like about each of your family members.
- List five things that bug you about each of your family members.
- Describe your favorite holiday tradition.
- Who do you feel the most comfortable talking to?
Why?
- What's the craziest dream you've ever had? Recount it in detail.
- How do you think things would change if there were no computers or televisions anymore?
- Your friend is going to do something that you don't agree with. What do you do?
- My life changed when
- You won the lottery, but can't spend the money on anything for yourself. What do you do with it?
- Tell about a time that you were very proud of yourself.
- Tell about a time that you felt bad about something you did.
- What makes you jealous? Do you think other kids are ever jealous of you?
- Describe what your room looks like.
- What would you do if you saw one of your classmates or friends being bullied?
- Describe the best day in the world.
- In ten years, I will be

- Describe a time when you had déjà vu. What do you think déjà vu is?
 - Make a list of goals you would like to accomplish over the next year and how you're going to do them.
3. If you want your child to be surprised by the prompt she takes out of the jar each day, then create the prompts on your own. Regardless of what you choose to do, it's a good idea to have at least a month's worth of journaling ideas in the jar.
 4. With a pencil, her journal, and the Journal Jar, your child is now ready to spend some time each day writing down her thoughts!

CHAPTER 10

Different Types of Writing

Your child may love to write stories, but writing is a skill that has many uses beyond just storytelling. As your child gets older, he'll start learning about how to use those different types of writing: persuasive writing, descriptive writing, expository writing, and narrative writing. Each type of writing serves a very specific purpose in teaching children how to communicate.

Convince Me!

Somewhere around third or fourth grade, your child will be introduced to a more complex type of writing known as persuasive writing. If your child likes to debate or argue, this type of writing is right up his alley!

Essentially, persuasive writing is a debate in written form. A persuasive essay takes a position on an issue, and uses an explanation of that position and its opposing view as well as facts and statistics to convince the reader to agree with the writer. It may sound logical, but if your child isn't a natural at arguing or research, he'll need some practice to be convincing. This activity is a low-pressure way to practice those skills.

Skills Being Practiced

- Persuasive writing skills

- Research skills
- Analytical thinking
- Negotiation skills

What You Need

- Pencil and paper or a word processing program
- Everyday household issue for which there is two clear sides

How to Play

1. Ask your child what he thinks it means to convince somebody of something. If necessary, prompt him with some examples about times when he tried to change your mind about something. For instance, you may want to remind him of the time he wanted you to raise his allowance, and he tried to convince you why you should. Provide him with the word *persuade* to describe the process of trying to convince or influence a person to think a certain way.
2. Help your child brainstorm some phrases that can be used when trying to make a persuasive argument. Write those words and phrases down for future reference. (See the following table for suggestions.)
3. Discuss topics around the house that you and your child don't always agree on. In order to keep this activity from feeling like a school assignment, it's a good idea to stick with light topics, such as allowance, making the bed, eating sugar cereals, etc.
4. Choose one of those topics and tell your child you might be willing to change your position on the issue if he can write a persuasive essay convincing you to change your mind. Explain that his essay must

contain his claim (what he thinks should happen) and use some persuasive strategies to help back up his claim. These strategies include:

- **Big names:** Using names of experts who support your position. (“Dad agrees that”)
- **Pathos:** Using emotional language to appeal to and tug on your audience’s heartstrings. (“Without a larger allowance, I’m unable to do the same things that my friends do.”)
- **Logos and research:** Using data, studies, illustrations, and logic to support your position. (“As this chart shows, research indicates that kids my age have an average allowance of”)
- **Ethos:** Using language that presents you as believable and worthy of trust. (“As you know, I’ve always been willing to”)
- **Kairos:** Creating a sense of urgency about the opportune moment. (“If we don’t change this now, then”)

5. Read your child’s essay and evaluate his arguments. Discuss with him the things you found convincing and the arguments you found lacking. If you aren’t fully convinced, give him the chance to incorporate your feedback and try again. Be prepared to give in on the issue your child chooses. Since the goal is to write a persuasive argument, it’s important to reward him if he succeeds. In that case, make sure you’ve set terms and conditions. For instance, perhaps he

can convince you why he doesn't need to make his bed for a month, as opposed to why he doesn't ever need to make his bed.

PHRASES AND WORDS TO USE IN PERSUASIVE WRITING

I am certain that ...	Surely you can see ...	What we need to do ...
Think about ...	I am writing to you in order to ...	On the other hand ...
It has been brought to my attention ...	If you proceed with ...	Nevertheless ...
Obviously...	Certainly ...	Regardless ...
If this were to happen, then ...	We can fix this by ...	It may seem as though ...

Painting Word Pictures

Descriptive writing plays a big part in writing stories, but it stands on its own as a specific type of writing. It is, in fact, a lot like painting a picture with words. A good piece of descriptive writing uses detailed, vivid words to describe all the facets of a person, place, thing, or idea. Painting Word Pictures is a quick activity to help your child practice the power of using detailed description.

Skills Being Practiced

- Descriptive writing skills
- Being detail-oriented

What You Need

- Pencil and paper
- Timer

How to Play

1. Sit down with your child and tell her you are each going to write a description of one of your favorite things. It can be a food, a place, a person, or anything else she can think of, but neither of you is allowed to tell the other your topic.
2. Explain that when you are done writing, you will each read the other's piece and try to figure out what picture has been painted with the words, so including a lot of detail is a way of providing clues.
3. Set a timer for 10 minutes. When the timer rings, exchange papers and see if you can guess what each of you "painted."

EXTEND THE LEARNING

If your child is having a hard time painting word pictures, start more simply. Take her on a nature walk or look through magazines together. Choose something she sees and ask her to write about it, describing what she sees, what she smells, and what she feels (both physically and emotionally).

Teach Me How To ...

Unlike descriptive writing, expository writing does not contain a lot of detail. It is very factual and to the point. Dictionary entries, comparisons, directions, and other types of instructions all fall into this category. A

great way to practice expository writing is to have your child write a “how-to” for an activity of daily living and see if it’s clear enough to follow. Activities of daily living, often referred to as ADLs, are everyday routines that people do to take care of themselves, such as getting dressed, brushing teeth, or making the bed. The ADL your child writes about will depend on his current level of functioning. If he is unable to tie his shoes, he will not be able to write directions telling another person how to do it.

Skill Being Practiced

- Expository writing
- Sequencing
- Activities of daily living

What You Need

- Paper and pencil

How to Play

1. Review with your child all of the things he does every day to take care of himself, making a verbal list of the things he knows how to do. Tell him that you want him to pretend he has to teach a visitor to our planet to do one of those things.
2. Explain that he and the alien don’t speak the same language, but the alien is able to read every language in the world, so if he writes down the directions, the alien will be able to read it. Caution him that the

- alien will do exactly what he writes, in the order in which he writes it, so it's up to him to write a clear set of directions the alien can follow.
3. Let your child choose an activity of daily living to teach the alien and have him write a how-to for it.
 4. When he is finished, tell him you're going to try out the directions yourself to see if the alien will understand them. Follow the directions exactly as your child wrote them, without asking for clarification. Your child might be surprised how much harder it is to write about doing something than it is to do it!

Hamburger and Condiment Writing

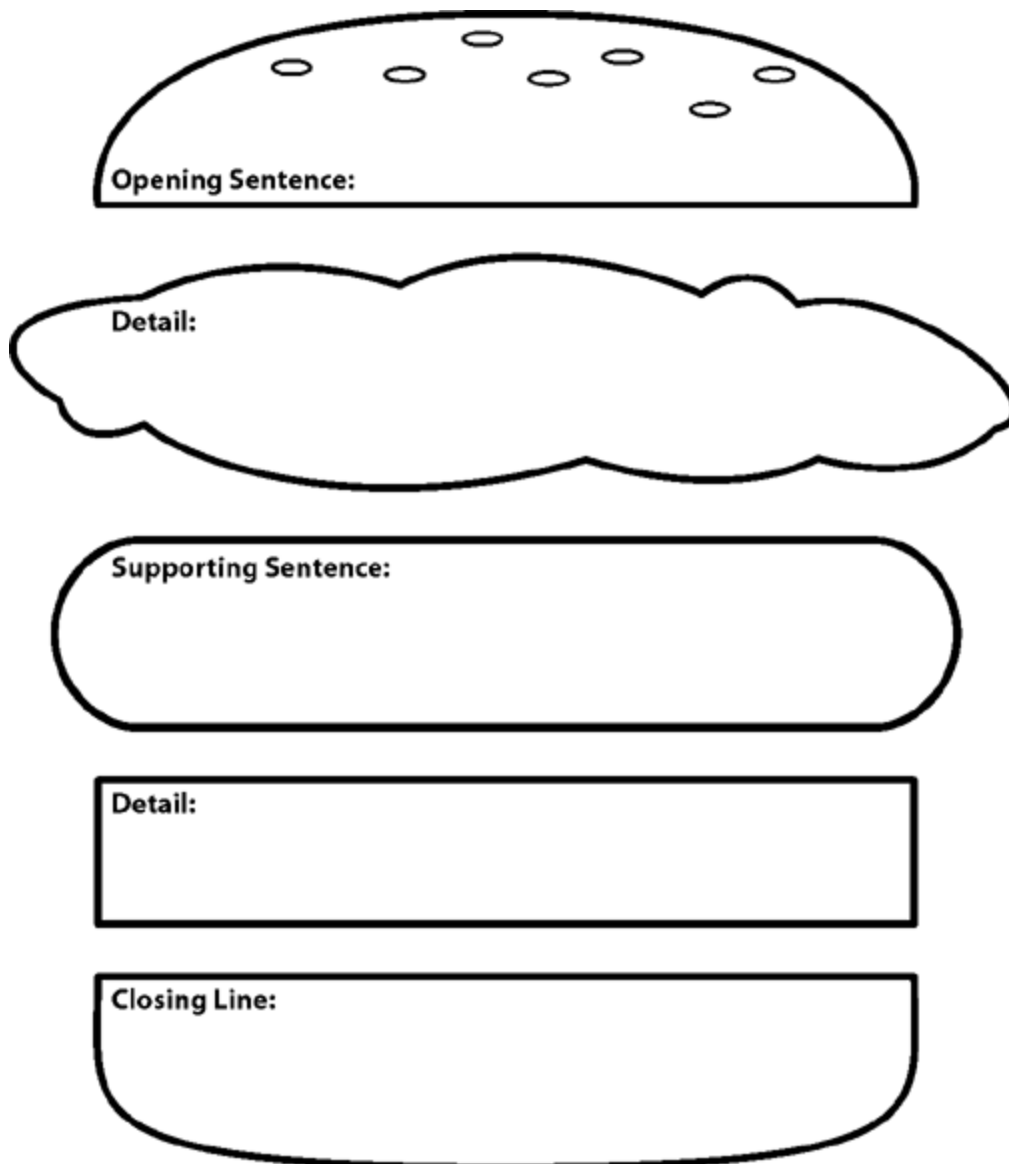
Believe it or not, learning to write a solid paragraph can be as easy as putting together a hamburger. Hamburger writing teaches your child the basic components of a paragraph by comparing each piece of it to an element of a hamburger. The condiments are simply the details. Making a hamburger visually appealing to the person who is going to eat it is important. The fuller it looks, the more willing they are to eat it. It's the same with your child's paragraph. The more information it contains, the more willing the reader will believe what she has to say.

Skills Being Practiced

- Concept organization
- Writing paragraphs
- Identifying main ideas
- Identifying supporting details

What You Need

- Hamburger Graphic Organizer
- Pencil
- Paper



The graphic organizer is designed to look like a hamburger with five layers. From top to bottom, the layers are:

- Opening Sentence:** A semi-circular shape with seven small circles inside, representing a bun.
- Detail:** A cloud-like shape representing a slice of cheese.
- Supporting Sentence:** A rounded rectangular shape representing a beef patty.
- Detail:** A rectangular shape representing a slice of tomato.
- Closing Line:** A rounded rectangular shape representing the bottom bun.

Hamburger Graphic Organizer

How to Play

1. Talk to your child about what a hamburger looks like. Ask: *What kinds of things do you absolutely need to make a hamburger? What kinds of things can you add to the burger to make it better?*
2. Explain that a paragraph is like a hamburger. The hamburger is made of three basic parts: the top bun, the patty, and the bottom bun. A paragraph also consists of three basic parts: an opening sentence, a supporting argument, and a closing sentence.
3. Ask your child whether her burger tastes better when she adds pickles, lettuce, ketchup, and/or other condiments. (Some children will say no, at which point you can say that you think it tastes better that way.) Let her know that you think the reason a burger tastes better when there's more to it is because there is more to enjoy. Explain that a paragraph is more enjoyable when it has more to it as well.
4. Have your child draw a hamburger or give her a copy of the Hamburger Graphic Organizer. Tell her you're going to help her write a paragraph about hamburgers.
5. Using the graphic organizer, have her write an idea for an opening sentence on the top bun. The opening sentence states the thesis, or what your child believes to be true. For example, she might write, "Hamburgers taste best when they contain more than just a bun and patty."
6. Next, have her write a supporting sentence on the patty. This is the meat of her argument, so to speak. For instance, she might say, "Without condiments, the patty sticks to the bun and makes the hamburger dry and hard to swallow."

7. Show her how to write other supporting details on the lettuce and cheese of the graphic organizer. These details both back up her opening sentence and provide more information. Much like her burger, your child's paragraph can have many layers to it, or just a few. She might say things like, "Lettuce adds texture," or "Pickles make the flavor of the meat stand out."
8. Lastly, ask your child to write her closing line on the bottom bun. This is the sentence that sums up her argument and ties her supporting details in to her thesis.
9. Once the Hamburger Graphic Organizer is filled in, it's time to write the whole paragraph. Your child's complete paragraph might read something like this:

Hamburgers taste best when they have more than just a patty and a bun. Without condiments and vegetables, the patty sticks to the bun and the burger is dry and hard to swallow. Adding lettuce between the bottom bun and the patty adds texture and crunch. Pickles bring out the flavor of the meat, while cheese can serve as a way to make sure that ketchup and mustard don't make the bun too soggy. All in all, a hamburger isn't complete without the condiments and vegetables added to enhance its flavor.

What's Your Perspective?

Narrative writing tells a story, but it differs from a typical story in that it's often written in the first person, or takes the form of a personal essay. The What's Your Perspective? game practices narrative writing by asking all the players to write their own version of a shared experience.

Skill Being Practiced

- Narrative writing
- Sequencing
- Memory
- Perspective-taking

What You Need

- Paper and pencil

How to Play

1. Gather all the players and give them each a pencil and a piece of paper. Ask them to talk about things they have all done together. It could be a vacation you took together, a sport you all participated in, or some other shared experience.
2. Explain that even though all the players were there, they all have a different perspective, or view, of the event and that you think it would be interesting to hear everybody's unique story.
3. Ask each player to write about that day or event from his own perspective, using the word "I" instead of creating a character. Stress that in a personal narrative, adding detail about what you think or felt is very helpful in telling the story.
4. When everybody is done, read the stories to each other. Compare them to find similarities and differences, discussing why some things are the same and why some things are different.

EXTEND THE LEARNING

You can modify this game to be used as a way to try to get all the points of view of an argument or conflict, especially amongst siblings. Ask each of your children to use “I” statements to write the story of what they think happened. Then you can compare their stories to see if you can figure out what really happened.

CHAPTER 11

Spelling

If spelling word homework, or spelling in general, is a source of tension between you and your child, you're not alone. You don't have to spend your time arguing, and you don't have to stick with the old "spell them out loud" technique. Unless he's in a spelling bee, your child needs to know how to write his words, not recite them. Instead, teach him to recognize spelling words when he sees them, make sense of them in context, and have a general idea of the definition of each word.

Creative Ways to Use Flash Cards

Flash cards may be a standard way to learn spelling words, but there are a few ways to make them a little less boring. There are two basic ways in which your child can approach making flash cards, both of which have learning benefits.

Skills Being Practiced

- Sight/spelling word recognition
- Vocabulary retention
- General word knowledge

What You Need

- Index cards or cardstock
- Pencil
- Set of markers
- Pen
- Computer with Comic Sans 12-point font

How to Play: Handwritten Flash Cards

1. Give your child index cards, a pencil, and his list of spelling words. Ask him to write one spelling word apiece on an index card.
2. This will help him recognize the words in his own handwriting and help him to start forming a visual memory of how each word looks when he writes it. This is important because when it comes time for him to write, either creatively or for a school assignment, he'll know what the word looks like in handwriting instead of just when it is typed.

How to Play: Computer Flash Cards

1. Just as seeing spelling words written in handwriting can be beneficial, so can seeing them in print. That's because your child isn't just learning his spelling words to use in writing; he's also learning them so he can understand them in the context of stories or other text he's reading.
2. The words may look very different in type than they do in his handwriting, so set your child up on the computer, set the font to

- Comic Sans 12 point (this is the font that many teachers agree most resembles handwriting), and have him type each word on its own row.
3. Print the document on cardstock and have him cut the words apart into makeshift flash cards.

How to Play: Definition Flash Cards

1. Create a set of flash cards, either on the computer or on index cards, but instead of writing the words this time, have your child write the definition of the word and a sentence in which he uses the word correctly.
2. Remind your child that a word's definition cannot use the word or any variation of that word to help define it. It's hard to do, so you may need to have a dictionary on hand.
3. Mark the back of these cards with a small colored dot or an X, so they can be used in Spelling Word Memory.

How to Play: Spelling Word Memory

1. Use one set each of the word flash cards and the definition flash cards to do this activity. Shuffle the two sets of cards together and place them facedown in rows on a table or on the floor.
2. The first player turns over two cards, one marked and one not. If the word on the nonmarked card and the definition on the marked card match, the player keeps the cards. If not, he turns them facedown again.
3. The next player takes a turn, keeping in mind the position and what was written on the cards that were previously turned over.

4. Once all the words and definitions have been matched up, the player with the most matches wins.

How to Play: Flash Card Tracing

This is a variation on the classic “writing your words ten times apiece” activity. Tracing his spelling words over and over with a pencil, crayons, or felt-tip markers helps him to retain the shape of the letters as well as the order in which they go.

EXTEND THE LEARNING

Have your child trace the words with brightly colored markers to make the card a little more attractive. When he’s done with that, have him write his word on the back of the card, then flip it over to compare. By now he should be able to write it correctly without even thinking about it!

Create Your Own Mad Libs

Mad Libs, the classic game created by Leonard Stern and Roger Price, in which a player substitutes a list of words for words in a story, often leads to ridiculous sounding stories. The game Mad Libs got its name from the theatrical phrase “ad lib,” in which an actor doesn’t read a specific set of lines in a scene. Instead, the actor’s words, much like those in Mad Libs, are spontaneously improvised. The goal of playing this game with your child’s spelling words is to see if she is able to recognize the type (part of

speech) of each spelling word. In the end, she'll have a funny tale to tell, too.

Skills Being Practiced

- Sight/spelling word recognition
- Vocabulary retention
- General word knowledge
- Parts of speech

What You Need

- Painter's tape

How to Play

1. Find your child's favorite picture book, poem, or a passage from a book. As you come to a part of speech that could be replaced by one of his spelling words, place a piece of painter's tape over the word, and ask him to give you a word from his list. Make sure to ask for not only a word, but the correct part of speech as well.
2. Once you've replaced all the words in the passage, read it to your child to see how silly it sounds. Then peel off the painter's tape and begin again.
3. You can also use a website like Eduplace.com's Wacky Web Tales (www.eduplace.com/tales/) with your child. You just have to input his spelling words, and a uniquely wacky tale will be created for you!

EXTEND THE LEARNING

Ask your child to spell each word for you when he uses it as a replacement word.

What Letter Is Missing?

This game is a variation on the classic game Hangman, and just as easy to play.

Skills Being Practiced

- Sight/spelling word recognition
- Vocabulary retention
- General word knowledge

What You Need

- Paper or a whiteboard
- Pencil or dry-erase markers
- Spelling word list

How to Play

1. Write or type your child's spelling list, leaving a letter or two out of each word. Your child's mission is to replace the missing letters correctly.

2. You can leave the vowel sounds blank to make sure your child has a grasp on which sounds each vowel makes, or, if this week's words have a letter pattern in common, leave out that letter pattern to see if your child has made the connection.

Add-a-Letter Game

This game combines elements of Hangman and the What Letter Is Missing? game in a fun, low-key, interactive way. The game is very easy to play with a piece of paper and a pencil.

Skills Being Practiced

- Sight/spelling word recognition
- Vocabulary retention
- General word knowledge

What You Need

- Paper or a whiteboard
- Pencil or dry-erase markers
- Spelling word list

How to Play

1. Sit down with your child, and tell her you're going to work together to write her spelling words. Begin by writing the first letter of one of the words.

2. Pass the paper to your child and ask her to add the next letter.
3. She'll then pass the paper back for you to add the next letter. This continues until the word is finished, or somebody writes the wrong letter.
4. Keep in mind that spelling words often are grouped so that many words start the same way. If this is the case, you'll need to tell your child which word you're spelling or the game won't go well.

EXTEND THE LEARNING

Play the game by texting the first letter of the word to your child.

Have her text back the letter you texted plus the next letter. Continue until the word is spelled.

Reconstruct the Words

This fun game involves both alphabetizing and spelling.

Skills Being Practiced

- Sight/spelling word recognition
- Vocabulary retention
- General word knowledge

What You Need

- Spelling word list
- Pencil

- Paper
- Scissors

How to Play

1. Have your child write her spelling list in big letters—one word per line, and with a finger's width between each letter—on a piece of paper. Ask her to cut the list into strips of single words.
2. Place the words faceup on the table, and challenge your child to alphabetize the list.
3. Once she has done that correctly, cut each word into individual letters, adding swerves or jagged edges to some of your cuts.
4. Give your child the pieces, and have her put the words back together like a puzzle.

EXTEND THE LEARNING

Instead of cutting the list and each individual word into strips and letters, cut the entire list apart like a jigsaw puzzle. Once your child puts it back together, she may have a better sense of how they fit together as a group, both literally and figuratively.

Spelling Word Hangman

Hangman is a classic game to use to practice spelling words.

Skills Being Practiced

- Sight/spelling word recognition
- Vocabulary retention
- General word knowledge

What You Need

- Spelling word list
- Paper or a whiteboard
- Pencil or dry-erase markers

How to Play

1. Provide your child with a copy of her spelling word list, so she has the advantage of being able to narrow down the words as she gets more letters in place. Write out the correct number of blanks for the word you want her to spell, and let her guess one letter at a time.
2. Each letter she guesses correctly gets written in the correct blank, while each letter that is a miss is a prompt for you to draw a body part on a stick person (head, torso, one arm, other arm, one leg, other leg). You can also use the definition of the word as a clue if your child is stumped.
3. The goal is for her to guess the word before you draw a whole person. Once she gets the word, ask her to use it in a sentence.

Spelling Word Songs

There's a definite connection between music and literacy. After all, there's a reason you can remember all the words to your favorite song from a

decade ago, but you can't remember why you walked into the next room! Putting things to music gives children a way to categorize things and keep them in their heads. Spelling words are no different.

Skills Being Practiced

- Sight/spelling word recognition
- Vocabulary retention
- Literacy-art connections

What You Need

- Spelling word list

How to Play

1. Depending on how musically inclined you are, you can either create an original silly song to spell out her words, or just set them to an old standard like "Row Your Boat" or "Twinkle, Twinkle Little Star."
2. If neither you nor your child is able to do that, it's okay to chant them, too. Chant the word, then its definition, and then spell it out. You could also add a simple snap-clap beat to your chant to keep a rhythm going.

Sandpaper Word Rubbings

Sandpaper word rubbings are a fun way to combine art and literacy.

Skills Being Practiced

- Sight/spelling word recognition
- Vocabulary retention
- Literacy-art connections

What You Need

- Sandpaper and stencils
- Pencil
- Scissors
- Spelling word list
- Paper
- Crayons
- Tape

How to Play

1. Some stores sell alphabet sandpaper stencils, but if you aren't able to find any, they are simple enough to make. Place a piece of sandpaper with the smooth side up, and use a pencil and a set of stencils to create your own sandpaper letter stencils. Once you (or your child) have cut out the stencils, give your child a copy of her spelling word list, some blank paper, and crayons.
2. Have her arrange the stencils to spell one of her words, and place a blank piece of paper over the stencils. Tape the paper in place, and let your child rub a crayon over the paper. (She could also use more than one color crayon to make multicolor word rubbings.) Her spelling word should magically appear!

EXTEND THE LEARNING

Ask your child to place the rubbing in groups based on words that are similar in some way. It could be by definition, letter patterns, or some other attribute, as long as she is able to explain the connection.

Glitter Glue Spelling Words

There are two ways to make glitter glue spelling words: with glitter and glue, or with glitter glue.

Skills Being Practiced

- Sight/spelling word recognition
- Vocabulary retention
- Literacy-art connections

What You Need

- Paper
- Spelling word list
- Pencil
- Glitter glue (or school glue and glitter)

How to Play

1. Begin by giving your child a sturdy piece of paper, and ask her to write her spelling words on the paper in pencil. Then she can either trace the words with glitter glue, or trace them in school glue and sprinkle glitter over them.
2. Either way, she will have made the physical connection of tracing the letters of each word, which can help her remember them when it comes time to use them in writing. When the project dries, she will have a shiny collage of all her spelling words!

EXTEND THE LEARNING

Instead of writing the spelling words in a list or in rows, have your child turn the paper around and write some of the words sideways or upside down. The result looks more like a word cloud than a word list. A word cloud, sometimes referred to as a “tag cloud” or a “weighted list,” is a visual image or picture created by a set of words. On the Internet, word clouds are used to provide a quick visual of the words or concepts presented in an article. In a weighted list, the most important words are larger than the other words.

Build Words with Blocks or Scrabble Tiles

Some children learn by reading, some by writing, some by listening, and some by making artistic connections. Still other children learn best by involving all their senses in what they are learning. When it comes to spelling word practice, you might think it difficult to incorporate all the senses, but it’s actually much easier to create sensory experiences than you

might think. Sometimes the best way to learn a spelling word list is to build it from scratch.

Skills Being Practiced

- Sight/spelling word recognition
- Vocabulary retention
- Fine motor and sensory skills

What You Need

- Spelling word list
- Word blocks, magnetic letters, or word tiles

How to Play

Your child can build her words using alphabet blocks, magnetic letters, or word tiles (like those found in the game Scrabble). In fact, she could use almost anything to build her words, as long as she's assembling the letters. She could also use beads, dried beans, macaroni, or even the blocks themselves to make the shape of each letter in the word.

EXTEND THE LEARNING

Play a game of Scrabble using only your child's spelling words and their antonyms and synonyms.

Build with Your Body

One really easy way to include physical activity in studying is to have your child practice her spelling words using her body. She may not be able to contort herself to make all the letters in one word, but she can practice the shape patterns of the words.

As you look over her words together, you'll notice that some letters are tall (above the line), some letters are small (within the line), and others are short (below the line). Translate those patterns into body positions.

Skills Being Practiced

- Sight/spelling word recognition
- Vocabulary retention
- Gross motor and sensory skills

What You Need

- Spelling word list

How to Play

1. Tall letters are a jump up; small letters are arms straight to the side; and short letters are a crouch down.
2. Using the word “begin” as an example, your child would: *b*–jump up, *e*–fly her arms to the side like an airplane, *g*– crouch down and *i-n*–fly like an airplane.

EXTEND THE LEARNING

Involve the whole family in the building of a word. Have each family member take a letter, and try to make his or her body shape match that letter. (For instance, a *t* might be standing up straight with your arms extended to each side). Then stand next to each other in order to see if you have created the whole word.

Trace in Food

This may be one of the few times it's okay to have your child play with her food.

Skills Being Practiced

- Sight/spelling word recognition
- Vocabulary retention
- Fine motor and sensory skills

What You Need

- Spelling word list
- Food and utensils

How to Play

1. Let her trace her words in her mashed potatoes with her fork, or try to build them with alphabet cereal.
2. If you're really ambitious, ask your child to arrange her vegetables to spell out words.

EXTEND THE LEARNING

Buy jam in a squeeze bottle (or transfer jam to a squeeze bottle at home) and have your child make spelling word PB&J sandwiches for lunch.

Draw in Shaving Cream/Sand

These two very sensory-intensive ways to practice spelling words may appeal to some children and repel others; it depends on how sensitive your child is to different textures.

Skills Being Practiced

- Sight/spelling word recognition
- Vocabulary retention
- Fine motor and sensory skills

What You Need

- Spelling word list
- Shaving cream
- Sand

- Dishpan

How to Play

1. To draw spelling words in shaving cream, clear a space on the kitchen table. Squirt a large dollop of shaving cream on the table and let your child use his hands to spread it “flat.” Have him use his index finger to spell the words in the shaving cream.
2. Drawing in sand is similar and can be done either outside or inside. If you have a sandbox, set your child loose and just call out the words you want him to trace in the sand. If you want to do an indoor version, fill a dishpan or casserole dish about halfway with sand, and play the same way.

EXTEND THE LEARNING

If you can’t find sand or don’t have a sandbox, give your child a stick and find an area outside that has a well-packed dirt cover. He can scratch the words into the dirt with his stick.

Spelling Word Charades

This hands-on activity is a great way to practice spelling and vocabulary words.

Skills Being Practiced

- Sight/spelling word recognition

- Vocabulary retention
- Gross motor and sensory skills

What You Need

- Spelling word list
- Paper
- Dish

How to Play

1. For this game, write each of your child's spelling words on a piece of paper, fold them in half, and place them in a dish.
2. Take turns choosing a piece of paper from the dish and acting out the word.
3. Some words do not lend themselves well to acting out, so you may need to start those words off with a verbal cue, such as giving a synonym or antonym of the word you are acting out.

EXTEND THE LEARNING

Instead of taking the words out of a bowl, give each player a copy of the list and let them choose which word to act out. That way you can also keep track of which words have already been used, making it a little bit easier to make a guess.

Spelling Word Scavenger Hunt

This game can be played in a number of different ways and has the added bonus of giving your technologically inclined child more opportunity to interact with print media!

Skills Being Practiced

- Sight/spelling word recognition
- Vocabulary retention
- Fine motor and sensory skills

What You Need

- Spelling word list
- Book
- Pencil
- Paper
- Old magazines or newspapers

How to Play: Storybook Spelling Word Scavenging

1. Give each player a copy of the words, a book, a pencil, and a piece of paper. Set a timer for 5 minutes.
2. Each player must find all the words in her book, writing down the word and the page number on which she found it.
3. The first player to finish and be verified is the winner.

How to Play: Clip, Cut and Spell

Use old magazines and newspapers to cut out the words on the list. Award bonus points for multiple sightings/cuttings of a word.

How to Play: Ready, Set, Circle!

Give each player a section of today's newspaper. Set the timer for 3 minutes and see how many of the spelling words each player can circle.

EXTEND THE LEARNING

Keep a copy of your child's spelling word list in your bag or in the car. See if you can find the words on signs or in stores while you are out and about.

CHAPTER 12

Math in Everyday Life

One of the most common complaints kids have about math is that they're never going to use it in real life. While it may feel that way, kids and adults alike use math every day without even thinking about it. Pointing that out to your child might not be the best way to counter his complaint, but you can make him more aware of how big a role math plays in his daily life. Here are ten key ways kids use math every day: telling time, setting the table, counting their allowances, buying something and counting the change, sorting and picking up toys, playing board games, comparison shopping, following recipes, building with blocks, and filling out chore charts.

Budgets and Wish Lists

How many times have you heard your child say, "I want one of those!" when he watches an ad on television or sees something cool in the store? The cost of all those "wants" can add up pretty quickly, but your child probably isn't as aware of that as you'd like him to be. Walking him through using a budget to make his wish list a reality not only incorporates math into his life, but it also gives him a better sense of the value of money.

Skills Being Practiced

- Budgeting
- Estimation
- Rounding
- Operational math

What You Need

- Paper and pencil
- Computer with Internet access
- Pretend money (optional)
- Catalogs, sales flyers
- Calculator

How to Play

1. Let your child make his wish list. Ask your child to write a list of all the things he wants to buy, leaving room next to each item to write its price. Then go online with your child to research the cost of the items.
2. Provide your child with an imaginary budget. How much pretend money you bestow upon your child depends on how many of the things on his wish list you want him to be able to pretend to buy (you do not want him to be able to buy all of them). For younger children, it may be helpful to actually give them pretend money to work with.
3. Comparison shop. Once your child has found a store that sells the things he wants, he may want to call it quits, but explain to him that not all stores sell things for the same price. Help him find a number

of different stores or websites that sell the same item, so he can see the different prices.

4. Calculate tax and shipping. How many times have you found what seems to be the perfect deal online only to find out the shipping costs more than the item? Help your child go through the process of adding each item to the online cart and seeing how much the tax and shipping add to the cost of the item. Ask him to add that cost to the price of each item.
5. Choose the best deal. Once you've helped your child through the process of comparison shopping and adding shipping and tax, he should have an idea of which store offers the best deal on each of the things on his wish list. Ask him to make another draft of the list, using the cost of the best deal.
6. Practice rounding. Although it's time to add up all the items on his wish list, it's not always easy to add numbers like \$10.99 or \$20.05. Explain to your child that sometimes it's easier to round to the nearest even dollar amount before adding it all together. Round up to the nearest dollar if the last digits equal 50 cents or more; round down if they're 49 cents or less. It not only makes the addition easier, but it also helps him remember when he should round up and when he should round down.
7. Get to the bottom line. There's a lot of information on your child's list now. It's time for him to add it up and see how much it all costs. Then ask him to subtract that figure from his budget. It's okay to let your child use a calculator during this process, but remind him that the calculator is only helpful if he's able to enter the correct numbers, use the correct buttons for each operation, and keep track of what the numbers all mean. Ask: *Do you have enough money?* (The answer

should be “no” or the lesson won’t work!) *How much more money do you need? Which item(s) could you take off your list to stay within your budget?*

One for Me, One for You

If you have more than one child, you’re sure to have heard cries of, “He has more!” and “Why does she get the bigger half?” No matter how hard you try to make things equal, kids just don’t always see it that way. If you show them, though, they may have to admit it’s true. This activity also helps practice fractions, multiplication, and division with remainders.

Skills Being Practiced

- Fractions
- Estimation
- Division with remainders

How to Play

1. This age-old game is a great way to teach about remainders. Give your child the responsibility of passing out the snack the next time she has friends over. Make sure to have an easily measurable food available; grapes, pretzels, or crackers work well.
2. Once your child has finished doling snacks out in the “one for me, one for you” fashion, she may discover she has some food left over. This is the perfect time to introduce the idea that some numbers

cannot be split evenly into some groups and that there may be something remaining.

3. When her guests have left, give your child a number of small items such as blocks, pennies, or dried pasta, and ask her to divvy them up between different numbers of theoretical people using the “one for me, one for you” method.

EXTEND THE LEARNING

Older children can work backward, starting by counting how many people and how many snacks there are. Once those numbers are established, you can ask things like: *If everybody got 3 crackers, would there be a remainder?* or *We have 21 crackers and 7 people. How many crackers will each person get?*

Now is also a good time to introduce more complicated math and the idea that not everything needs to be fair. For example, a preschooler doesn't need as many grapes as a middle-school child. Statements like, “You eat three times as many grapes as your little brother, and he has fifteen grapes. How many will you get?” can help promote higher math skills as well as teach life skills.

Carpool Math

Another way to drive home the idea that math is part of daily life is to make your daily drive a little more interesting. As parents know, there's a whole lot of math involved in making sure all of the kids get to everywhere they need to be—on time!

Skills Being Practiced

- Time sense
- Estimation
- Operational math

How to Play: Calculate the Route in Parts

1. As you well know, getting to your destination is only part of timing a carpool correctly. The rest is about how long it takes to get to the first kid's house, to the next house, how long it takes for those kids to put on their seatbelts and settle down, and then how long it takes to get to your final destination after all that.
2. Your older child should have a good enough sense of time (and his friends) to be able to take that all into account when you're calculating when you need to leave in order to know whether you'll have enough time. It's a good idea to round everything to five-minute increments to start. You can help him talk it through with statements like:

Okay, we need to be at swim practice at 4:00 and are bringing Hannah and Eli with us today. It will take us ten minutes to get to Hannah's house from our house, and you know she's always running about five minutes late. Then it will take five minutes to get to Eli's house, and about fifteen minutes to get to the pool from there. What time do you think we should leave?

3. If that stumps your child, try rephrasing it so he's looking at it from a different perspective. Try:

We're leaving at 3:15 for swim practice. It will take us ten minutes to get to Hannah's house, and another five minutes to get to Eli's. From his house it's another fifteen minutes to the pool. Assuming they are both on time, will we make it to the 4:00 practice?

How to Play: Calculate the Route All at Once

1. Your younger child is probably just learning about telling time and developing time sense. A child who is just starting to get a sense of hours and half-hours doesn't have the same ability as an older child to think about the different legs of a trip.
2. Instead of breaking down the route, talk to your child about how long it takes to get somewhere with the time it takes to pick everyone up already included. You can do this by asking questions like:

We have to be at swim practice at 4:00, and it will take us 30 minutes to pick up all the kids and get there. What time should we leave?

If that's too confusing, try it the other way around:

It will take us 30 minutes to get all your friends and make it to swim practice. Practice starts at 4:00. If we leave at 3:30, will we get there in time?

EXTEND THE LEARNING

Include a little real life in your calculations. Remind your child that there will be delays caused by traffic, detours, and traffic lights. Ask him to estimate how much time those factors might add to your trip.

Housecleaning Math

You probably can't even begin to count the number of times you've told your child to clean her room. Subtract the number of times she's actually listened to you, and you already have some housecleaning math! There are also opportunities to teach other, more practical mathematical skills through room cleaning. Remember it will almost always take your child longer to clean her room than she thinks. That's because her idea of clean and yours are going to be very different. To help her get a better sense of how long it will realistically take, define "clean" before she even begins.

Skills Being Practiced

- Time sense
- Estimation
- Operational math

What You Need

- Timer

How to Play

Estimation

1. Walk through your child's room with her to get a sense of how much cleaning really needs to be done. Ask her to estimate how many items need to be picked up from the floor. Ask: *Is it closer to ten or twenty-five things?* Do the same for her bookshelf, bed, and any other area that really needs to be cleaned.
2. Then ask your child to estimate how many items in total need to be picked up.

Time Sense

1. As you do the walk-through with your child, ask her to tell you how long she thinks it will take her to clean her entire room. Tell her how long you think it will take, and ask her to tell you what the difference is in minutes between her guess and yours.
2. Tell her what time it is now, and see if she can tell you what time it will be if she finishes cleaning her room half an hour from now.

Comparison

As your child picks up each area of her room, have her count the items she's putting away. Have her compare the actual number to the estimation she made when she was first looking at her room. Help her get a sense of how close her estimate was by finding the difference between the two numbers.

Basic Division

When it comes to room cleaning, this is one time your child is going to be eager to try division. That's because the more people that are involved, the less work there is for each person. Enlist her siblings to help (you will probably have to give them a reciprocal deal) and create a divide-and-conquer problem, such as:

There are three of us to pick up twelve toys. If we each pick up two toys, will your room be clean? Why or why not? How many toys would we each need to pick up to make it clean?

EXTEND THE LEARNING

Challenge your child to estimate how many things she'll put able to pick up and put away in 5 minutes. Set a timer and see if she is right.

Grocery Store Math

A quick and easy way to prove that we use math in daily life is to take your child grocery shopping with you. Just as there are numerous opportunities for literacy learning at the grocery store, there are many opportunities to practice math as well, both in preparation for and at the store.

However, while the grocery store may provide lots of opportunity for teaching, your schedule may not. Don't try to do everything in one day, or your shopping trip will seem endless. Choose a couple of activities for one day and save some for another day. You will get out of the store in a reasonable amount of time, and your child won't get bored of grocery store math.

Skills Being Practiced

- Operational math
- Estimation
- Budgeting

What You Need

- Grocery list
- Pencil
- Paper
- Calculator

How to Play

Price Estimation

1. Give your child a copy of your grocery list. Ask him to come up with an estimation of how much each item costs, and write that estimate next to the item on the list. Have him bring his copy of the list and his pencil to the store so he can write the real cost next to his estimate.
2. Give your older child your grocery list, a copy of the most recent sales flyer, and the coupons you will be using at the store. If you have a savings card that takes a percentage off the total cost, tell him about that as well. Ask him to take all of these factors into account and come up with an estimate of how much you will pay at the register. Have him write down his number. When you get home, let him look over the receipt to see how close or far off he was from the actual total.

Weights and Measures

1. At the store, show your child the produce scale. Explain that it measures produce in pounds. (If he doesn't already know, tell him that one pound is equal to sixteen ounces.) Choose a fruit or vegetable you want to buy and tell your child how many pounds of it you need. Let him estimate how much of that type of produce is equal to the weight you are looking for, then have him put it on the scale to see if he was right.
2. Find two different types of produce that seem as though they would weigh about the same amount. Apples, oranges, and potatoes work well for this activity. Have your child put one of each type of produce in each hand and try to guess if they are the same weight, or if one is lighter than the other. Let him use the produce scale to test his skills.
3. Calculate the cost of produce. Show your child the price per pound for the type of produce you want to buy, and ask him to calculate how much it would cost to buy four pounds of it. Then let him use the produce scale to measure out the right amount.

Estimate Volume

At the register, ask your child to look at the conveyer belt full of food. See if he can estimate how many bags' worth of food you have bought, asking him to take into account the differences in size between paper, plastic, and recyclable bags.

Comparison Shop

1. Compare the prices of food. Make sure to look at things like brand name versus generic, and the price per ounce of different sizes. Your

older child can use a calculator to figure out which is the best price. For example, if you can buy a 16-ounce box of cereal for \$2.99 and a 21-ounce box of the same cereal for \$3.49, your child can divide the price by ounces to find out the unit price: $\$2.99 \div 16 = 18$ cents per ounce, while $\$3.49 \div 21 = 16$ cents per ounce. Therefore, buying the bigger box is the better deal.

2. Give your child a copy of the sales flyer and your coupons. See if he can match any of the sales items to the coupons, and ask him to figure out how much the item would cost if it were on sale and you used the coupon. Once you're in the store, ask him to compare to see if it's worth buying the brand name with the coupon and the sale, or if the generic brand is still a better deal.

EXTEND THE LEARNING

Ask your child some of the following questions : *Which items did you have a hard time estimating the correct cost for? Which items were easy? Why were some harder than others? How close were you to estimating the total cost?*

Road Trip Math

Road trip math not only keeps your child occupied during a long trip, but it can also practice some of his real-life math skills. From license plates to maps and meals, there are many ways to make your trip a little more “edutaining.” Edutainment is a portmanteau word combining the words “education” and “entertainment.” It refers to activities that are designed to be entertaining as well as educational.

Skills Being Practiced

- Operational math
- Ciphers
- Percentages
- Money skills

What You Need

- Paper and pencil, or whiteboard and dry-erase markers
- Calculator

How to Play: License Plate Math

1. Your child may be looking at license plates to find different states, but you can also play a few license plate math games along the way, too.
2. Have each passenger find a license plate and write down the number, taking out any letters. Ask your child to read each number to you (if she can), and compare them and see whose number is the largest.
Ask: Can you identify the number in the tens place in each license plate? What about the hundreds place? Does anyone's plate have a larger place value than hundreds? What is it? Whose license plate number is larger if you add the numbers on each plate together?
3. Keep track of any vanity plates you see. Use a basic alphanumeric cipher to substitute the letter on plates for numbers. (The easiest code is just giving each letter of the alphabet the number of its position in the alphabet, in which A = 1 and Z = 26.) Calculate to see which vanity plate has the highest numerical value.

How to Play: Map Math

1. Map math can begin even before your trip does. Take out a map and show him where you are and where you are going. Then show him the map key and explain how it translates to miles.
2. From there you can have your child help you find the shortest route to your destination.
3. Have your child compare his route to the roads you have chosen. Ask: *Is the overall distance the same? Does his route have advantages over yours or vice versa? Even if the routes are the same distance, will the speed limit have a bearing on how long your trip takes? Why or why not?*

How to Play: Food, Gas, and Tax

1. Even the stops along the way provide you with the chance to teach your child some road trip math, especially if you're buying food or gas along the way.
2. Let your child pay for an item at a rest stop. Give him a certain amount of money and see if he can figure out how much change he should get. Then have him count the change to make sure he got the right amount back.
3. Encourage your child to practice estimate and rounding at restaurants. After each person has decided on a meal, have him round each price up (or down) to the nearest dollar. Then see if he can estimate how much the entire meal will cost. Keep track of his estimation, and see how close he is when the check arrives.
4. Teach your older child to calculate tips. Explain that the tip is usually a certain percentage of the total cost of the meal. To make it a little

easier, you may want to stick with amounts like 15 or 20 percent. Give your child the basic equation, filling in the pieces you have, and let him come up with the answer. The equation is: *total bill* \times *percentage* = *tip*. So if you ate a \$30 meal and wanted to leave a 15 percent tip, the equation would be: $\$30 \times 0.15 = \4.50 .

CHAPTER 13

Counting, Sorting, and Patterns

Counting, sorting, and patterning are basic math skills that go hand in hand. These skills are the foundation on which the rest of mathematical learning is built. In fact, operational math skills like addition, multiplication, subtraction, and division all rely on these skills, albeit at a more complex level. There are a number of different attributes or characteristics that can be used to sort objects, and with which to create patterns. Some of the more common ways to separate objects are by color, shape, size, texture, length, height, weight, and type of object. All of the activities in this chapter give your child the opportunity to practice seeing the attributes that things have in common and in what ways they differ, helping to build a base of skills that will ready him for more advanced math concepts.

Lollipop Patterns

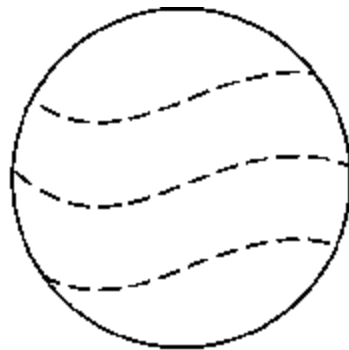
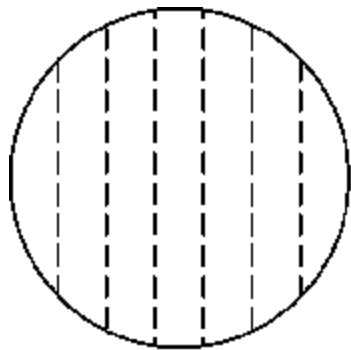
Lollipop patterning is a fun and easy way to get your child thinking about how patterns are found in the natural world. You don't have to use real lollipops, though. For the purpose of these patterning activities, you and your child will make your own craft "lollipops." That way, you can maximize the number of attributes that can be used for patterning, as well as store the pops away for another day.

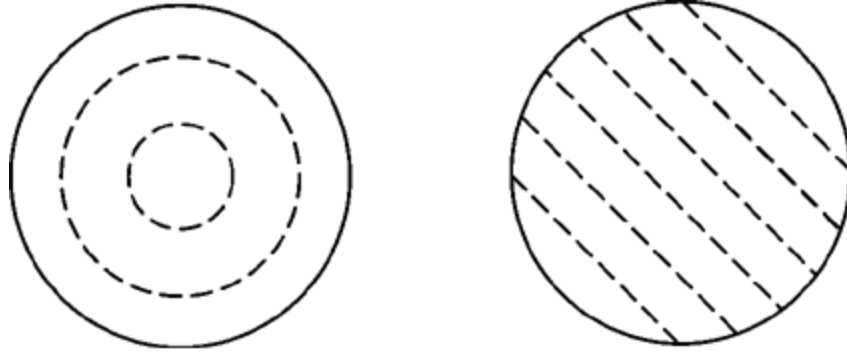
Skills Being Practiced

- Patterning
- Sorting
- Fine motor skills

What You Need

- Lollipop template (optional)
- Multicolored package of craft foam, construction paper, wallpaper samples, or patterned scrapbook paper
- Craft sticks
- Scissors
- Hot glue gun
- Pencil
- Permanent marker
- Stickers, colored tape, and/or rubber stamps
- Markers or crayons





Lollipop Pattern Template

Get Ready to Play

1. To make the lollipops, use a permanent marker to trace around at least four of each of the lollipop templates on heavy paper or craft foam. Make sure to use a utility knife or scissors to score through the dotted lines and trace those patterns on the surfaces, too. If you are drawing your own lollipops, draw concentric circles or patterns like these inside the large circle that makes up your lollipop. These circles are important in creating unique patterns.
2. Trace the same number of circles—without the patterns—on a single color of paper or craft foam. Cut out all the lollipop circles.
3. Give your child markers, crayons, stickers, or other decorative materials. If you have made the lollipops using the templates, you should have sets of circles with the same types of lines on them. Ask your child to decorate each set so that the lollipops with the same lines look exactly alike. That means coloring the same color in the same spaces or placing the same sticker in exactly the same place. In the end, your child should have created sets of circles that can be easily sorted if they get mixed up.

4. Use a hot glue gun to glue a craft stick to back of each circle. Once you have glued on the stick, turn the lollipops over so that the patterns are facedown. Glue the plain, nonpatterned circles to the back of the lollipops. When you are finished, the stick should be between the pieces of paper. One side of each lollipop will be patterned and the other side will not.
5. Separate the lollipops into two equal piles. It doesn't matter whether or not the piles have matching patterns on them, as what you will be doing is writing on the sticks of the pops.
6. Have your child count how many lollipops are in one pile. As he counts, turn each lollipop sideways and use a permanent marker to write the number word on each craft stick. Move on to the next pile and write the numerals on those sticks.

How to Play: Lollipop Patterning and Sorting

1. The most basic activity you and your child can do with these lollipops is to sort them into groups and create patterns. Remember, though, a pattern is only a pattern if it is a sequence of characteristics that repeat in the same order. A red lollipop followed by a blue lollipop followed by a red lollipop isn't a pattern until there's another blue lollipop to complete the repeating sequence.
2. Place all of the pops in a small jar and have your child take them out one at a time, putting them on the floor or on a table. As he takes out lollipops he should create piles of pops that look the same.
3. Begin a pattern line with the pops and ask your child to continue the pattern. The most common patterning ideas (where each letter

represents a different pattern on the lollipop) are: ABA, ABBA, AAB, and ABC.

4. Give your child the lollipops and ask him to make a pattern line.

How to Play: Lollipop Memory Game

1. Mix the lollipops up, and place them pattern-side down in rows. Your child should see a table full of lollipops of the same color.
2. Take turns turning over two lollipops at a time. If the patterns match, the player who turned them over gets to keep them. If they don't match, the player must turn them back so that the pattern faces down again.
3. Player Two may choose to turn over one of the previously revealed lollipops and look for its match, or turn over two new lollipops. Since there are four of each pattern in play, the chances of finding a match is increased.
4. The player with the most pairs at the end of the game wins.

How to Play: Lollipop Matching Game

1. This game is very similar to the Lollipop Memory game. The difference is that it is designed for younger children who may get easily frustrated with the memory game, but who are still able to match patterns.
2. Place the lollipops in rows, pattern side up. Choose one of the lollipops and challenge your child to find all the other pops that look the same as the one you are holding. He may find one, he may find two, or he may find all three of the remaining matching lollipops. If

he doesn't find them all at once, encourage him to keep looking for more matching lollipops.

3. When he has found all the matches to the pop you are holding, it is his turn to ask you to find matches to one he chooses.

How to Play: Lollipop Number Games

Lollipop Number games can be played in a few different ways. Here are a few fun ways to play with the pops:

- Separate the lollipops with number words written on the sticks from the lollipops with numerals written on the sticks. Then ask your child to match the numerals to the correct number word.
- Ask your child to line the lollipops up in numerical order, using both the words and the numerals.
- Have your child hold up the correct lollipops when you say a number.
- Use small toys to represent the correct set for each lollipop. For instance, your child might put a pile of ten LEGO bricks under the lollipop with "ten" on the stick, or he might place six crayons under the lollipop with "6" on the stick
- Make sets of items, and then ask your child to count the items and place the correct lollipops next to the set.

Playing with Your Food

You may not normally encourage your child to play with his food, but snack foods actually provide some great teachable moments when it comes to patterns. All you need is to have some pattern-friendly snacks in the house, and it's easy to combine snack time with math time. How you decide to reinforce patterning and sorting is somewhat dependent on what you choose to have for a snack on a certain day, but there are enough options to still allow for a varied diet of snacks.

Skills Being Practiced

- Patterning
- Pattern recognition
- Sorting

What You Need

- Pattern-friendly snack foods (i.e., pretzel sticks, colored fish crackers, square crackers, circle crackers, trail mix, Chex Mix, grapes, and/or cheese cubes)
- Small plastic cups (preferably clear)
- Paper plates

How to Play

- Use a snack like trail mix or a cereal mix to let your child show you how he can sort and pattern. Provide your child with several small plastic cups and a paper plate. Ask him to sort his snack into the cups by type of food. Once he has

sorted them, ask him to make an “edible pattern” on his paper plate. The pattern might be as simple as *raisin, sunflower seed, raisin, sunflower seed* or as complex as *raisin, sunflower seed, apricot, date, raisin, sunflower seed, apricot, date*.

- Use snacks as a chance to present your child with a pattern he can identify. For instance, you can give him a plate on which you have made a checkerboard of different shaped crackers, or a pattern of crackers with cheese on them alternated with crackers without cheese.
- Use pretzel sticks to help your child understand that patterns can be made up of the same item as long as that item has a characteristic that isn’t always the same. Break some of the pretzel sticks in half and show your child how to make a pattern using the length of the pretzel sticks as the differing attribute.
- Give your child part of his snack in plastic cups and part of it on a paper plate to help him learn how to complete patterns. Arrange the food on his plate in a simple pattern and ask him to complete the pattern with the rest of his snack before eating it.

Junk Drawer Sorting

Everyone has at least one junk drawer. It’s the one into which all the miscellaneous stuff that doesn’t have any other place to go gets thrown.

Over time your junk drawer can become both overwhelming and overflowing, but it can become educational, too. The Junk Drawer Sorting

activity is a winner for both kids and parents. Your child will learn some sorting skills, and you'll get some housecleaning done.

Skills Being Practiced

- Sorting
- Eco-consciousness

What You Need

- Junk drawer
- Trash can
- Newspaper or a paper tablecloth
- Drawer divider or a sectioned desktop organizer

How to Play

1. Lay out a paper tablecloth or layer of newspaper on the floor. Dump the contents of your junk drawer onto the paper. If you're not concerned about anything breakable in the drawer, you can even let your child dump it for you.
2. Stand back and let your child survey the pile of stuff that was in the drawer. Tell her your goal is to sort through and organize the contents of the drawer. Let her know that some of the junk probably isn't worth saving, so when she starts sorting into piles she needs to make a trash pile, too.
3. Ask your child to begin sorting the junk into piles of items that have similar purposes. For example, she might put screwdrivers and hex

keys together because those items are both tools, while tape and glue go into another pile.

4. Once your child has sorted everything into piles of basic functions, ask her to sort in a little more depth. See if she can separate each pile into like items. A general pile of office supplies, for instance, might now be sorted into separate groups of elastic bands, paper clips, pens, and pencils.
5. Help your child identify, name, and categorize any unfamiliar items. (Keep in mind that if neither of you know what it is, you probably don't need it anymore.)
6. Give your child the drawer divider or desktop organizer. Ask her to put the sorted items into neatly categorized, easily understood places in the divider.
7. Approve the trash pile, rescuing anything you want saved, and roll it all up in the newspaper or tablecloth. Put the tablecloth in the trash, and enjoy your newly cleaned junk drawer!

Muffin Tin Toy Sort

Muffin tins are a household item that can easily be transformed into a mathematical tool. With just a few muffin tins and a bunch of different types of toys or craft materials, your child can practice sorting, categorizing, and identifying sets of items.

Skills Being Practiced

- Categorization skills
- Identifying numbers and sets

What You Need

- Muffin tins
- Construction paper
- Scissors
- Permanent marker
- Variety of small toys and/or craft materials (i.e., colored craft pompoms, Fruit Loops cereal, beads, LEGO bricks, alphabet magnets, play food, toy animals, a variety of types of pasta, packets of seeds)

How to Play

1. **Color sorting:** Choose six different colors of construction paper, and cut circles to place in the bottom of the cups in the muffin tin. Give your child a pile of colorful items, such as beads, colored cereal, or craft pompoms, and the muffin tin. Have him sort the items into the muffin cup that matches the item's color.
2. **Number sorting:** Remove the paper circles from the bottom of the muffin cups. Write a numeral on each piece of paper and return them to the muffin tin. Let your child choose from the gathered materials and ask him to put the correct number of items in each muffin cup.
3. **Food sorting:** For this activity, you will need to have more than one set of muffin tins. Put two or three pans on a table and label each one with a different type of food. For example, you may have "Vegetable," "Fruit," and "Meat" tins, or you may have "Breakfast," "Lunch," and "Dinner" tins. Help your child identify each tin's label and verbally identify a few items that could be placed in each muffin

tin. Then give him his play food and ask him to sort it into the correct tins.

4. **Animal sorting:** There are a few different ways you can approach this type of sorting. If your child's toy animals are small enough, you can use one muffin tin and have him sort into the cups, but if they are larger, you may need multiple muffin pans.

Whichever you choose, you can ask your child to sort the animals in a number of different ways, including: farm animals, jungle animals, and zoo animals; bipedal animals, quadruped animals, and animals that fly; or mammals, reptiles, and amphibians. If these are too complicated for your child, write animal sounds on circles that you place in the bottom of the muffin cups and ask him to match the animal to its sound.

5. **Categorization sorting:** For this type of muffin-tin sorting, all your child needs is a bag full of different items. Whether it be numerous types of dried pasta, different types of seeds, or something even simpler like different types of toys mixed together, all your child needs to do is separate the items into the cups based on what they are.

EXTEND THE LEARNING

Animal sorting also opens up the opportunity to combine math and literacy skills. Give your child a set of alphabet magnets, and ask her to find the letter that comes first in each animal's name. You can also make an animal sound and ask your child to spell it with magnetic letters.

CHAPTER 14

Addition, Subtraction, Multiplication, and Division

Once your child has a good grasp of how to recognize and create patterns in the natural world, he's ready to make the connection that there are patterns in the way we work with numbers, as well. Addition, subtraction, multiplication, and division (known, to some degree, as operational math), are all based on patterns between numbers and groups of numbers. The activities in this chapter help your child work with numbers in ways that make those patterns visually apparent.

Build Fact Family Houses

One of the more common themes in operational math is fact families. Every fact family has three core numbers that are related to each other. Just as in a human family, the family grows as connections between these numbers are created. The original three numbers can always be used to make at least four math facts. Your child will begin learning about fact families in relation to addition and subtraction, then later move on to multiplication and division.

Recognizing fact families, especially the ones that make up the “tens facts” in the following example, are key in being able to add by rote.

Putting those families in “houses” extends the analogy of a family, giving your child a fun, visual way to see the relationships.

Skills Being Practiced

- Recognition of patterns in numbers
- Identification of relationship between numbers
- Creating and solving numerical sentences

What You Need

- Colored pencils or crayons
- Lined paper
- Card stock, cardboard, or construction paper
- Scissors (optional)

Get Ready to Play

Here's some information you need to know before you begin.

- **The Family.** The three members of the immediate fact family are numbers that are clearly related to each other. When your child adds two of the numbers together the sum is the third number. For example, if a fact family is composed of the numbers 7, 3, and 10, you can add the first two numbers together to get the last number. So, $7 + 3 = 10$ or, by the commutative property of addition, you can transpose the numbers and get the same answer: $3 + 7 = 10$.

- **Family Cousins.** The family is related by addition but, again like human families, can also be related by subtraction as well. Even with the use of subtraction, these numbers are still related. If you subtract one of the smaller numbers from the largest number, the remaining number (or family member) is always going to be the correct answer. For example: $10 - 7 = 3$ and $10 - 3 = 7$.
- **A Built-In Family Locator.** Just as there are ways that you can keep track of your children when they are not around, there are ways to keep track of missing fact family members, too. Once your child has a good grasp on the members of the family and their related facts, the information will become so ingrained that she should be able to immediately know who's missing when she sees a problem. For instance, if you were to show your child the problem $7 + \underline{\quad} = 10$, she should be able to tell you very quickly that 3 is the missing family member.

How to Play

1. Use a piece of lined paper and a pencil to help your child make a list of the tens facts. She may need a little help, but once you get going, together you should be able to figure out all the combinations of numbers that add up to 10. To get started, write the number 1 on the first line of the paper and ask your child, "What do you need to add to the number 1 to get 10?" Continue this process, remembering to list the inverse facts, too. That means your child will list the problem $9 + 1$ as well as the problem $1 + 9$.

2. On a piece of card stock or construction paper, have your child draw a basic house. The house should be simple: just a basic square with a triangle on top for the roof. On the roof, your child should draw three square windows, one in the gable (the peak) of the roof, and the other two somewhere near the bottom corners of the triangle.
3. On the body of the house, ask your child to draw four long, horizontal rectangular bay windows, one on top of the other, each one going across the whole front of the house (these are not typical of the square windows in most children's drawings, so you may need to show her how to do this).
4. Write two unfinished addition problems ($\underline{\hspace{1cm}} + \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$) on two of the long windows and two unfinished subtraction problems ($\underline{\hspace{1cm}} - \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$) on the two other long windows.
5. On the windows of the roof, ask your child to write three numbers that make up one of her tens facts families. The number 10 should always be in the top window in the gable. Since it is the number that all the other numbers are related to, it is sort of the head of the fact family.
6. Ask your child to use the numbers from the roof to fill in the addition problems. You can give her a hint that 10 will always be the number after the equal sign in these addition problems.
7. Then have her complete the subtraction problems using the same numbers. Remind her that subtraction is just the reverse of addition, prompting her with questions like, "You added 7 to 3 to get 10, so what number do you think you'll be left with if you take that 3 away from 10?"
8. When she's done, it's time to decorate the house!

EXTEND THE LEARNING

Have your child make one house for each of her tens facts. She can cut them all out and create an entire neighborhood of fact families.

Multiplication Magic: Tricks to Make Multiplication Easy

Being able to pull up the answers to multiplication facts is a very important skill your child will need to master in order to move on to more complicated types of math. This is why so much time is spent in school trying to make sure that she can recall the answers as quickly as possible. Not all kids are able to learn their multiplication facts using rote memorization, and if your child is one of them, don't worry too much about it. There are Multiplication Magic Tricks to help and amaze her.

Research has shown that rote memorization doesn't help kids to learn the connections between numbers or understand the rules of multiplication. Studies have found that *practically-based* math, or finding ways to help kids relate math to real life, is more effective than just teaching the facts.

Here are some practically-based multiplication strategies you can do easily:

- Use household items to visually represent multiplication. Using things like blocks or little toys can help your child understand that multiplication is really just a way to add more than one group of the same number over and over again. For instance, write the problem 4×2 on a piece of

paper, and then help your child create four groups of two blocks each. He can then see that what the problem is asking him is to put together four groups of two.

- Practice doubles facts. In math, the concept of “doubles” is almost magical in itself. Once your child has learned the answers to his “doubles” addition facts (adding a number to itself) he automatically knows the answers to the twos times table. Simply remind him that any number multiplied by two is like adding that number to itself, because the problem is asking how much are two groups of that number.
- Connect skip-counting to five facts. Your child probably already knows how to count by fives. What he may not know is that by counting by five, he’s actually reciting the fives times table. Show him that if he uses his fingers to keep track of how many times he’s “counted” by five, he can discover the answer to any fives problem. For example, if he’s counted by five up to fifteen, he’ll have three fingers held up. That’s actually the same as 5×3 !

How to Play: Magical Multiplication Tricks

While it’s easy to see through the magic of some of the more practical multiplication tricks, there are other ways to get the answers that aren’t as easy to see through. Once your child understands how to do the trick, though, he’ll be able to amaze his friends and teachers with his talent!

The Magically Appearing Zero

1. Write out the tens times table for your child to see and ask if he notices a pattern. What he should be able to see is that when multiplied by the number 10, a number looks like itself with a zero on the end.
2. Let him try it out on a calculator using large numbers, too. He'll see that every time he multiplies by 10, a zero "magically" appears on the end!

Multiplying by Zero

Multiplying by zero doesn't lend itself easily to magic. It's not easy to understand that when you multiply a number by zero the answer is zero, not the number you started with. Once your child understands that question really is "How much is zero groups of something?" he'll realize the answer is "Nothing," and understand how the number disappeared.

Seeing Double

The magic of the elevens times tables may only work with single digits, but that's probably all your child is working with right now anyway. Demonstrate how multiplying by 11 always makes your child see double of the number he's multiplying. For instance, $11 \times 7 = 77$ and $11 \times 3 = 33$.

Doubling the "Doubles"

1. If your child has figured out the trick to his twos, then he'll be able to make magic with the fours. Ask him to fold a piece of paper in half lengthwise, then unfold it to make two columns separated by the fold. Have him write his twos tables in one column.
2. Have him write his fours table in the next column.

3. The magic that he should see is that the answers are the doubles doubled. That is, if $4 \times 2 = 8$ (the double), then $4 \times 4 = 16$. The double has doubled!

Magic Fives

1. This trick is a little odd, as it only works with odd numbers. Write down all the fives multiplication facts that use an odd number, and have your child find the magical oddity.
2. He may see that if he subtracts one from the multiplier, “cuts” it in half, and puts a five after it, that’s the answer to the problem. If that went too fast for you to see, look at it like this: $5 \times 9 = 45$, which is actually 9 minus 1 (8), cut in half (4) with a 5 on the end (45).

Even More Magic Fives

1. If your child doesn’t like skip-counting as an option to make the fives tables appear, there is another trick to try. Ask your child to write down all the fives facts that involve even numbers, and ask him to look for a pattern.
2. What should appear before his eyes is that each answer is simply half of the number he’s multiplying by five, with a zero on the end. Not a believer? Check out these examples: $5 \times 6 = 30$, and $5 \times 8 = 40$.

Magical Finger Math

1. To learn the nines tables, all your child really needs is his hands. Have him place his hands in front of him and explain that the fingers on his left hand represent the numbers 1 through 5. The fingers on his right hand represent the numbers 6 through 10.

2. For his first trick, ask him to fold down the middle finger on his left hand, or finger number 3.
3. Remind him that $9 \times 3 = 27$, and then have him look at his hands. To the left of his bent finger there are 2 fingers. To the right are his remaining 7 fingers.
4. The magic to this trick is that the number given to the finger that he folds down $\times 9$ is equal to the number of fingers to the left of the bent finger (in the tens place) and the fingers to the right (in the ones place.)

Multiplication Card Games

For children who aren't taken in by rote memorization or "magic" tricks, another way to make those multiplication skills become second nature is to just make it part of everyday fun. Here are a few card games that help you incorporate multiplication without making it a big deal.

Skills Being Practiced

- Multiplication facts
- Number comparison

What You Need

- Deck of cards with the face cards removed
- Pencils and paper

How to Play: Multiplication War 1 (Two Players)

1. Shuffle the cards and deal them facedown equally between the players.
2. On the count of three, each player turns over a card. The first player to say the product of the two cards wins the hand. For example, if Player One turns over a 6 and Player Two turns over a 5, the first player to say 30 gets to keep both cards.
3. The game is over when all the cards have been turned over. The player with the most cards is the winner.

How to Play: Multiplication War 2 (Multiplayer)

1. Shuffle the cards, and place them in a facedown stack in the middle of the table. Each player draws two cards.
2. Go around the table and ask each player to give the product of his two cards. Once everyone has had a turn, all players must show their cards so the other players can check the multiplication. The player with the highest product gets to take all the cards.
3. This continues until all the cards are gone. The player who has the most cards at the end of the game is the winner.

How to Play: Multiplication Go Fish

1. Shuffle the cards and deal six cards to each player. Place the remaining cards in a pile in the middle of the table. This pile is to be used as the draw pile.
2. The game is played very much like typical Go Fish, but when a player asks another player if he has a card, he must come up with a

multiplication fact to represent the card's value instead of just saying the card. For example, instead of asking, "Do you have any 6s?" a player may ask, "Do you have any 2 times 3s?"

3. If the player asked has a card of that value, he must relinquish it to the player who asked, who then can put the matched pair aside. If the player asked does not have that card, he says "Go fish," and the player who asked takes a card from the draw pile.
4. The game continues this way until one of the players runs out of cards. The player with the most matches is the winner.

How to Play: Ladder Multiplication Game

1. This is a more complex card game than any of the other multiplication games. It should only be played with children who have a good grasp of multiplication facts and don't get frustrated easily. It's also a game that can go on for a long time, so having a fairly long attention span is also important.
2. Designate a recorder to keep track of all the players' points. Give the recorder a piece of paper and a pencil and ask him to write everybody's name on the paper. Place another piece of paper in the middle of the table and draw a ladder on it.
3. Deal six cards to each player. These cards remain as each player's hand for the entire game and can be displayed faceup or hidden from view. They are never discarded or lost.
4. Place the rest of the cards to the side. This is the draw pile.
5. Turn over the first card in the draw pile, and place it in the middle of the table. This card serves as the first "rung" in the ladder, so the

recorder writes the card's number on the first rung of the ladder (on the paper in the middle of the table).

6. The first player takes a card from the draw pile. He then looks at the cards in his hand and tries to find one that can be multiplied with the card he drew to create a product larger than the number on the first rung of the ladder. If he is able to do it, then this product becomes the next rung in the ladder. The recorder writes that number on the second rung, the first player is awarded a point, and his draw card is placed at the bottom of the draw pile.
7. The next player turns over a card from the draw pile and tries to find a card in his hand that can create a product larger than that of the second rung of the ladder. If he is unable to do so, he places his draw card on the bottom of the draw pile and it is the next player's turn. If the third player is able to come up with a product larger than the number on the second rung, that number is written on the third rung, and that player is awarded a point.
8. Game play continues until no player is able to create a product larger than the number on the highest rung of the ladder. The player with the most points is the winner.

Division Card Games

Card games are a good way to practice multiplication, but they can also be modified to practice division, too. It takes a little more creativity, but you and your child will both have fun and end up with a better understanding of division.

Skills Being Practiced

- Division facts
- Number comparison
- Even division
- Remainders

What You Need

- Deck of cards

How to Play: Ready, Set, Divide!

1. Assign numbers to the face cards, writing down the key or placing a small piece of tape on each card with the number written on it. For the purpose of this game Ace = 1, King = 12, Queen = 12, and Jack = 11.
2. Shuffle the cards, then deal them facedown equally between the two players.
3. On the count of three, each player must turn two cards faceup.
4. Looking at all four cards, the players must try to find three cards that can be put in sequence to create a division problem. For instance, if one player reveals a 5 and a 3 and the other player reveals a King and a 4, one of the players could take the 4, the 3, and the King to make the problem King $(12) \div 4 = 3$.
5. The first player to recognize a potential division problem, and set it out with all the cards, wins the hand. All the cards not used go back into the players' hands for the next round.

6. The game is over when there are no more cards left, or the players are unable to make any more division problems.

How to Play: Division Go Fish

1. This game is played almost exactly like Multiplication Go Fish, except that instead of thinking of a multiplication problem to represent the card value she is looking for, a player must come up with a division problem. So, if a player is looking for a match for her 6, she might ask, “Do you have any 18 divided by 3s?” or “Do you have any 12 divided by 2s?”
2. If the player being asked has that card, she must give it to the asking player. If not, she must say “Go fish,” and the other player takes a card from the draw pile.

Operation Words Brainstorm

Your child might know his number facts, but when it comes to word problems, it's likely that he is a little confused. For many kids it's not the math that confuses them, it's figuring out which operation they need to use. There are always key words or phrases in the problems that can help, but your child needs to learn which words go with which operations. That's what the Operation Words Brainstorm activity is all about.

Skills Being Practiced

- Mathematical vocabulary
- Word problems

What You Need

- Markers
- Paper
- Tape
- Timer

COMMON WORDS FOR OPERATIONAL MATH

Addition	Subtraction	Multiplication	Division
plus	minus	times	divided by
add	fewer than	multiplied by	goes into
and	difference between	product of	into
combine	take away	multiply	divide
added to	from	by	half of
together	less than	groups of	(fraction) of
greater than	decreased by	doubled by	per
in addition to	reduced by	tripled	quotient
more than	subtract	how many each	groups of
increased by	how many left	twice as much	every
total	dropped by		

How to Play

1. Talk to your child about what he thinks about math word problems, reassuring him that you're not going to be solving any problems. Ask him what he finds the most difficult about word problems and, if he doesn't bring it up, mention to him that a lot of people find it hard to understand what the problem is asking them to do.

2. Explain that if you know the “magic words” to listen for, word problems can actually be really easy to solve. Let him know that every problem has phrases or words that are clues to what type of math he needs to be doing. Tell him that what you’re going to do is help him learn as many of those clue words as possible. Most word problems include more information than is necessary to solve the problem. Once your child is able to recognize the key words and phrases, it will be much easier to figure out what other information is also important to the problem.
3. Tape four large pieces of paper somewhere where they are easy to see and easy to reach. Label them: Addition, Subtraction, Multiplication, and Division.
4. Ask your child if he can tell you one word or phrase that he knows is used to mean “add these numbers” (the previous table provides a number of examples for you to use).
5. Write his words on the Addition paper, and add a word or phrase of your own. Then tell him you’re going to set the timer for 5 minutes, and the two of you are going to see how many other phrases you can come up with that mean the same thing. Write them down.
6. Repeat this process with each of the other mathematical operations.
7. When you are finished, demonstrate how some of the phrases can be used as clue words. For example, if you have the phrase “in addition to” on the Addition paper, you might say: *“I bought three apples. In addition to those, I have four apples in the kitchen. How many apples do I have?”*

EXTEND THE LEARNING

Ask your child to create word problems using some of the clue words.

Toothpick Subtraction

Your child may understand the concept of place value in that she knows which is the ones place and which is the tens place, but understanding that there's a connection between the two is a little harder to understand. One way to help her see this is to help her *actually* see it. The Toothpick Regrouping activity helps your child understand how ones become tens, and how it's possible to borrow from a ten when subtracting.

Many parents remember learning the concept of “borrowing” in subtraction and “carrying over” in addition. For the most part, these terms have been replaced with the singular term “regrouping.” Regrouping is used to describe both processes, since they both involve “trading” or making changes to place value “groups.”

Skills Being Practiced

- Place value
- Regrouping

What You Need

- Toothpicks or craft sticks
- Elastic bands

- Paper
- Markers
- Index cards

How to Play

1. Label two sets of index cards with the numbers 0 through 9. Then fold a piece of paper in half lengthwise, open the page, and trace the fold with a marker. Label the top of the right-hand column “Ones” and the top of the left-hand column “Tens.” Set these materials aside.
2. Ask your child to help you make five or six “tens bundles” with the toothpicks or craft sticks. Explain to her that ten bundles consist of ten sticks held together by an elastic band. Set the tens bundles aside as well.
3. Lay out one set of the numbered index cards in a vertical row (up and down) in numerical order. That means the 0 card will be at the top, and the 9 at the bottom of your set. Ask your child to place the correct number of toothpicks on each card. Explain that since these numbers are less than ten, they remain single sticks and cannot be bundled up.
4. Open up the sheet of paper on which you have identified the Tens and Ones columns, and ask your child to tell you in which column these cards would belong. She should be able to tell you they go in the Ones column because they are single sticks and not tens bundles. If she is unable to explain this, then remind her that only tens bundles go in the Tens column.

Check for Understanding

1. Your child may say he understands the concept of “tens bundles,” but to really test his understanding, place one tens bundle in the Tens column. Ask him how much that is. He should say “ten.” Place an index card with the number 1 on it under the ten bundle, and ask him if that is how he writes ten.
2. When he says no, explain to him that what he has written is the equivalent of “one Ten,” but in order to make the number complete, he’ll need to add a 0 in the Ones column. That’s because the number really says “one Ten and zero Ones.” Place an index card with the number 0 in the Ones column to show him how the two cards together make the number 10.
3. Ask him to use the index cards to show you “1 Ten and 1 One,” then ask him to identify what number he has made (11). Now ask him to put the correct number of tens bundles and single sticks down on the cards, and ask him what number he gets by adding one tens bundle and one single stick (11).

How to Play: Begin with Addition

1. Write the plus sign (+) on an index card. Use the sheet of paper with the Tens and Ones columns again. In the Ones column, use the index cards to set up a vertical addition problem that adds up to more than ten (for example, $9 + 2$, but you’ll stack it instead of writing it from left to right).
2. Have your child put the correct number of sticks on each card, and count the total number of sticks to get the answer. Ask her if there are enough sticks to trade some of them in for a tens bundle. When your child is adding and is able to trade in single sticks for a tens bundle,

make sure to use the word “trade.” It’s the language she’s likely to use at school, and it verbalizes exchanging one thing for another of equal value.

3. Have her trade in ten sticks, and then place the newly acquired tens bundle and the remaining single sticks in the correct columns below the addition problem. Ask: *What is the answer (1 Ten and 1 One)? Can you show the answer with the index cards? What number have you made?*

How to Play: Subtraction with Regrouping

1. Clear your Tens and Ones columns and create a minus sign (–) on an index card.
2. Set up a new vertical problem, using both the Tens and Ones columns. Start with something that doesn’t require any regrouping (formerly known as “borrowing”). For example, try the problem $15 - 4$.
3. Again, have your child create the problem using tens bundles and single sticks, placing the correct index cards and number of sticks in the columns below the problem. In this example, he should have 1 Ten and 1 One left. Do a few more subtraction problems without regrouping before moving on to the more difficult problems.
4. Set up the problem $11 - 2$. Ask your child to put out the right number of sticks and to try to do the problem. Ask: *Can you do the problem with the sticks you have handy? Why not?*
5. Remind your child that when he was adding, he was able to trade in to make new tens bundles. Ask: *Is there a way to make more single sticks?* If your child doesn’t see the solution, explain to him that all he has to do is “break” one of the tens bundles and regroup them.

Once a tens bundle is broken, it's just ten single sticks (or ones) that can be placed in the Ones column with the rest of the singles.

6. Open a tens bundle and add it to the Ones column, putting a 0 card in the Tens column to remind your child there are no more tens. Have your child complete the problem $11 - 2$. Ask: *Can you do it now? How did you do it?*

EXTEND THE LEARNING

Create a problem that asks your child to regroup, but also to leave some Tens behind. For example, try the problem $21 - 9$. See if your child can figure out how to complete the problem, reminding her that once she breaks open a tens bundle, she needs to make sure the Tens column has the number cards that matches how many tens bundles are left.

CHAPTER 15

Money

Money is a hard concept for many children to learn, not because they don't understand what money is and how it's used, but because the coins, bills, and their values are confusing. That means when it comes to practicing money skills, you have to think beyond making change and budgeting. The activities in this chapter will not only help your child learn to work with money in the real world, but also help her to recognize coins, bills, and their denominations.

Lemonade Stand Math

Your child may love the idea of having a lemonade stand in the warm weather, but she probably doesn't know that in order to make money, she'll have to do a lot of planning, and even invest some money to start up a stand. The Lemonade Stand Math activity is a great way to help her see how much math is involved in an everyday money-making project.

Skills Being Practiced

- Estimation
- Operational math
- Money sense
- Calculating percentages

- Profit/loss margin skills

What You Need

- Paper and pencil
- Calculator
- Trip to the grocery store

How to Play

1. Help your child price ingredients. There's no better way to work on money sense skills than trying to find a good deal. Take your child to the grocery store and have her explore whether it's going to be a better investment to buy fresh lemons and sugar, or lemonade mix. Have her add the cost of the fresh ingredients together and compare it to the price of the mix.
2. Talk about size and price. While you're at the store, she'll have to price cups, too. It's not as easy as it might seem, as there are a number of profit/loss decisions that go into picking cups. Ask her to consider these questions to see which cups would be the most cost-efficient: *If you bought larger cups, would you charge more per cup? What size cup do you think people would be more willing to buy? How many cups are in a package, and how much does that mean it costs per cup? How does the size of the cup affect how much you'll have to pay for ingredients?*
3. Calculate start-up costs. Once your child has purchased her supplies, ask her to add the price of ingredients and cups to come up with a total price. Then explain that depending on the price she sets, she may

also need to have some money to start with in order to make change. Ask her, too: *How do you plan on advertising? Do you need to buy supplies to make posters?* Explain that all of these costs together are her start-up cost.

4. Explain the concept of profit and loss. Once your child has an idea of how much money she'll be putting into her lemonade stand, it's time to help her understand that in order to make a profit, she'll have to make more money than she spends in the first place.
5. Set the price per cup. Ask your child how much she thinks she'd like to charge for one cup of lemonade. Have her divide her start-up cost by the price per cup, explaining that the number she gets is the number of cups she'll have to sell just to make back the money she's already spent. The math to set the price per cup is a simple algebraic formula that even young kids can understand. For example, if your child spends \$25.00 on supplies and wants to charge 25 cents per cup, the problem is $\$25.00 \text{ (supplies)} \div 0.25 \text{ (price per cup)} = 100 \text{ cups}$. She needs to sell 100 cups to break even.
6. Figure out how many cups to sell to make a specific profit amount. Once your child knows how many cups she has to sell to make her money back, it's time to figure out how to adjust the price of her lemonade to make a profit. If she knows how much money she wants to make, then she can calculate how many cups she'll have to sell to make that amount in addition to her original investment. For example, if she wants to make \$5, then she divides that amount by the price per cup ($\$5.00 \div 0.25 = 20 \text{ cups}$) and then adds that number to how many cups she'll need to sell to break even. (The answer is 120 cups!)

7. Adjust the price per cup. By now, your child probably knows that 25 cents per cup is going to make for a lot of work, so it's time for her to play with some other numbers to see if she can make a profit without selling ridiculous amounts of lemonade. Depending on the prices she tries, she may need to practice rounding, too. For example: $\$25.00$ (supplies) $\div 0.75$ (price per cup) = 33 r (r stands for remainder or what's "left over") 3 cups, rounded up to 34 cups. At 75 cents per cup, she'd only have to sell 34 cups to break even. So, in order to make her extra \$5, she'd calculate: $\$5.00$ (extra) $\div 0.75$ (price per cup) = 6 r 6 cups, rounded to 7 cups. To make a profit, she'd only have to sell 41 cups. That's much better than 120!

Being Prepared for Customers

Now that your child has figured out ingredients and price per cup, there's more to think about.

- Does she know how much it will cost if a customer wants two cups of lemonade?
- If someone gives her \$2.00 for two cups of lemonade, how much change do they need?
- Would it be easier to make change if a cup of lemonade is priced at 75 cents instead of 60 cents? Why?
- When is she likely to have more customers? At what time of day, and in what type of weather?
- Is there a way to see what the weather is going to be like the next few days? For both your sake and your child's, this is a good time to show her how to find a long-term weather forecast prediction, and to plan her outdoor activities

accordingly. It will increase the likelihood of profit, and decrease the likelihood of complaining!

Getting to the Bottom Line

Once your child has finished running her lemonade stand, doing some follow-up can help her see whether it was worth it, in terms of both financial and physical resources. Help her count the money she made, and then ask her to subtract that amount from her original investment. Did she make money or lose money? Combining that answer with her thoughts on how easy or difficult it was to make the lemonade, run the stand, and get customers can show her whether she's willing to do it all over again.

EXTEND THE LEARNING

Practice observation and graphing skills by having your child keep track of how many cars pass by at certain times of the day, both on weekends and weekdays. Your child can make a graph to see when her lemonade stand is most likely to be successful.

Muffin Tin Coin Sort

When kids are first learning about money, it can be hard to tell one coin from another, let alone figure out what the value of each coin is. It is better to play money games with real coins instead of plastic ones. That way your child will get a sense of the weight of each coin, the ridges on the edges, and all the other things that make real coins unique from plastic or paper ones. A muffin tin is just the right size to help your child learn to

sort coins by size and denomination. There are a few different ways to do this.

Skills Being Practiced

- Money sense
- Recognition of different coin features
- Naming coins
- Recognition of the value of coins
- Sorting

What You Need

- Several pennies, nickels, dimes, and quarters (in a small zip-top bag or container)
- Muffin tin
- Paper muffin cup liners
- Paper
- Marker

Get Ready to Play

1. Show your child the pile of coins you have, and ask her if she recognizes and/or can name any of them. If she is unable to name them, take one penny, one nickel, one dime, and one quarter out of the pile and line them up from smallest denomination to largest. Name each coin and its value.

2. Place one of each of the coins in a different cup of the muffin tin, and give your child the rest of the coins. Ask her to put them in the correct muffin cups according to how you have started sorting them.
3. Ask your child to take out all the 1-cent coins. Ask her to remind you what they are called. Do the same for the rest of the coins.
4. Your child will mostly see money words in books, on signs, or math worksheets, so she'll need to recognize them in typed and printed form, too. On a piece of paper, write the words "penny," "nickel," "dime," and "quarter," so your child can see them in print. Place one of the correct coins next to each word, so she can associate the coin with the word. Use a marker to write each of the words on the bottom of a paper muffin cup liner.
5. Place the liners in the muffin tin and have your child sort again, using the words as a guide.
6. Repeat this process with the value of the coins, using both the "¢" sign and the word "cents," so your child is familiar with both.

EXTEND THE LEARNING

Write amounts on the bottom of muffin cup liners that will require your child to add two coins together. For instance, try writing amounts like "26 cents" or "6 cents" on the liner, placing them in the tin and asking your child to put the right combination of coins in each cup.

How to Play

1. In separate cups of a muffin tin, place 25 pennies, 15 nickels, 15 dimes, and 10 quarters. If you have half-dollar coins, put 2 of them in another section.
2. Give each player one penny with which to begin the game.
3. Choose a player to start the game. That player flips his penny to see if it lands on “heads” or “tails.” If it is “heads,” he gets to pick a penny from the muffin tin. If it is “tails,” it’s the next player’s turn.
4. Once a player has 5 pennies, he can trade them in for a nickel. When he has 2 nickels or a nickel and 5 pennies, he can trade in for a dime, and so forth.
5. The game play continues until a player has a dollar’s worth of coins.

The Home Store

One of the harder concepts to learn about money is how to add different coins and bills to make the correct amount. As an adult, you probably take this for granted when you go to the store, especially if you use checks or a debit card. It’s not as easy for your child to figure out how much money to give to a cashier when she buys something. Setting up a play store in your home can give your child some practice adding money, and making change.

If your child is just starting to learn about money, don’t add bills to the game. It will be difficult for him to figure out the correct amounts. Children who understand the value of coins are ready to add bills to the mix and can be encouraged to ask for change for dollar bills to make purchasing easier.

Skills Being Practiced

- Counting money
- Adding money
- Recognizing monetary values
- Making change

What You Need

- Money (either play or real)
- Index cards or labels
- Marker
- Calculator
- Items to “purchase”
- Table

How to Play

1. Designate an area in your house as a “store.” Place the items you have for sale in the store. These can be new, special items for this activity, or just toys and things you already have around the house.
2. Use an index card or label to price each item. Make sure to price them so that your child can’t use a single bill or coin to purchase them. For instance, it’s very easy to pay for a \$2 item, but it takes more thought to pay for an item that costs 53 cents.
3. Set up at a table with a calculator and some change. This will be your checkout area and your “bank.”
4. Give your child two or three dollars in coins. Begin the game by telling him he can buy as many items as he likes but he has to pay for

them one at a time, using exact change. Explain that if he does not have the exact change for an item, he must take some of his money to the bank and trade it in for different coins of the same value.

5. Play this game for a little while and see how well your child does counting money to make exact change.
6. Tell your child it is his turn to be the cashier, but that, unfortunately, when you pay, you will not be able to pay in exact change. That means he will have to give you change back when you purchase something.
7. Bring an item up to the “register,” and pay for it. Show your child how to input the amount of the money you have given him and subtract the cost of the item from that number. Ask: *What do you think the number on the calculator means? Can you give me that much change back?*

EXTEND THE LEARNING

Place price tags on the items your child uses daily, such as his books, toys, DVDs, etc. Give him a set amount of pretend money for the day and ask him to “pay” you each time he wants to use something. Ask: *Does he have enough money to make it through his day? Why or why not? What can he do to make it through the day and not be broke? Would it help to watch a DVD with a sister or brother, and split the cost?*

Bean Budgeting

How often has your child wanted you to buy her something that you can't afford, and she's told you just to go to the bank to get money? Like most kids, your child probably doesn't understand that the money in the bank is mostly earmarked for living expenses and isn't just "free money." The Bean Budgeting game helps to give your child a sense of the value of money and how it is sometimes tough to make decisions about how to use it.

Skills Being Practiced

- Budgeting
- Money sense
- Understanding of the value of money

What You Need

- 2–6 players
- Jelly beans or dried beans
- Bean Budget Sheets (use following table as a guide)
- Pencils and paper
- Timer

HOW MANY BEANS DOES IT COST?

Housing	Food	Clothing	Fun	Other Bills
Live with family = 0	Cook all meals = 1	Hand-me-downs = 0	Parks/ TV/ hang with friends = 0	Pets =1
Rent apartment = 1	Eat fast food once a week = 2	Thrift stores =1	Satellite/Cable = 1	Cell phones = 2
Rent a house = 2	Eat fast food, one meal a day = 3	New, not name brand = 2	Concerts/movies/museums = 2	Internet = 3
Buy a house = 3	Eat fast food, all meals = 4	New, all name brand = 3	Taking vacation = 3	Own a car = 4

How to Play

1. Spilt your players into two families (teams), and give each family 20 beans, explaining that these beans are like the set amount of money your real family has each month to pay your real-life bills. Provide each team with a copy of a Bean Budget Sheet in each of the categories: Housing, Food, Clothing, Fun, and Other Bills.
2. Explain that each family must work together to make at least one choice in each category, but each family also needs to have at least 3 beans left over for any emergency expenses that might arise. Since all the decisions need to be agreed upon amongst team members, encourage your child to discuss the pros and cons of each situation.
3. Set a timer for 10 minutes to give each family a chance to move their “money” around, to make sure they have everything they need, and can still stay within the budget.
4. When the timer goes off, talk about the decisions each “family” made. Questions to explore include:

- How did your family decide what was important?
- Were there things that you paid for that you didn't really need but really wanted?
- Were there things you really wanted but didn't choose? Why?
- Are there drawbacks to some of the options that cost fewer or no beans?
- Was it hard to save 3 extra beans?
- How does this game apply to real life and real money?

EXTEND THE LEARNING

Play the game again, but this time give each team an added hardship (such as a nonnegotiable expense like braces or diapers) and the option to not save any beans. Ask your child to talk to you about how that hardship affects the way the rest of the beans get spent.

CHAPTER 16

Measuring and Fractions

The world around you is described in terms of measurement and fractions. People talk about how tall someone is, how much something weighs, or how loud something is. Measuring and fractions are math skill sets that are more alike than they may seem at first. In order to understand and work with fractions, your child first needs to understand the concept of measurement. This chapter will help your child practice the basic concepts of measuring, understand the need for standard measurement tools, and find ways that fractions fit into his daily life.

How Many Paper Clips?

When your child first starts out learning about length, height, width, and other ways to measure items, the units used to describe them can sound like a foreign language. *You* might be able to look at the microwave and guess that it's close to sixteen inches long, but at first, all your child is able to see is that it's longer than the toaster and a little bit taller than the coffeemaker. Using paper clips to measure can help give a way to compare things, and learn about the need for a standard unit of measurement.

Skills Being Practiced

- Measuring

- Fine motor skills
- Use of nonstandard units of measurement
- Learning and recognizing measurement-related vocabulary

What You Need

- Box of paper clips
- Paper
- Pencil
- Glue
- Scissors
- Piece of cardboard

Get Ready to Play

Introduce the vocabulary of measurement. Your child may already use some of the vocabulary of measurement and not know it. Begin the conversation about words that indicate measurement by talking about common household items. You can ask your child things like whether he thinks the chair is *taller* than the table, if the table is *longer* than the kitchen counter, if he is *shorter* than the bookcase, etc.

1. After you've discussed it a little bit, ask him if he can tell you which words you used in your conversation that talked about how big, small, tall, short, heavy, or light something was. Explain that those are measurement words.
2. Stress the vocabulary of height and length. Explain to your child that today you're only going to be figuring out how long, short, or tall things are, and that those are words that indicate height and length.

3. Direct your child to find a way to compare items. Cut a piece of paper into strips of different lengths and ask your child to put them in order from shortest to longest. Ask him how he knows which one is longest.
4. Now ask him *how much longer* the longest strip of paper is than the shortest strip. He is likely to put the two strips next to each other and say “that much longer,” but tell him if you weren’t there to see it and needed to know the answer, he would have to find a different way to tell you that you could understand. You are trying to show your child that to compare things, there needs to be a common way to measure them. Saying that a piece of paper is two fingers long and another is two toes long doesn’t provide a way to compare them. Using paper clips, beans, or blocks to measure helps describe things in a way that can be compared.

How to Play

1. Give your child the box of paper clips. Have him take out some of the paper clips and compare them to see if they are the same size as one another. Ask him if there’s a way to use the paper clips to describe the length of the strips of paper. Then show him how to measure a strip by laying paper clips down end to end beside it or on top of it.
2. Ask him to measure all the strips. As he measures each strip of paper, have him use a pencil to label it with how many paper clips long it is. Remind him to include the words “paper clips” after the number. That way there’s no question as to what was used to measure the strip, and the measurement can be replicated.
3. Make paper clip measurement tools. Now that your child understands that using paper clips is a way to compare the length and height of

different objects, help him make some measurement tools out of paper clips. Show him how to make a paper clip chain and have him make a “measuring tape” of about 20–25 paper clips to measure tall or long items.

4. Cut a narrow strip of cardboard. Have your child glue 10 paper clips on it, end to end. This can be his “ruler” to measure shorter items.
5. Let him measure the house. You can approach measuring the house in two ways: by giving your child a sheet of paper with items written on it, or by giving him a piece of paper on which to write a list of the items of his choice. Either way, let him take the paper, a pencil, and his measurement tools to explore and write down his results.

EXTEND THE LEARNING

Explain the difference between *standard* and *nonstandard* units of measurement. Paper clips work well, but the whole world doesn’t measure in paper clips, which makes them a nonstandard unit of measurement. A standard unit of measurement is one that a large group of people uses as a tool. That’s why your child is X inches tall, not X paper clips tall.

How Does the Family Measure Up?

Now that your child has a bit of a handle on how to measure things, you can use the entire family as a way to practice measuring, and to emphasize how important it is to have a standard unit of measurement. All you need is a little space, both indoors and outdoors, and some willing volunteers to help show how your family’s measurements compare to each other.

Skills Being Practiced

- Measuring
- Fine motor skills
- Standard and nonstandard units of measurement
- Learning and recognizing measurement-related vocabulary

What You Need

- Chalk
- Clear, level paved area (or pieces of butcher paper)
- Rulers
- Measuring tapes
- Paper clips, blocks, toys cars, or other small items of uniform size
- Markers

How to Play

1. Find an outdoor area large enough for all your participants to lie down on the ground. If you are unable to do so, you can do the same activity using large sheets of butcher paper.
2. Lie down on the ground with your arms a little bit away from your body, your palms flat to the ground, your fingers spread, and your feet turned to each side.
3. Have your child use chalk to trace the outline of your body. When she is finished, get up without smudging the chalk and write your name inside the outline. Repeat this for each family member.

4. Give each family member a different item with which to measure each outline. For instance, you might be measuring with blocks, and your child might be measuring with paper clips.
5. Specify which parts of the outlines you will all be measuring. It's easiest to start with the simple things like the length of legs, the overall height, finger length, and width of hands. Give each person a different color of chalk and set him or her to measuring the outlines.
6. Once each person has come up with a number, ask them to write the number and measuring tool used on the correct place in the outline. For example, if you measure your child's height with blocks and use 15 blocks to do it, then label the height on her outline as "height = 15 blocks."
7. When everyone has finished measuring and recording, take a look at the recorded numbers. Ask: *Why are the numbers different?* Your child should be able to tell you that the numbers are different because the tools each person used to measure weren't all the same size. Affirm this, reinforcing vocabulary by calling this *nonstandard measurement*.
8. Have your child look at all the supplies you have gathered, and ask if there are measurement tools that use standard units of measurement. Point out the rulers and measuring tapes, and explain that these are tools that are typically used to measure height and length. Show your child how to interpret the markings on each one and how to use them.
9. Measure again with the tools that use standard units of measurement. If you have more than one measuring tape and ruler, this will go a lot faster. Regardless, make sure everyone has a turn to measure again and write the results. Compare again to see if using a standard unit of measurement made a difference in the numbers.

EXTEND THE LEARNING

You can also reinforce the idea of the need for standard units of measurement by using your family as measurement tools. See how many “yous” long your outdoor space is as compared to how many “your childs” long it is. Then ask your child how the numbers can be so different, considering the space stayed the same size.

Cookie Fractions

Fractions are not an easy concept for kids to understand. There’s just something about trying to figure out how to cut numbers into pieces that’s really confusing. However, being able to visualize how a whole number can be cut up into fractional pieces makes the concept a little less abstract. Using cookies to reinforce the idea of fractions combines your child’s love for food and using math in real life.

Skills Being Practiced

- Concept of a “whole” or a whole number
- Concept of fractions of the whole
- Visual fractions
- Equivalent fractions

What You Need

- 6–12 large, soft, round cookies (sugar cookies work well)

- Knife
- Piece of paper and pencil, or a whiteboard and dry-erase markers

How to Play

1. Place a few cookies on a plate. Ask your child to tell you how many cookies there are. On the piece of paper or whiteboard, ask your child to draw a circle to represent each cookie. Underneath each circle, write the number “1.” Tell your child that each of these cookies is one whole cookie.
2. Cut one of the cookies in half. Again, ask your child how many cookies there are. Ask: *Did that change how many cookies are on the plate? What did change?*
3. Discuss the difference between the cookie you cut and the other cookies. Explain that the only difference between the cookie you cut and the cookies that you didn’t cut is that the cut one is in pieces and the others are whole. Ask: *How many pieces is a whole cookie?* (Your child will probably say one, but you’re going to change that!)
4. Tell your child that the cookie you cut still looks like a whole cookie to you, it’s just in two pieces. Draw a line in one of her circles representing the cut you made. Ask her how many pieces there are. To introduce the idea that each piece is one half, take one of the pieces off the plate.
5. Explain: *I just took one of two pieces of the cookie, and the whole cookie is made up of two pieces. So that’s one out of two pieces or one half.* Write the fraction $\frac{1}{2}$, and explain that the line in a fraction basically stands for the words “out of.”

6. Put the piece of cookie back, and cut the next cookie into four equal pieces. Ask your child to tell you how many pieces make up that whole cookie. Take one of the pieces away and ask your child to write the fraction of how many pieces are left.
7. Remind her that since the line means “out of,” the number of pieces that add up to the whole goes under the line, and the number of pieces she sees goes above the line. (Answer: $\frac{3}{4}$.) Now ask her to write down the fraction that represents the missing piece. (Answer: $\frac{1}{4}$.) Put the piece back. The number above the line in a fraction is called a *numerator*, and the number below the line is called a *denominator*. A quick and easy way to remember this is that the denominator is down below the line, making it a “down-nominator.”
8. Have your child look at the cookies you’ve cut. Ask: *If four pieces make a whole cookie, and two pieces make a whole cookie, is there a way that some of those four pieces are the same as one of the two pieces?* Let your child place the cookie pieces next to or on top of each other, until she figures out that is the same as $\frac{1}{2}$.
9. Explain that you can cut a cookie into as many pieces as you want, but those pieces will always add up to a whole, and some of the smaller pieces can be combined to add up to the same amount as some of the bigger pieces.

EXTEND THE LEARNING

Let your child cut the rest of the cookies into equal parts. Ask her to show you $\frac{1}{2}$ of a cookie or $\frac{3}{4}$ of a cookie. When she’s got the idea, get a glass of milk, and enjoy your fractions!

Kitchen Math

As a parent, you probably spend more time in the kitchen than you'd like to. Since your child probably enjoys helping out in the kitchen anyway, you have the dual opportunity to spend time with your child and help her practice her math skills. From chances to practice sequencing to opportunities for measuring, your kitchen holds much more than just food.

Skills Being Practiced

- Sequencing
- Measuring
- Ordinal numbers
- Estimation
- Multiplication

What You Need

(not all materials are needed for all activities)

- Measuring cups and spoons
- Index cards
- Clip art or photos of common kitchen ingredients and utensils
- Glue
- Calculator (optional)

How to Play: Order Up!

1. Grab an assortment of measuring cups and spoons, and put them on the table or counter. As you are cooking or gathering ingredients for a project, encourage your child to line up the spoons and cups in order. To him that might mean from largest to smallest, which is fine, but when he's done, you can explain to him that when it comes to measuring, the smallest increments build up to the larger increments.
2. *Ordinal numbers* are those that are used to indicate the order of something in a series, such as in a list or a line. First, second, third, fourth, and fifth are all examples of ordinal numbers. The numbers used for counting that indicate quantity as opposed to order (1, 2, 3, etc.) are known as *cardinal numbers*. Use the opportunity to practice ordinal numbers with your child by asking him to put little items in the first cup, or to nestle the second spoon inside the fourth spoon, etc.

How to Play: Rebus Recipes

Getting your child involved in cooking is much easier when you use rebus cards to help show him what to do and in what order. In general, a rebus is a picture that is used to represent something. Most people know a rebus as a puzzle that combines pictures, letters, and symbols to create a riddle, but they're also used to help kids learn to read. By using pictures to replace or represent unfamiliar words or phrases and eventually pairing them with the written word, kids can learn to associate the written word with its picture. In order to make rebus cards for a recipe, you'll need to make a card for each step in the recipe. If you don't want to make your own cards, you can find some easy recipes with printable rebus cards on the National Dairy Council's website

(www.nationaldairycouncil.org/ChildNutrition/Pages/ChildNutritionLessons.aspx)

1. Glue a picture of the ingredient on an index card, along with an indicator of the amount of the ingredient you need. For example, if you need to add 2 cups of flour, the index card would have a picture of a bag of flour and two measuring cups with an arrow pointing to the very top of each cup.
2. Write the word of the ingredient and the amount of the measurement under each picture. Number the rebus cards to reflect the recipe's steps, and ask your child to put the cards in order.
3. Place the ingredients on the table, and supervise your child as he follows the cards to create the recipe.

Other Ways to Play Measuring and Estimation in the Kitchen

- Let your child explore measurement tools. There are all sorts of tools in the kitchen that are used to measure things, from measuring spoons and cups to spaghetti measures and kitchen scales. Give your child a chance to look over all of these things, and see if she can tell you what she thinks some of the markings and abbreviations mean. When she is done exploring, teach her about those markings and abbreviations and explain how they help you to make sure you use the correct amount of ingredients when you cook.
- Explore the relationships between measurements. Let your child see if she can figure out how the measurement tools relate to each other. Ask questions like: *How many of this $\frac{1}{4}$*

cup do you think makes up 1 cup? How many teaspoons do you think are in a tablespoon? How many tablespoons are there in a cup? Once your child has had a chance to do some visual estimation, provide her with more concrete ways to make the connections. For example, you can give her a bowl of water or some flour to transfer amongst the tools to find the answers to your questions or confirm her estimates.

- Talk about the relationship between measurements and how it's helpful in cooking. Your older child is more likely to make concrete connections like the fact that 1 cup is the same as two $\frac{1}{2}$ cups or four $\frac{1}{4}$ cups, or that 1 tablespoon is the same as two $\frac{1}{2}$ tablespoons. With that connection firmly in place, she's able to understand that this knowledge comes in handy if you need to change a recipe. Ask questions like: *If I want to make half of this recipe, and it calls for 2 cups of flour, how many cups of flour should I use?*

Ideas for Calculations in the Kitchen

- Ask your child to help you double or halve a recipe. If she does not yet know how to multiply fractions, that's okay; have her show you "how many" with the measuring cups and spoons.
- Calculate serving sizes. Your child may never have noticed before that nutrition labels not only tell you how many calories and carbs are in a package, but also how many servings are in a package and how much of that food

constitutes a serving. The next time she grabs a handful of chips or crackers point out the serving size on the package and ask her to estimate how many servings she is eating.

- See if she can tell you how many chips there are in four or five servings. After that, ask her to pretend she's having five friends over and that they are each going to want two servings of chips. Ask: *How many chips will you need? Are there enough servings in one bag? If not, how many more bags will you need?*

CHAPTER 17

Investigating and Interacting with the World

Your child's first experiences with science may not look like much at all, but once he starts making observations about and trying to actively make changes in his environment, he's begun the process of scientific discovery. At first this is a matter of using his senses to find new and exciting ways to investigate and interact with the world around him. The activities in this chapter provide some ways for you to encourage a budding scientist.

Scratch and Sniff Painting

Part of interacting with the world is discovering how your senses can come together to make an experience more powerful. While simple painting is appealing to your child's visual sense (and sense of touch if he finger-paints), the Scratch and Sniff Painting activity incorporates his sense of smell, too. The two different kinds of paint here are easy enough to make with ingredients you probably already have around the house, and your child will be able to see and smell the beauty of his accomplishment when he's done.

The gelatin and drink mix paints below both have advantages and disadvantages. Paint made with powdered drink mix has a stronger smell and provides more vibrant colors, but is also more likely to stain clothes.

Gelatin paint needs to be mixed with glue and food coloring to get the right consistency and vibrancy, but it has the added dimension of a tactile sensory experience.

Skills Being Practiced

- Fine motor skills
- Sensory awareness

What You Need

- Powdered drink mix packets in bright colors (orange, red, blue, purple, etc.)
- Water
- Food coloring
- Powdered gelatin dessert mix (such as Jell-O) in varying colors and flavors
- School glue
- Small cups
- Paintbrushes
- Heavyweight paper (watercolor paper is best, but you can use card stock or construction paper)
- Pencil
- Permanent marker

Get Ready to Play: How to Make Drink Mix Paint

Put one or two packages of each color of drink mix in a plastic cup. Slowly add water to the cup, stirring as you go until the mix is the right thickness

and color that you desire. If you wish, you can add a little white glue to thicken the mixture.

Get Ready to Play: How to Make Gelatin Paint

1. Using a separate plastic cup for each color, combine 2 tablespoons of gelatin powder with 2 tablespoons of warm water. If you wish to make the color a little bit brighter, add a drop or two of food coloring. Stir the mixture, then add 4–5 drops of glue, and stir again. The glue helps the granules stick to the paper, making the painting not only scented but “scratchable” as well.
2. If your child is using gelatin paint, the granules may separate and sink to the bottom of the cup. After he’s finished painting, have your child sweep his paintbrush against the bottom of the cup to get a number of granules in the remaining paint and then dab them on the painted areas to maximize the scratch and sniff effect.

How to Play

1. Ask your child to think about things that are brightly colored and have a strong, pleasant smell, like flowers or his favorite kinds of fruit.
2. Give your child a piece of watercolor paper and pencil, and ask him to sketch out a drawing of some of those things. If he’s having trouble, consider putting together a bowl of fruit or a vase of flowers for him to use as a model.
3. When he is certain he has finished his drawing, help him trace the pencil lines with a permanent marker. (Nonpermanent markers will

run when mixed with water.) This will help outline the areas so he can apply different colors of paint.

4. Put out the cups of scented paint and a few paintbrushes. Let your child sniff the different cups and choose which scent he thinks is most appropriate for each part of his drawing. Let him use the paintbrushes to create his masterpiece.
5. When he's done, lay the paper flat to dry, a process that may take a little longer than with regular paint. When the painting is dry, all he has to do is rub his fingers over the painted surface or scratch the gelatin granules to activate the scratch and sniff paint.

Sour, Sweet, Salty, or Bitter?

Your child probably has some favorite foods and other foods she'd rather never eat again, but she may not know what words to use to categorize those foods. A taste test is not only a fun way to figure out which parts of her tongue are sensitive to which tastes, but it is also a good way to help her learn about the different types of flavors such as sour, salty, sweet, and bitter. Typically, people taste sweet on the tip of the tongue, sour on the back sides, salty on the front sides, and bitter on the back. Other senses help create a fuller sensory experience, allowing you to taste more complicated flavors. A taste test is also a good way to ease into learning the basic steps of the scientific method, or the order in which things are done to conduct an experiment or observations.

Skills Being Practiced

- Sensory observation

- Identifying tastes
- Taste-related vocabulary
- Taste bud mapping

What You Need

- White paper
- Red pencil
- Black marker
- Plastic cups
- Water
- Sugar
- Salt
- Lemon juice
- Tonic water
- Toothpicks or craft sticks
- Blindfold

Create a Hypothesis

1. Before you begin your experiment, explain to your child that you are going to try a variety of different tastes placed directly on her tongue. Introduce the words *salty*, *sweet*, *sour*, and *bitter*, giving her an example of a type of food that fits into each category.
2. Have your child stick her tongue out and look at it in the mirror. Ask:
What do you think those bumps all over your tongue are for? Do you know what the bumps are called? Why do you think they're called taste buds?

3. Now ask her to give some thought as to what happens to her tongue when she eats her favorite foods and her least favorite foods. Then ask her to hypothesize, or make a good guess, as to what she will find out about her tongue and the different tastes. Her statement will be the hypothesis, or the idea she is testing. (Be aware that in order to map her taste buds, your child will be placing toothpicks or craft sticks on all areas of her tongue, including the back of her tongue. This can trigger a gag reflex in some people. If your child has an easily triggered gag reflex, consider volunteering to be the taste tester, and let your child be the recorder.)

How to Play (Part 1)

1. Give your child a piece of white paper and a red pencil. Ask her to draw a big tongue on her paper, but not to color it in yet. Set the paper aside.
2. Set up four plastic cups, placing each one on top of a piece of paper. Pour a little lemon juice (sour) into the first cup, and a little tonic water (bitter) into the second cup. For the last two cups, mix up sugar water and salt water, making sure they are very sweet and very salty. Label the paper underneath each cup with the name of the liquid in it, not with the taste.
3. Give your child some toothpicks or craft sticks, and ask her to dip one into one of the liquids. Have her place the stick on the tip of her tongue. Does she taste anything? If so, what taste is it?
4. Dip it again, and repeat this on the sides, flat surface, and back of the tongue. Once she has identified the taste and found where on her

- tongue the taste is the strongest, have her write the name of the taste—not the liquid—in the corresponding space on her tongue drawing
5. Allow your child to rinse her mouth with some water, and repeat this process with the rest of the liquids.
 6. Have her fill in the “tongue map,” writing in all the tastes. If she wishes, she can draw taste buds, and color the tongue reddish pink to make it more realistic.

How to Play (Part 2)

1. Tell your child that it’s time to test if her other senses play a part in how and where she detects tastes on her tongue. Explain that you are going to blindfold her, and *you* will be handing her the various tastes to place on her tongue this time. If she gets a little nervous, reassure her she’s safe and you will narrate everything you’re going to do.
2. Sit your child in a chair, and place the blindfold over her eyes. Dip a stick into one of the liquids, explaining to her what you are doing. Tell her that you want her to see if she can identify the liquid and taste without your help. Give her the stick, and ask her to roll it around her tongue. Can she identify the liquid? How about the taste?
3. Let her rinse her mouth, and repeat this with the rest of the liquids.
4. Remove the blindfold, and have her do the tests while pinching her nose shut, too.

Questions to Ask

- Did the experiments answer the question you posed as your hypothesis? Why or why not?

- On what areas of your tongue were you able to detect bitter tastes? Sour? Sweet? Salty?
- Are there any areas of your tongue on which you could detect two different tastes?
- Are there areas on your tongue on which you could not detect any tastes at all?
- Do you think this is the same for everyone? How could you test that theory?
- When you were blindfolded, were you nervous about what you were going to taste?
- Was it harder or easier to identify tastes while blindfolded?
- Did things taste better or worse without being able to see?
- Was there a difference when you had your nose pinched shut? What was it?

EXTEND THE LEARNING

Reinforce the idea of taste bud zones. Allow your child to map your tongue as you taste the different liquids.

Activities to Improve Fine Motor Skills

Your child uses his fine motor skills every day to perform basic tasks like tying his shoes, zipping his coat, or even brushing his teeth. In addition to that, fine motor skills play an important role in helping your child investigate the world around him. Fine motor control doesn't always come easily, so incorporating fine motor practice into everyday exploration

activities helps your child discover the world around him as well as practice those skills.

Skills Being Practiced

- Basic fine motor skills
- Writing
- Fine motor control
- Using scissors
- Pencil grip
- Sensory investigation

What You Need

(not all materials are needed for all activities)

- Kid-safe scissors and/or plastic knife
- Old newspapers, junk mail, and scrap paper
- Clay or Play-Doh
- Small plastic toys, beads, or coins
- Tweezers
- Rice
- O-shaped cereal
- Small plastic bowls
- Water
- Eyedropper or medicine dropper
- Silly Putty
- Markers
- Tape

How to Play: Drawing the Line

Writing and drawing requires a lot of fine motor control, and not just because it's hard to hold a writing instrument correctly. Drawing a straight line and imitating written patterns can be tough, too. If your child has trouble gripping a pencil, start him off with markers or a chunky crayon. If your school-age child is still using an immature or inefficient pencil grasp, get some advice from an occupational therapist as to how to help modify the grasp before it's too ingrained. Such grips include a fist grip in which the entire hand is wrapped around the pencil, or a five-fingered grip in which all the fingers are holding on to the pencil.

- Get a book of dot-to-dot puzzles for your child. He will have to practice motor planning and sequencing to get from number to number in addition to drawing the lines.
- Set up a chalkboard or whiteboard easel, and ask your child to just practice drawing lines from the top to the bottom of the board. (If you don't have an easel, tape a big piece of paper to the wall at your child's eye level.) After he has a handle on top-to-bottom lines, have him practice drawing lines from left to right.
- Play a cooperative drawing game. On a piece of drawing paper, draw a simple line, a shape, or a more complicated line (curves, waves, spikes, etc.). Take turns adding a new line or shape to the existing one to create a new drawing. Continue this until there's no more room on the paper.

How to Play: Putty Hide-and-Seek

1. Place small plastic toys, beads, or coins inside balls of putty, making sure to squish them in well enough that your child cannot see the items.
2. Give your child the putty and ask him to hold a ball of it in one hand while he uses the fingers on the other hand to pull it apart to find the hidden items.
3. Try putting new little toys in the putty so when your child uncovers them he gets the “prize” of having new toys to play with.

How to Play: Play Clay

1. You can get in some fine motor practice while your child is playing with clay or Play-Doh, and he probably won't even know it. Encourage him to roll balls and snakes between his palms or ask him to make tiny little balls between his forefingers and thumbs to help work on strengthening his fingers.
2. To help your child learn to coordinate the muscles in his hands to use tools, consider letting him cut through slabs of play clay with an old pair of scissors or a plastic knife. If you're really brave, and think he won't generalize the skill to people, you can also show him how to “pinch” the clay.

How to Play: Newspaper-Trashcan Ball

1. Challenge your child to a game of newspaper-trashcan basketball with the stipulation that he has to make a new “ball” for each throw. Give him an old newspaper and ask him to separate it into single sheets.

2. Once it's all separated, show him how to place a sheet in the palm of his hand and crumple it up to make a tight ball. If he uses both hands to make the ball, he loses his turn.

How to Play: Household Helping

The next time you're dusting or cleaning with window cleaner, fill an empty spray bottle with some water and let your child "help" you clean. Designate him as the official window cleaner or plant sprayer. He may get water everywhere, but it takes a lot of fine motor effort to pull the trigger of a spray bottle.

Ideas to Cut, Twist, and Tear

Sometimes what looks like utter destruction can actually be educational. Tearing, twisting, and cutting are all great ways to give your child's fine motor skills a workout.

- Show your child how to rip newspaper into strips. Have him place his hands side by side on the top of the page, with his thumbs on one side of the page and his fingers on the other side. Have him hold on tight and pull his hands in opposite directions (one toward and one away from him). The paper should tear right down the middle.
- Twist the strips into "logs." Have your child collect the newspaper strips. Take one strip of paper and ask him to hold it horizontally, with one hand on each end. He should use the same grip as he did when tearing the paper, but instead of pulling in opposite directions, now he needs to twist in opposite directions. (It should look like he's

wringing out a towel.) If he twists hard enough—letting go and resetting his grip as needed—the strips will turn into tight, twisted “logs.”

- **Create a human shredding machine.** Give your child a pair of kid-safe scissors and your junk mail or old papers you no longer need. Tell him this is stuff you don’t want anymore and he can cut them into pieces, using straight cuts, curvy cuts, or even just making fringes on the edges. Since the goal is to help your child’s scissor grip, correct his grip if need be and remind him to turn the scissors, not the paper, when he cuts.

How to Play: Miniature Races

You and your child may have played relay games before, but they probably involved running and large objects. While those types of races are great to help gross motor development, in order to work on fine motor skills, your relay races have to be on a smaller scale. Here are a few to try out.

- **The Rice Race.** Divide a handful of rice into two small plastic bowls or cups. Give one cup and a pair of tweezers to your child, and keep the other and a pair of tweezers for yourself. Put an empty bowl between you and use the tweezers to transfer the rice to the empty cup. The first to get rid of all his rice wins the race. If rice is too hard for your child, you can substitute O-shaped cereal.
- **The Teeny Tiny Water Race.** Fill two cups about one-quarter full with water. Give each participant a cup of water,

an empty cup, and an eyedropper or medicine dropper. The first player who transfers all the water from one cup to the other is the winner.

Make a Coat Hanger Scale

Part of investigating the world includes seeing how things are related, even if it isn't obvious. Sometimes, the way to relate objects to one another is to see how many of one object is equal to one of another. For instance, your child can get a sense of how heavy a blue whale is if he knows a grown whale weighs about the same as 15 school buses. However, since you don't have blue whales, school buses, or the capacity to weigh either in your house, it's probably better to stick to your child's toys. Making a Coat Hanger Scale gives him an easy way to compare items.

Skills Being Practiced

- Comparing and contrasting
- Estimating
- Measuring

What You Need

- Notched plastic hanger
- Yarn
- Single-hole punch
- 2 identical paper cups
- Scissors

- Measuring tape
- Masking tape

Get Ready to Play: Making the Scale

1. Cut two pieces of yarn, each about 2 feet long. Make sure they are exactly the same length.
2. On both of the paper cups, make a mark just below the rim on opposite sides of the cup. Try to make the marks in the same places on each cup. Use a single-hole punch to make holes where you made the marks.
3. Locate a notched plastic hanger (the kind which has indents in the top for hanging items with straps). Hang it on a doorknob, cup hook in the wall, or on something like a metal clothes drying rack.
4. Poke one end of a piece of yarn through one hole in one of the cups. Tie a small knot on the end inside the cup so it doesn't slip out of the hole. Loop the string around the side and over the top of the hanger, letting it rest in one of the notches. Pull the yarn down the back of the hanger and poke the other end of the yarn through the other hole in the cup. Tie another knot.
5. Do the same with the other cup, but place it on the other end of the hanger. Make sure the cups hang at the same level. If they do not, you may have to retie the yarn to make the cups even.
6. Let the cups settle into place. When they are no longer swinging and look even, use a small piece of masking tape to hold each piece of yarn in place in the notches of the hanger.
7. Demonstrate to your child how the balance scale works by placing a penny in each cup, then adding another penny to one of the cups. He

should see the “scale” tip in the direction of the cup with two pennies in it.

How to Play

Now it’s time to let your child loose with the scale. Let him explore with his toys to see how it works, and then ask him to start exploring with a little more direction. Prompt him with questions like:

- What can you use as common unit of measurement?
(Answer: pennies, marbles, or anything else that is a constant weight.)
- How can you tell which item is heavier?
- Why do you think the cups move up and down?
- Does it matter where you put the hanger? Why?
- How many pennies does a toy car weigh?
- How many pennies does an action figure weigh?
- Is a penny heavier or lighter than a Barbie shoe?

CHAPTER 18

Life Science

Life science is a broad term for the many different branches of science that involve studying life and living things. From animal science to biology, all of these fields look at the natural world and how it works. While your child might not be ready to become a microbiologist just yet, she is ready to become a scientific explorer who observes the world around her. The activities in this chapter focus on helping her learn more about living things, including herself.

Learning at the Zoo

The zoo isn't just a nice place to take a day trip; it's also a real-life way to learn about life science. In addition to providing your child the opportunity to see animals she might never see outside of books, the zoo also holds a number of opportunities to teach your child about animal behavior, habitats, and the different classes of animals. Here are a few ways to help your child become an amateur zoologist.

Skills Being Practiced

- Observation
- Matching
- Habitat awareness

- Animal classification

What You Need

- Children's books about different types of animals, such as:

The Furry Animal Alphabet Book by Jerry Pallotta

An A to Z Walk in the Park: Animal Alphabet Book by R. M. Smith

Dear Zoo by Rod Campbell

The Secret Zoo by Bryan Chick

Animal Babies ABC: An Alphabet Book of Animal Offspring by
Barbara Knox

- Notebook and pencil

How to Play: Checking Out (and Off) Animals

1. If your child is more familiar with cartoon animals and house pets, it's a good idea to introduce him to different types of animals before you leave for the zoo. A few days before your trip to the zoo, sit down with a few good books and start reading about animals all the way from A to Z.
2. In a notebook, create an alphabetical checklist of the animals your child wants to try to find at the zoo. Bring the notebook with you and check the animals off your list as you find them.
3. Don't forget to stop to give your child a chance to tell you how the real-life animals compare with the pictures she has seen.

How to Play: Whose Baby Is This?

1. The goal of this activity is to help your child learn the names of different types of animal babies, and how their parents take care of them. Again, before you go to the zoo, take the time to read a bit about animal parents and their babies, paying particular attention to what each animal's offspring is called.
2. Make a list of these in your notebook, and as you visit the different animals at the zoo, quiz your child to see if she can remember what the baby animal is called.
3. After your visit, ask your child if she saw the animals taking care of their babies and in what way. Ask her to compare that to the ways you take care of her.

How to Play: Spots, Stripes, and Colors

1. Another quick way to get your child interested in really checking out the animals is to keep track of how many animals each of you can see with spots, stripes, or sporting a certain color.
2. Dedicate a page in your notebook to each person in your traveling party. Each time someone points out an animal with spots, stripes, or the target color, make a tally mark on his notebook page.
3. At the end of the trip, the person with the most tally marks wins.

Animal Habitats and Adaptations

Your older child can understand animals and animal behavior on more complex levels than your younger child, so there is a lot of opportunity to

teach about why certain animals are found in different types of environments and what traits they have that make them suited to their environment.

All animal habitats have at least five things in common. Animals need access to food, water, shelter, air, and a safe place to raise their young, no matter where they live. *Endangered habitats* are not able to provide these things anymore, and the animals that live there won't be able to survive without environmental protection laws to protect the land from harm.

The Concept of a Habitat

The word “environment” may be a little confusing for your child when it comes to talking about where animals live, mostly because she's more likely to associate the word with eco-consciousness and weather. It's time to talk to her about habitats, or the specific type of environment in which different animals live. Talk to her about how even in your home environment, there are different types of habitats set up. Her room, for example, probably has different types of things in it than your room does, or that of a younger or older sibling. Explain that what is found in each room is designed to meet the needs of the person who lives there.

This can easily become a conversation about how different animals need different types of terrain, weather, and plant life in order to be healthy and live comfortably. Having this conversation sets the stage for talking about the different habitats your child sees at the zoo. You can ask questions like: *Why do you think the humidity is so high in the reptile room?* or *Why do the lions have so many shaded areas in which to hang out?*

How to Play: All about Adaptations

1. Adaptations are a little more complicated to understand, but when you combine the conversation with habitats, it becomes a little easier. As you and your child look through pictures of zoo animals together before your trip, point out the characteristics that make zoo animals different from your housecat or pet dog.
2. You can wonder out loud about why zebras have stripes, or why giraffes have long necks, to plant the seed in your child's head that these adaptations serve a purpose. Make a list of adaptations in your zoo notebook, and ask your child to keep a lookout for animals that have them.
3. Give her the notebook and ask her to write down at least one animal for each trait, and to hypothesize why that trait might help the animal in its natural habitat. Here are some adaptations to look for:

- What body shape does the animal have? (Long, round, thin, flat, etc.)
- What does the animal's tail look like?
- Does the animal have patterns? (Stripes, spots, etc.)
- Is the animal brightly colored or dull?
- What do the animal's legs look like?
- What type of feet does the animal have? (Hooves, webbed, big, little, etc.)
- What do its teeth look like? (Sharp, flat, fangs, etc.)
- What does its beak look like?
- Does the animal have fur, hair, feathers, scales, or bare skin?
- Does it have a shell?
- What size are its eyes?

- Does it have flippers, fins, wings, an opposable thumb, or claws?

Backyard Nature Journal

A nature journal is not only a good way to provide your child the chance to be more aware of the world around him, it also helps with his investigatory and writing skills. As he sits outside with his journal, encourage him to really look at the vegetation and animal life that surrounds him, to listen carefully to the noises and odors of nature, and to keep track of the effect his environment has on his mood.

This activity is actually a collection of many different nature-exploration activities. The first step is to make a journal of natural elements. Then you and your child can pick some of the other ideas for using his journal.

Skills Being Practiced

- Scientific observation
- Data recording
- Descriptive writing

What You Need

- 8–10 pieces of 11" × 14" sketch pad paper or other medium-weight paper
- Relatively straight stick, approximately 7–8" long
- Ruler

- Pencil
- Thick, heavy elastic band
- Digital camera or cell phone camera
- Scissors
- Glue
- Markers

How to Make Your Journal

1. Take your child outside to gather materials to make a journal made partially of natural elements. Ask him to look for a sturdy, dry, mostly straight stick about the length of his wrist to his elbow and no thicker than 3" in diameter. If he only finds long sticks on the ground, he can always break one to make it the right length. Explain the importance of appreciating nature to your child, and how to leave the natural elements as he found them. As he interacts with the world, help him learn to be a nature observer, not to leave his imprint on it. For example, as he looks for a stick to make his journal, he should look on the ground, not break a branch off a tree.
2. Ask your child if there is a plant or flower outside that particularly catches his attention. Help him take a picture of it, so that he can print it to use as a cover image for his journal.
3. Bring the stick inside, and set it aside. Gather all the sheets of paper into a neat stack, turn it so that it is longer than it is tall, and fold the stack in half side to side.
4. The paper should be oriented so that the spine is facing to the left. Measure with a ruler and make a small pencil mark 2" from the bottom on the spine. Do the same 2" from the top.

5. At each mark, cut a small triangle-shaped notch in the spine. If the stack of paper is too thick to cut with scissors, you may have to take out a few pieces of paper and cut it in batches.
6. Place the stick along the outside of the spine of the paper, and slip the elastic band over the top end of the stick. Slide the elastic band down the stick until it reaches the top notch in the paper.
7. Without removing the band from the stick, slide the free end of the elastic band through the notch, into the middle of the pages of the journal.
8. Pull the elastic band down the inside of the fold to the bottom notch, and slide the end back through, stretching it to place it over the other end of the stick. The nature journal should now be bound, with the stick and the elastic band holding the pages together.
9. Print the picture that your child took, so he can cut it out and glue it to the cover of his journal. Have him decorate the rest of the cover with nature-related images.

How to Play: Nature Detective

1. Most kids love the idea of solving mysteries, which is partly what your child's nature journal is for. Let him know that today he's not just going out to play; he is also going to be a nature detective who needs to be very focused on the things he sees and hears.
2. You can give him a small container or bag to carry any interesting "clues" he finds, so he can look at them more closely at home. When you get home, tell him it's time to write up his notes. Grab his nature journal and ask him to write or dictate answers to questions like the following:

- Can you describe one sound you heard today and take a guess at what made it?
- Did you see what made the sound?
- Do you think any of the clues you gathered today are important? Why or why not? What do they mean?

Other Ways to Use a Backyard Nature Journal

One of the best ways to use a nature journal is to have your child just sit outside with it and draw pictures of what he sees. In fact, he may want to choose a special spot to sit in at least once a week to sketch or write about his surroundings. Over time, he can look back through his journal and see how the seasons and weather affected the area just by looking at his own drawings or reading his own writing. Other ways to use a nature journal include:

- Pressing flowers or leaves in the pages
- Gluing on small pinecones, small rocks, feathers, seashells, or other found objects
- Listing the different sounds he hears
- Creating drawings (or taking pictures of) animals and plants he sees, looking them up, and adding a written summary of the information he discovers about each
- Taking bark or leaf rubbings
- Sketching or including molds of small animal tracks
- Researching statistics about the area being explored
- Musings about the writings of naturalists, or entries of nature-related quotes
- Plant/flower diagramming

- Garden plans, and glued-on seed samples or seed packets

Balloon Terrarium

A terrarium is a good way to help your child see how an ecosystem works on a small scale. An ecosystem is a community of living organisms that live and interact in the same environment. Ecosystems are often very fragile; if one organism or part of the environment changes, it can have negative consequences on all the other organisms in the system. Some ecosystems are very big, like an entire forest, while others are smaller, like the balloon terrarium in this activity.

With many small plants growing in a contained area, it is easy for your child to see the processes that plants go through in order to grow and thrive. A Balloon Terrarium is a fun, easily portable way to make an enclosed container terrarium.

Skills Being Practiced

- Creating a hypothesis
- Scientific method
- Understanding of basic ecosystems

What You Need

- Large clear or translucent balloons (have two or three on hand in case one breaks)
- Funnel
- Measuring cups

- Potting soil
- Water
- Grass seed, radish seeds, or other quick-growing plant seeds
- Piece of string or elastic band

Create a Hypothesis

1. As you gather the materials for your experiment and explain the concept of a terrarium to your child, talk to her about what might happen inside the balloon once all the components are added and the balloon is sealed.
2. Ask her to create a hypothesis about what she might see, what she expects to happen, and where she thinks is the best place to put the terrarium in order for it to do well.
3. Make note of her hypothesis, so she can compare what really happens to what she expected to happen.

How to Play

1. Blow up the balloon a few times to stretch it out a little bit. Move to the kitchen sink for the next few steps. It will help minimize cleanup and you'll be right by your water source.
2. Measure and set aside a ½ cup of potting or garden soil, and a quarter cup of water.
3. Grasp the balloon by the neck and insert the funnel into the top. Hold onto the funnel and the balloon while your child pours the soil into the funnel. Shake the funnel and balloon a little to make sure all the soil funnels into the bottom of the balloon.

4. Slowly add the water to the balloon until the dirt is wet but not oversaturated.
5. Drop a handful of seeds into the balloon, and then carefully remove the funnel, continuing to hold the neck of the balloon.
6. Gently wipe off any dirt that is on the outside or on the neck of the balloon.
7. Holding the balloon upright, slowly blow air into it, trying to keep the dirt and seeds on the bottom. If the balloon tips, it will get the sides dirty, making it harder to observe the ecosystem process.
8. Knot off the neck of the balloon. Tie a piece of string or attach an elastic band around the neck.
9. Hang the terrarium in a window or somewhere else near a natural light source.

Observations

Over the next few days, things will start happening in your Balloon Terrarium. Have your child keep track of what's happening. You can ask some of the following questions to help get her thinking about what she should be noticing:

- What's happening to the walls of the balloon?
- Why do you think those drops of water are there?
- Why do you think they disappear?
- Is there a pattern to when you see moisture and when you do not?
- Does the way the water moves in the balloon remind you of anything in nature?
- What's happening in the dirt?

- Are your plants growing?

What's Going On

Since the Balloon Terrarium is a closed ecosystem, the water inside is continually being reused. It is passing through the states of the water cycle. As the terrarium heats up in the sunlight, the water inside turns to vapor or evaporates. As it cools, it becomes water again and it “rains” inside the terrarium. The water is then absorbed by the soil and, eventually, the roots of the growing plants, which use some of the water to deliver nutrients from the soil to the plant.

Make Your Own Stethoscope

In your child's egocentric world, his own body and its workings are very interesting to him. He's probably noticed his heart beating, and maybe even listened to it a few times at the doctor's office or with a toy stethoscope. Making your own stethoscopes out of a variety of different materials gives your child the opportunity to explore the differences between his resting and active heart rates, and it also shows him how different materials work to conduct sound. Using a balloon to make a tympanic membrane amplifies the vibrations of the sound waves, making it easier to hear your child's heartbeat. If you want him to be able to hear this difference, try making a stethoscope without the balloon on the end. Remember, unlike a doctor's stethoscope, the tube of this one is designed to be placed *at* your child's ear, not *in* it. Be sure to make that clear before you begin.

Skills Being Practiced

- Fine motor skills
- Scientific inquiry
- Basic understanding of sound conduction

What You Need

- Paper towel tube; *or* a foot-long piece of plastic dryer vent tubing, a foot-long piece of old garden hose, *or* a foot-long piece of plastic tubing
- 2 small funnels
- Duct tape
- Medium-size balloon
- Scissors

Create a Hypothesis

1. Ask your child if he remembers the name of the instrument a doctor uses to hear a patient's heartbeat. Remind him of the word "stethoscope" and then talk to him a little bit about why the doctor needs a stethoscope to hear his heart. Show him the materials you have and tell him you're going to use them to make your own stethoscope, asking him if he has some ideas about how you might put the materials together to make a stethoscope.
2. Help him create a hypothesis about what is going to happen by asking questions like: *How do you think a stethoscope works? What makes it more effective than just listening to your heartbeat with your ear?*

How to Make a Dryer Vent Tubing or Paper Towel Tube Stethoscope

1. Place the neck of one of the funnels in the end of the dryer vent tubing or paper towel tube, pushing it down to make a firm seal between the funnel and the tube.
2. Use duct tape to hold the funnel in place.
3. Stretch out the balloon by pulling on it with your fingers, or blowing it up once or twice.
4. Snip off the balloon's neck, and stretch the rest of it over the end of the funnel. Make sure the balloon is taut, like a drum skin, and tape it in place.
5. Have your child place the tube to his ear and the funnel on his chest to hear his heartbeat.

How to Make a Plastic Tubing or Garden Hose Stethoscope

1. Make sure the ends of the piece of hose or plastic tubing are cut straight, not at an angle.
2. Place the neck of a funnel in one end of the hose or tube, pushing it down to make a tight seal. Secure it with duct tape.
3. Use a second funnel to repeat this process on the other end of the tube or hose.
4. Blow up a balloon to stretch it, let the air out, and cut off the neck.
5. Stretch the rest of the balloon over one of the funnels, and tape it in place.
6. Have your child place the open funnel at his ear, and the other funnel covered by the balloon on his chest to listen to his heart.

Observations

Once you have your stethoscopes made, it's time to test them out. Let your child play around with the different stethoscopes, and then ask some of the following questions:

- What do you hear?
- Does the type of stethoscope make a difference in what you hear?
- Which one works better?
- What do you think the balloon does?
- Is your heartbeat made up of more than one sound? (If he listens carefully, he should be able to hear one long, low sound and a short, high sound.)
- Why do you think you can hear better with a stethoscope than without it?

Next, have your child listen to his heart, count how many times it beats in a minute, and record that number. Ask him to do the same with your heart. Then run in place for a few minutes, and record the information again. Ask:

- How does your heartbeat change after you exercise?
- Why do you think that is?
- Is there a difference between your heartbeat and mine?
- What do you think contributes to the difference?
- Does your heart beat faster or slower than an adult's heart?

What's Going On

There are a couple of main points to this experiment. First is that a stethoscope makes it easier to hear the sound of your heart because it is amplifying the sound waves. The tube also keeps the sound from dispersing in other directions.

The second point is that your child's heartbeat will usually be faster than yours, though as he gets older and bigger, this will not be true. That's because children typically have higher metabolic rates than adults. Though it may seem that a bigger person's heart needs to beat faster to circulate blood around his body, as you get older, your heart grows and becomes more efficient.

EXTEND THE LEARNING

If you have made a dryer vent tube stethoscope, have your child test the device after bending the tube into various shapes. Which shape best conducts the sound of his heartbeat?

CHAPTER 19

Electricity and Magnets

Electricity and magnets are two forces of nature that most kids (and adults) find fascinating. The idea that small particles that are unable to be seen by the eye are responsible for lighting up a room or keeping things attached to the refrigerator is almost a magical concept. The activities in this chapter aim to provide a little more information about those forces, as well as to give your child some practical experience in harnessing them.

Make a Lemon Clock

As part of a generation of children growing up in an increasingly green and eco-conscious world, things like low-energy light bulbs and hybrid cars are the norm for your child. Making a clock that runs on citrus power is not only a powerful way to reinforce the idea that there are alternative energy sources to be found everywhere, but it's also a great way for her to learn more about electricity and conductive materials. Note that though using alligator clips is ideal for this experiment, you can only use them if the terminals in the battery compartment of the clock are large enough to clip onto. If they are not, you will need to use electrical tape to secure the ends of the wire to the terminals.

Skills Being Practiced

- Scientific method
- Basic understanding of how electricity works
- Exploration of conductive materials

What You Need

- 2 large lemons or other citrus fruits
- 3 copper wires, approximately 1' long each
- 2 copper pennies or copper nails
- 2 large galvanized zinc nails (at least 2" long)
- Battery-powered clock (one that uses a single battery, and does not also have an outlet cord)
- 2 alligator (electrical) clips or electrical tape
- AA battery
- Paper and pencil
- Permanent marker

Learn about Electricity, Electrons, and Batteries

- You and your child can look at the AA battery together to note that one end has a "+" sign on it, and the other end has a "-" sign on it. These are known as positive and negative terminals. For further exploration, open up the clock's battery compartment and note that it, too, has positive and negative terminals.
- Tiny particles of electricity known as electrons can travel between a negative and positive terminal, if there is something connecting them that allows those electrons to

flow between them. That connection is known as a *conductor*, and some materials, including zinc and copper, are much better conductors than other materials. When two different metals are used as terminals, the electrons push harder in one direction than the other, creating a current.

- In battery-powered devices, the battery itself makes electrons through a chemical reaction that occurs when a conductive circuit is created by putting the battery in between the positive and negative terminals in a battery compartment. The chemical reaction only takes place when the battery is in place.
- When conductive materials are placed in acidic solutions and juices (like those found in citrus fruits), it also creates a chemical reaction. That reaction breaks down the structure of the metal, releasing electrons into the solution.

Create a Hypothesis

1. Go over the background information about electricity and batteries here with your child to make sure she has a basic understanding of how batteries and conduction work. Show your child the materials you have, and tell her that you are going use them to make the clock work without a battery.
2. Identify each of the materials by name and composition (i.e., a *copper* nail, a *zinc* nail), and ask her to predict what will happen if you connect all these materials together.
3. Have her make a basic diagram of what she thinks you need to do and what will happen. This will serve as her plan and hypothesis.

How to Play

1. Securely attach one end of a piece of copper wire just below the head of one of the zinc nails by wrapping it around the nail. Attach a small alligator clip to the other end of the wire. If you do not have alligator clips, leave the end of the wire as it is.
2. Attach the end of a second piece of copper wire to a copper nail by twisting it around the nail (or, if you are using a penny, attach it with electrical tape). Attach the other alligator clip to the other end of this wire. Again, if you do not have alligator clips, leave the end of this wire as it is.
3. Secure a zinc nail to one end of the third piece of wire and a copper nail (or penny) to the other end of it.
4. Set aside the wiring for a moment, and prepare the lemons. Use a permanent marker to label one lemon as Lemon 1 and the other as Lemon 2. Next you need to loosen the pulp inside and release some of the juice into the lemons without breaking the peels by squeezing the lemons gently, and/or rolling them on a table while applying gentle pressure.
5. Place Lemon 1 and Lemon 2 next to each other on a table. Locate the wire attached to the first zinc nail, and poke the nail into Lemon 1, making sure the nail pierces the peel and is embedded in the pulpy portion of the lemon but does not come out the other side of the lemon.
6. Locate the wire attached to the copper nail or penny. Drive that nail into Lemon 2 (or cut a deep slit in the lemon, and place the penny in the slit).
7. Next, take the wire with a copper nail on one end and the zinc nail on the other end. Drive the zinc nail into Lemon 2, approximately an

inch away from the copper nail or penny already embedded in the lemon.

8. Insert the copper nail/penny end of the same wire into Lemon 1, about an inch away from the already embedded zinc nail.
9. Connect the free end of the wire in Lemon 1 to the clock by clipping the alligator clip onto one of the battery terminals in the clock. If you do not have alligator clips, attach the end of the wire to the terminal with electrical tape. Complete the circuit by attaching the free end of the wire in Lemon 2 to the other battery terminal in the same way. Completing the circuit should power the clock. If the clock isn't running, it may be that the connections are loose, the ends of the wires connected to the clock are attached to the same metals, or that the current from the lemon is just too weak. If all the connections are right, try substituting potatoes for lemons.

Observations

- Why do you think we needed to use zinc *and* copper nails?
- Why is the clock lighting up?
- Why do we need to connect Lemon 1 and Lemon 2 to each other?
- How are the lemons like a battery when they are attached?
- What is it about the lemon that allows it to conduct electricity?
- What other foods do you think would conduct electricity?

What's Going On

When you put the zinc and copper in the lemon juice, it creates a chemical reaction that changes chemical energy into electrical energy. This change of energy is a voltaic reaction, which turns the lemons into a voltaic battery. The chemical reactions push the electrons that are being released from each metal through the copper wire and, because the metals are different, the electrons push harder in one direction.

They move in a circular direction, going through the wires to the clock terminals and back to the lemon, making an electric current that may be powerful enough to power the clock. Once the lemon juice starts to dry up, the reaction will lessen, and you will need to change the “battery.”

EXTEND THE LEARNING

Try using different citrus fruits, orange juice, or soda to see how they work as voltaic batteries.

Magnet Magic Scavenger Hunt

If your child is mesmerized by how electricity works, then he’s bound to love working with magnets, too. Going on a Magnet Magic Scavenger Hunt can help him sort out not only what materials are magnetic, but it can also help him understand that there are varying degrees of magnetic force. However, do not let your child check the magnetism of any electronic devices or cards with magnetic strips (like credit cards). A magnet can do a lot of damage to computers, cell phones, and other devices, as well as demagnetize your credit cards.

Skills Being Practiced

- Seeing and experiencing magnetic attraction
- Understanding that materials have varying degrees of magnetic force
- Understanding that magnets are mostly metal

What You Need

- Strong magnet, like the round ones that can be purchased for craft projects
- 3 small plastic bowls or containers
- Pencil and paper
- Permanent marker

How to Play

1. Tell your child that you are going to help him explore your house to find out what a magnet will pick up and what it will not. Explain to your child that the force between a magnet and something else is known as “magnetic attraction.”
2. Demonstrate how magnetic attraction feels by giving him two magnets. Every magnet has a north and south pole, also known as positive and negative poles. Opposite poles are attracted to each other, creating a “pulling” magnetic force. Like poles repel each other, causing a “pushing away” magnetic force. Have him hold one magnet in each hand and let him feel the negative and positive poles attract and repel each other. He should be able to feel that the force is beyond his control.

3. Explain to your child that you are going to send him on a scavenger hunt to find items that are very magnetic, mildly magnetic, and not magnetic at all. Give him the permanent marker and ask him to label the three containers Strong Attraction, Mild Attraction, and No Attraction.
4. Give him a piece of paper and a pencil, and help him generate a list of items to find to test their magnetism. Items to consider include nails and screws; plastic and metal bottle caps; tin foil; paper clips; cardboard; keys; toys (remind him to try all the different parts of the toy); coins; and sticks.
5. As he tests each item, let him decide into which category the item falls, and then place each item in the corresponding container.
6. Ask him about the items in each container: *How do the groups differ? Do the magnetic items have something in common? What material are most of the magnetic items made of? Are all metal items magnetic?*

What's Going On

Magnetic force is a product of charged electrons in a substance that has areas of positive and negative charge. The items most strongly attracted to magnets are ferrous and often made of metals like iron, steel, and nickel, though sometimes other materials can have fleeting magnetic attraction as well.

Magnets are attracted to these substances because the positive and negative areas of charge are not balanced. Nonattracted substances are “charge balanced,” meaning the positive and negative charges in the substance already equal each other, rendering the item magnetically neutral.

Magical Magnetic Race Car Track

It may not actually be magic, but once your child sees her racetrack in action, it may seem like it to her. With a large box, a few magnets, a hot glue gun, and some toy cars, you and your child can create a new and exciting toy that can also teach about magnetic forces.

Skills Being Practiced

- Seeing and experiencing magnetic attraction
- Understanding that magnetic force can travel through lightweight materials

What You Need

- Toy cars
- Small round magnets, like those sold for crafting (small enough to glue to the bottoms of the toy cars)
- 2 small horseshoe magnets
- Magnetic tape (optional)
- Hot glue gun with glue sticks
- Large empty box (moving box, packing box, or appliance box)
- Markers
- Sharp scissors
- Twine or yarn
- Tape

How to Play

1. Ask your child to test each of the round magnets with a horseshoe magnet. Have her place the round magnets on a flat surface with the side that is attracted to the horseshoe magnet facing down. That means if you run the horseshoe magnet across the round magnets, you should feel a repelling force, not an attracting force.
2. Working one at a time, use a hot glue gun to put glue on the upward-facing side of the round magnets. Quickly press the underbelly of a toy car to the round magnet before the glue cools. Once the glue has cooled and set, you should have a set of toy cars with magnets between the front and back wheels.
3. Flip a large box upside down, so the top is a flat surface and the rest of the box acts like a makeshift table.
4. Give your child markers and ask her to draw a racetrack, roadway, or city with streets for the cars on the top of the box.
5. Cut two ' pieces of yarn or twine. Tie a horseshoe magnet to one end of each of the pieces of twine.
6. On opposite sides of the "table," help your child cut a small opening, large enough for her arm to reach through. Poke a small hole about an inch away from each opening (on any side of the hole), and slip the other end of the twine (that which is not attached to the horseshoe magnet) through each hole from outside to inside. Tie knots on the ends of the strings on the inside of the box to secure the twine, so it doesn't slip out of the holes. You may want to tape these in place, just in case.
7. Have your child place some of the magnetic cars on the top of the table. Show her how she can grab one of the horseshoe magnets, put her arm through the opening in the table, and move it around the

underside of the tabletop until she finds a car. When she does, the car should be attracted to the horseshoe magnet and stick to it through the cardboard. Then show her how to gently drag the magnet around to move the car along the track.

EXTEND THE LEARNING

Try using magnetic tape to make roadways on top of the box, as opposed to using horseshoe magnets underneath it. Just make sure the magnets on the cars are attracted to the magnetic tape before you begin.

Toilet Paper Tube Flashlight

By now, your child has learned enough about electricity to know that it's not some mysterious force that only electricians can make sense of. If you've already made a Lemon Clock, then he has learned a little about electrons and how batteries work. Making a Toilet Paper Tube Flashlight will not only reinforce those skills but also help your child understand what's going on inside a regular flashlight when he flips the switch. This project needs a lot of adult supervision and assistance, as it requires precision and calls for someone to strip the insulation off wires. Do not let your child attempt this project alone.

Skills Being Practiced

- Scientific method
- Basic understanding of how electricity works

- Exploring conductive materials and circuitry

What You Need

- 2 D batteries
- Large paper clip
- 2 brass fasteners
- Small plastic cup
- Empty toilet paper tube
- Flashlight light bulb
- Scissors
- 5"-long piece of 22-gauge insulated copper wire
- 8"-long piece of 22-gauge insulated copper wire
- Utility knife or wire strippers
- Electrical tape
- 2"-wide sewing elastic
- Ruler
- Marker

Get Ready to Play

1. Use a utility knife or a pair of wire strippers to strip 1" of insulation from each end of both pieces of copper wire.
2. Have your child measure and cut a $\frac{1}{2}$ " piece of sewing elastic. He should have a piece of elastic that measures $\frac{1}{2}" \times 2"$.
3. Use your utility knife to make a small slit in the middle of the piece of elastic, and insert the flashlight bulb, bulb-side up. Make sure the elastic fits snugly.

4. Help your child cut the bottom off the plastic cup. It should now look like a small megaphone.
5. Ask your child to cut the toilet paper tube lengthwise so it can be spread out into a flat rectangle.

Make the Flashlight

1. Lay the toilet paper tube flat on your work surface. It is bound to try to curl up again, so you will either need to designate someone to hold it in place or temporarily tape the edges down.
2. Place a large paper clip lengthwise in the middle of the flattened tube. Insert a brass fastener through one end of the paperclip and push it through the flattened tube. Have your child flip the tube over and flatten out the edges of the brass fastener. If the tube is taped down, you will have to remove the tape to do this.
3. Flip the tube back over, so you can see the paper clip. Make sure it is parallel to the end of the top edge of the flattened toilet paper tube. In the end of the paper clip that doesn't have the brass fastener, use a marker to make a small mark on the tube.
4. Swing the paper clip down and away from the mark, just like the switch it is becoming. Have your child poke a second brass fastener through the mark you made. Turn the tube over, and flatten out the prongs of the brass fastener.
5. Keep the toilet paper tube flipped over, so you can see the prongs of the fasteners. Take the 5"-long piece of wire, and attach one of the stripped ends to the brass fastener on the left side of the tube. The easiest way to attach the wire is to slide it under one of the prongs of

- the brass fastener, and wrap it tightly. Use a piece of electrical tape to cover the brass fastener to help to hold the wire in place.
6. Repeat the last step with the 8"-long wire and the other brass fastener.
 7. Place the 2 D batteries end to end, making sure the positive and negative terminals are touching. Hold them tightly while your child uses electrical tape to tape them together. Have him use as much tape as he needs to make sure the batteries are securely fastened and the terminals won't slip.
 8. Put the battery pack inside the flattened toilet paper tube. The negative terminal should be toward the left-hand side (the side with the shorter wire). Have your child use electrical tape to attach the remaining stripped end of the wire to the negative terminal on the bottom of the battery pack.
 9. At the other end of the battery pack, wrap the stripped end of the longer wire around the base of the flashlight bulb. Hold it in place with tape, and then touch the bottom of the light bulb to the positive terminal on the battery. Have your child hold it there while you tape them together.
 10. Fold the ends of the elastic in which the light bulb is contained toward the top of the battery pack. Place tape around the bottom of the elastic and help your child attach it to the battery pack. When it's taped in place, it should look a bit like a covered wagon's canvas on top of the battery.
 11. Roll the toilet paper tube back up around the batteries. Make sure it's tight, and have your child tape it closed.
 12. Place the plastic cup megaphone on the top of the flashlight. The smaller opening should go over the elastic around the base of the light bulb. Wrap tape around the bottom of the cup to attach it to the

toilet paper tube. By now, your child should see that your contraption is beginning to look like a flashlight.

13. Give your child the flashlight. Have him move the paperclip switch so that it touches the brass fastener it is not attached to. If all the connections are in the right place, the flashlight should light up! When the switch is moved away from the brass fastener, the flashlight will go off.

Observations

- Why did you have to make sure the negative and positive terminals of the batteries were touching?
- Why does the flashlight work when you touch the paper clip to the other brass fastener? (Answer: *It closes the circuit. Remember, the wires that are attached to the batteries are also attached to the brass fasteners.*)
- Why did you have to strip the insulation from the ends of the wire? (Answer: *The insulation isn't a conductive material, but the metal in the wire is very conductive.*)
- What's the purpose of the plastic cup?
- How does the elastic band help hold the bulb in place?

Make Your Own Metal Detector

If your child has ever seen or used a metal detector, then she probably knows how exciting it is to hit a jackpot, however small the prize may be. Professional metal detectors or metal detector kits can be expensive and

difficult to make, but you can make a basic version with just a calculator, a radio, and a little bit of tape.

Skills Being Practiced

- Basic understanding of radio signals and amplification of sound waves

What You Need

- Small, battery-operated portable AM/FM radio (with working battery inside)
- Battery-powered, nonsolar calculator (with working battery inside)
- Duct tape

How to Play

1. Have your child turn on the radio, and switch it to the AM band. Your child may never have seen a radio before, let alone know what AM frequency is. AM stands for a type of signal known as “amplitude modulation.” Since AM combines audio and radio frequencies to make an audio signal, it often picks up interference. That’s frustrating when listening to music, but it makes it perfect for a metal detector. Set the frequency up as high as possible (to the right), making sure you are not on a station and can only hear static.
2. Turn the volume up as loud as you can stand it.

3. Turn on the calculator, and place it battery side to battery side with the radio. Help your child hold them in place as you move toward a metal object.
4. Adjust the position of the calculator on the back of the radio until you hear a distinct change in the static tone when you get near a metal object. It should make a beeping sound.
5. Move away from the object to see if the tone changes back to static. If it does, tape the calculator and the radio together. If it doesn't, keep adjusting the calculator until you find the right place, then tape them together.

Observations

- Why do you think you couldn't put the radio on a station that had music?
- What types of objects make the metal detector work better?

What's Going On

The circuit board of the calculator actually produces a slight radio frequency, the waves of which bounce off metal objects. The AM station on the radio then picks up and amplifies those waves, which can be heard as a loud sound through the radio speakers.

CHAPTER 20

Earth Science

Earth sciences are the branches of science that look in depth at our planet, its composition, and all the factors that affect it. As your child begins exploring earth science, some of the things he'll be investigating will range from meteorological phenomena and environmental concerns to geological concepts and paleontology. The activities in this chapter are designed to jumpstart your child's interest in some of these areas.

Help the Earth Mobile

While there is a specific day set aside in April to celebrate Earth Day, taking care of the earth and its renewable resources is a concept to reinforce with your child any time of year. Making a Help the Earth mobile is an easy project to take on with both younger and older children and, when it is completed, can serve as an attractive visual reminder that your child can be eco-conscious on a daily basis.

Skills Being Practiced

- Expository writing
- Critical thinking
- Eco-awareness
- Fine motor skills

What You Need

- One or more books on the topic of the environment: *The Everything ® Kids' Environment Book* by Sheri Amsel; *Michael Recycle* by Ellie Bethel; *Sid the Science Kid: Earth Day Fun* by Jennifer Frantz; *Where Does the Garbage Go?* by Lincoln James; *Compost Stew* by Mary McKenna Siddals
- Watercolor paper or other heavy paper on which to paint
- A few pieces of lined writing paper
- A few pieces of white paper
- Crayons
- Watercolors/paint
- Pencil
- Twine
- Scissors
- Single-hole punch
- Cotton balls and glue (optional)

How to Play

1. Start by reading or looking through one or more of the recommended books. Some of them are better suited for younger kids and some for older kids, so you'll have to choose one that fits your child's developmental level. After you've read a few books, discuss with your child what common concern all the books address and then talk about what kinds of things are not eco-friendly and are harming the earth. Ask questions like:

- Can you name one thing that people do that isn't good for the earth?
- Are there things happening that are bad for the earth that people can only partially control?
- Can one person fix these problems?
- If not, then what things can one family or person do to help the environment or be more eco-conscious?
- Can you name a few things that you, specifically, can do to make a difference?

2. Once your child has named a few things that he can do to be more eco-conscious, give him a piece of lined paper and ask him to write down three things, each in the form of a resolution. For instance: *I will turn off the lights when I leave my room, or I will start separating recyclables and trash.* Set the paper aside.
3. Explain to your child that sometimes people need to be able to see the resolutions they have made in order to keep them. Tell him you will help him make a beautiful rainbow Help the Earth mobile to hang in his room as a reminder of his resolve.
4. Give your child a piece of watercolor paper and crayons, and ask him to draw the outline of a rainbow with a fluffy cloud on each end. Have him leave each curve blank so he can paint it the correct color. After he's drawn a rainbow, let him paint it. Set it aside to dry.
5. Take a blank piece of paper and outline three large raindrop shapes in pencil. Have your child either cut out his written resolutions and glue them one per raindrop, or rewrite them on the raindrops. Then ask him to cut the raindrops out.
6. Help your child cut three pieces of twine of varying lengths, but not much longer than 10" apiece. Use a single-hole punch or a pencil,

poke a hole in the top of each raindrop. Thread a piece of twine through each hole and secure it with a knot.

7. Check to see if your child's rainbow is dry. If it is, ask your child to locate three places on the clouds to which he would like the raindrops to be attached. Punch holes in those places, and then use the twine to tie the raindrops to the clouds.
8. Give your child the option of gluing cotton balls to the clouds to make them look fluffier. After he's satisfied with how the mobile looks, punch a hole at the top of the rainbow, and thread another piece of twine through to make a hanging loop.
9. Hang the Help the Earth mobile somewhere that your child can see it and be reminded of his resolutions!

Wanted for Harming the Earth

Your child may have already gotten a taste for writing wanted posters from some of the activities earlier in this book, but this type of wanted poster is not like those she's already written. While other posters are used to describe a person, the Wanted for Harming the Earth poster gives your child the opportunity to make a poster describing a concept or behavior. It will give her some practice in thinking more analytically, as well as help her to gain a more in-depth understanding of the kinds of things that can cause ecological damage to our planet.

Skills Being Practiced

- Critical thinking
- Expository and descriptive writing

- Environmental awareness

What You Need

- Notebook paper
- Construction paper or poster board
- Markers or colored pencils
- Scissors
- Glue
- Ruler

How to Play

1. Discuss with your child what types of things are being done to help the environment, either on a personal or more global level. Then review the types of things that are harming it. Ask your child to take notes as you talk, so she can refer back to them as she makes her poster.
2. Tell her you are each going to make a wanted poster identifying and describing some of things that are harmful to the environment.
3. Distribute a large piece of construction paper or poster board, a pencil, and a ruler to each activity participant. At the top of the paper, in large letters, write the headline: “WANTED for Harming the Earth.”
4. Using the ruler as a straight edge, ask your child to draw three boxes below the headline. Have her choose three things that are harming the earth, and draw and color pictures of them, one per box. The pictures can be of a type of product (i.e., aerosol cans or six-pack rings), an

atmospheric phenomenon (i.e., acid rain or smog), or anything else that you or your child can back up in writing.

5. Label the harmful element below each picture, then write a description of what it is and how it is causing the earth harm. Include information about where this thing happens, how it came about, and what can be done to reverse the damage it is causing to the earth.
6. When you have completed your posters, compare them and use them as teaching tools to share you have learned about environmental issues.

EXTEND THE LEARNING

For a more in-depth conversation with your child about things that are causing environmental damage and how kids can help, visit the Environmental Protection Agency's Planet Protectors Club for Kids website

(www.epa.gov/osw/education/kids/planetprotectors/index.xhtml). It has information about how your child can help protect the earth, as well as games and activities to support environmental learning.

Evaporation, Condensation, and Precipitation: A Water Cycle Experiment

Though the water cycle is a relatively simple concept to grasp in the abstract, it's much easier for kids to understand the entire process when they can visualize it. Conducting a multipart, interactive experiment about each component of the water cycle can help your child see each piece of the cycle and how they fit together. With just a few simple materials, your

child can observe evaporation, condensation, and precipitation as it happens.

Skills Being Practiced

- Understanding of, and ability to explain, the steps of the water cycle
- Water-cycle-related vocabulary
- Scientific method
- Observation skills

What You Need to Conduct Evaporation

- Saucers, shallow bowls, or jar lids
- Tablespoons
- Water
- Bright lamp

How to Play

1. Introduce the concept of evaporation to your child by talking about where he thinks the water goes when a puddle dries up or when you hang clothing on a clothesline. If you made the Balloon Terrarium found in [Chapter 18](#), remind him that the water in the terrarium seemed to disappear at times, too. Ask him whether he thinks water disappears, or *evaporates*, faster in hot weather or cold weather.
2. Tell your child that you are going to work together to make an artificial puddle, to see if you can figure out where the water goes.

3. Put two saucers, shallow bowls, or jar lids on a flat surface. Ask your child to put a tablespoon of water in each dish.
4. Find a place in direct sunlight in which you can leave one dish without it being disturbed. If there is not such a place in your house, put it on a table under a bright lamp. Place the other dish in a spot that does not get much light.
5. Ask your child to predict what will happen to each dish of water if you leave them overnight. Have him write down this hypothesis.
6. Check the water dishes in the morning, and ask your child to describe what he sees in each dish. Ask: *Does what you see support your hypothesis? Why does one dish have more water than the other? Which dish is it? How do you think the light contributed to what happened?*

What's Going On

Your child has witnessed the first part of the water cycle, known as *evaporation*. Evaporation occurs when the sun (or, in this case, a lamp) heats up water. The water turns to steam or vapor, and is absorbed into the air. On a large scale this happens every day with the world's lakes, rivers, and oceans.

What You Need to Conduct Condensation

- Clear plastic bottle with a cap (a 2-liter soda bottle with the label removed works well)
- Flexible plastic strip thermometers (the kind that you press against a child's forehead—these can be bought at most drugstores)

- Clear tape
- Matches
- Eyedropper

How to Play

1. Review the results of your evaporation experiment with your child, and ask him to remind you what happened to the water. Then ask him to think about what the next step in the water cycle might be, or what happens to the water after it evaporates.
2. Reminding your child that the water vapor is absorbed into the air, ask him to think about what happens to all that water vapor in both warm air and cold air. If you have ever been to a humid climate or experienced humidity, you can bring this up, explaining that humid air is both hot and moist.
3. Remind him that when it gets colder the water vapor condenses into droplets, as it did in his terrarium. Ask: *When the air cools over a body of water, what does the vapor do?* Answer: *It condenses, or turns to droplets, and forms clouds.*
4. Take the clear plastic bottle and help your child tape a temperature strip inside it. Put the cap back on the bottle, and lay it on its side so you can read the temperature strip.
5. Write down the temperature of the bottle before you begin the experiment. Then time your child while he uses both hands to squeeze the bottle for one minute. Write down the temperature after he squeezes the bottle, let it sit for another minute, and then write down the temperature for a third time. Ask: *What happened to the temperature in the bottle?*

6. Have your child open the bottle and use the eyedropper to put a few drops of water inside it. Put the cap back on and swirl the bottle around so that most of the inside of the bottle is wet. If necessary, your child can add a little more water. Repeat the process of squeezing the bottle as you did before, but without taking temperature readings. Ask: *What happened this time?*
7. Take the cover off the bottle, and lay it on its side. Ask your child to flatten the bottle to let out about half the air.
8. Light a match, blow it out, and place the smoking match in the bottle. Let the bottle quickly reinflate to its normal size and put the cap on as fast as you can.
9. Squeeze the bottle one more time. Ask: *What do you see?* Answer: *A cloud.*

What's Going On

As your child squeezed the bottle, both the air pressure and the temperature increased. The water began to evaporate, but when the temperature dropped again, the vapor turned back into liquid (*condensation*), and then formed a cloud.

What You Need to Conduct Precipitation

- Your stove
- Pot in which to boil water
- Oven mitt
- Clear pitcher or other container with a handle
- Ice cubes
- Pie pan

How to Play

1. Go over the first two steps of the water cycle: evaporation and condensation. Ask your child if he knows what the last part of the water cycle is. You can hint at it by wondering about things like how the water from the clouds gets back into the rivers, oceans, and lakes, or how rain and snow come about.
2. Move to the kitchen. Have your child fill a cooking pot about three-quarters full of water, then ask him to keep a safe distance as you put it on the stove to boil.
3. While the water is reaching a boil, ask your child to fill the pitcher with ice.
4. Once the water boils, turn off the burner and move the pot of water to a cool element. Take the pitcher of ice from your child—grasping it by the handle—and stretch out your arm so that the bottom of the pitcher is over the steaming pot. (Be sure not to place your hand or arm directly over the pot as the steam can scald your skin!)
5. Cover the other hand with an oven mitt and grasp the edge of a metal pie pan, holding it so that about half of the pan is under the ice-filled container.
6. Ask your child to be very quiet, so he can observe with his eyes and ears the effect the steam has on the ice. Ask:
 - What is happening on the bottom of the pitcher?
 - What do you see (or hear) happening in the pie pan?
 - Why is there water on the side of the pitcher?
 - Do the water drops that are falling look different from the ones on the side of the pitcher?

What's Going On

The steam from the boiling water is actually water vapor, or water that has evaporated. The ice cools the air down quickly, leading to the next step in the water cycle—condensation. As the water condenses, the big drops form a mist or cloud on the side of the pitcher.

The water drops begin to bump into each other, just as they do when the wind blows inside a cloud. As they collide, they combine to make larger drops that become too large and too heavy to stay in the cloud. They then fall as *precipitation*. What type of precipitation (snow, rain, hail, etc.), depends on the air temperature as the droplets fall.

Fossil Casting

Fossils are amazing artifacts that paleontologists (scientists who study the history of life on earth) can use to learn more about what the natural world used to look like, and to get some insight into how it has changed over the years. Your child has most likely heard about fossils as they pertain to ancient creatures like dinosaurs, but he may not know that fossils can also be of plants and smaller animals, too. Fossil casting can help your child explore how the imprint of an item can help him learn more about that item, but can also bring about more questions, too.

There are three different types of fossils: body fossils, trace fossils, and petrified fossils. A body fossil is the remains of an organism. Trace fossils are things like footprints that are related to an ancient organism and teach about its behavior. Petrified fossils are made when an organism, like wood, is replaced by a mineral, but retains its original form.

Skills Being Practiced

- Scientific observation
- Fine motor skills
- Matching parts to a whole

What You Need

- Small items—coins, plastic animals, rocks, fake leaves/plants, etc.
- Empty, clean butter containers, or other small, shallow plastic containers such as tuna cans
- Modeling clay (the nondrying kind)
- Plaster of Paris (also known as gypsum plaster)
- Water
- Small bucket
- Plastic spoon
- Utility knife and/or can opener
- Toothpicks, old toothbrushes, soft paintbrushes (optional)

How to Play

1. Talk with your child about the different types of fossils, emphasizing the point that body fossils are different than petrified fossils or bones. Body fossils are often just imprints of an animal or organism, with bits of it (like teeth or bones) sometimes left behind. Explain that in this project you are going to be making fossil casts that are more like body fossils than any other type of fossil.

2. Give your child few of the empty containers and some modeling clay. Have him roll a ball of clay and push it into the bottom of the container, squishing it into a flat, even surface. There should be enough clay to hold the imprint of one of his “fossils,” so don’t let him flatten the clay to less than an inch in depth.
3. Ask him to pick some of the small items to “fossilize.” Have him choose which way he’d like the item to be imprinted and then have him press it into the clay, removing it with a straight upward motion so it makes a clear imprint. Do this in each container.
4. Pour some plaster powder into a bucket, add water, and mix until it’s the about the consistency of waffle batter. Pour the mixed plaster on top of the imprinted clay in each container, filling it to the top of the container.
5. Let the plaster set (this will take at least 24 hours). When it has hardened, use the can opener to remove the bottoms of the tuna cans or, if you have used plastic containers, carefully cut off the bottom with a utility knife. Push the clay and cast out the bottom of the container.
6. Have your child remove the clay from the fossil cast. He may need to “act like a paleontologist” and use toothpicks and toothbrushes to clean it out completely.

Questions to Ask

- Can you match the items you used with their fossils casts?
- How does the item look different from its fossil cast?
- What is the difference between how you created a fossil cast and how it would be created in the natural world?

Which takes longer?

Baking Soda Stalactites and Stalagmites

Stalactites are stone columns that descend from the roofs of underground caves. *Stalagmites* are stone columns that rise from the floor of such caves. Also sometimes known as “dripstones,” stalactites and stalagmites are formed from the minerals that dissolve in rainwater that drips from the roof and walls of the caves. Some dripstones take thousands of years to form, while others grow much faster.

Your child might not be able to remember which of these two formations grow up from the floor of a cave or which drip down from the ceiling, but if she has ever seen them, she is probably fascinated by the beauty of these natural crystals. You can’t watch real ones form, but you *can* help your child learn more about how crystals grow with this experiment. Set up your experiment in a warm place where it will not be disturbed or be in anyone’s way, as it will need to sit for up to a week for large stalactites and stalagmites to grow.

Skills Being Practiced

- Following experimental protocol
- Critical thinking
- Scientific analysis

What You Need

- 2 glass jars of equal size

- Small plate
- 2 paper clips
- Piece of wool or cotton yarn, about 3 feet long
- Hot water
- Box of baking soda
- Pitcher or bowl

How to Play

1. Lay a small plate on a flat surface, and put a glass jar on either side of it.
2. Have your child fold the yarn in half, and then half again. Then show her how to twist it into a rope-like formation. Dampen the yarn and attach a paper clip to either end of the rope. The paper clips will act as anchors, weighting the yarn down in each jar.
3. Have your child put one paper-clipped end of yarn into each jar. The middle of the twisted yarn should be hanging over the plate between the jars. Ask your child to adjust the position of the jars until the yarn is draped over the center of the plate in a slight U-shape. The yarn should not be touching the plate.
4. Help your child mix up a saturated baking soda solution in a pitcher or bowl. A saturated solution is one in which there is so much baking soda in the water that it no longer dissolves when you add more.
5. Pour half of the baking soda water into each jar.
6. Watch the experiment closely for the next few days, asking your child to take notes or draw pictures of what is happening to the yarn. Also, depending on how concentrated a solution you have made, you may

need to drain water off the plate (just pour it back into the jars) or add more solution to the jars.

7. Over the next few days, your child should be able to see crystals forming on either side of the yarn. Eventually they will meet in the middle and begin growing down first, and then up.

What's Going On

Just as real stalactites and stalagmites are formed from the minerals left behind when rainwater evaporates, the calcium carbonate (baking soda) is left behind when the water of the solution in the jars evaporates. The yarn works like a wick that absorbs both the water and the calcium carbonate. The water drips from the yarn to the plate, and as it evaporates, the mineral remains, forming crystals, that eventually pile up enough to form columns.

CHAPTER 21

Experiments Around the House

There are some science experiments that are good to do with your child, not because they reinforce the skills of a particular branch of science, but because they show your child that she can use science to influence or change ordinary household objects. The experiments in this chapter range from one that teaches about the importance of dental hygiene to another that demonstrates the power of combining common household ingredients in a sandwich bag. What they all have in common is that they use stuff you already have around your house.

Naked Egg

The Naked Egg experiment is good experiment to help show your child the effect that acid can have on calcium carbonate, a substance found in eggshells, bone, and your child's teeth.

Putting an egg in an acid solution isn't quite the same as your child not brushing her teeth well, but the chemical reaction is similar enough that the Naked Egg experiment stands as a precautionary tale. Not only that, but when you're done with the experiment, your child will be able to see what an egg looks like naked. That's not something that happens every day!

Tooth decay is caused by the acid created by the interaction of the bacteria in your mouth and the sugars and carbohydrates that you eat. It's

not the same as immersing your teeth in vinegar, but it has the same effect. Luckily, you can brush your teeth to stave off tooth decay!

This experiment will take between 48 and 72 hours.

Skills Being Practiced

- Scientific method
- Basic understanding of the effect of the reaction between two types of chemicals
- Effect of acidic solutions on dental health

What You Need

- Raw, white-shelled egg
- Clear plastic cup (large enough to immerse the egg)
- Vinegar
- Large spoon
- Flashlight

Create a Hypothesis

1. Ask your child to look at her teeth in the mirror, and then look at the egg. What do they have in common? Though she may answer that they are both white, it goes beyond that. Explain that an eggshell is made up of a substance known as calcium carbonate, and ask her if she's ever heard of calcium. Remind her that she drinks milk because it contains calcium, and that it helps to make her teeth and bones strong.

2. Now ask her to think about what might happen if she left that calcium-covered bone, tooth, or egg in an acidic solution overnight. Have her write down her hypothesis so she can compare it with what actually happens.

How to Play

1. Find an out-of-the-way place, preferably on the kitchen counter, to set up your experiment. Ask your child to carefully take an egg out of the refrigerator and put it in the clear plastic cup. If your child drops the egg, that might actually be helpful to your experiment, as it can show her how fragile the egg is and what it contains inside the shell.
2. Pour vinegar into the cup until the egg is completely immersed.
3. Leave the egg overnight, and have your child check it in the morning. She may notice that there are bubbles on the eggshell or that the top of the liquid is covered in a foamy substance. Ask her to take a guess as to what the bubbles and foam are.
4. Help your child remove the egg from the cup with a large spoon. Then pour the vinegar and foam out of the cup into the sink. Put the egg back in the cup, pour in new vinegar, and let the egg sit for another day or two.
5. On day three of the Naked Egg experiment, remove the egg from the cup with a spoon and rinse it under a very gentle stream of water. Whatever eggshell is remaining will probably wash off during this process. Do not remove the egg with your hands or rub it when you rinse it off. Since the egg's shell has almost completely dissolved, it is by now nothing more than a sort of egg water balloon that can burst in your hand with the slightest amount of pressure.

6. Rinse out the plastic cup, and gently place the egg back inside. Have your child crouch down to “egg level” and aim a flashlight beam behind the egg. With only the membrane remaining, the egg should be somewhat translucent and take on a glow when the light goes through it.

Questions to Ask

- What happened to the egg the first day of the experiment?
- What happened to it eventually?
- Do you think the bubbles play any role in what happened to the eggshell?
- How is the eggshell like the outside of your teeth?
- What do you think would happen to your teeth if you didn’t brush them every day?

What’s Going On

The vinegar you used is an acid known as acetic acid, but it also contains some water. The vinegar interacts with the calcium carbonate in the eggshell and creates a chemical reaction, the first sign of which is the bubbles you saw on the eggshell. Since the acid breaks the calcium carbonate apart into calcium and carbonate, the carbonate works with the water in the vinegar to create carbon dioxide gas—the bubbles that form on the egg.

The calcium component of the eggshell is suspended in the vinegar and creates the foamy substance in the liquid. The chemical reaction continues until all of the calcium carbonate is gone, leaving behind an egg without a shell.

Coloring Carnations

The Coloring Carnations experiment helps to explain why the water level in a vase of flowers drops, why houseplants need to be watered, and where all that water goes. By adding food coloring to the water, your child can follow the water's movement as well as see the flowers "eating." You will also end up with a beautiful rainbow bouquet to brighten up a room.

This experiment will take between 24 and 48 hours.

Skills Being Practiced

- Scientific method
- Basic understanding of transpiration and capillary action

What You Need

- 1 fresh white carnation for every different color you'd like to try
- Empty water bottles or vases, 1 per flower
- Large bowl
- Food coloring
- Water
- Scissors

Create a Hypothesis

1. Ask your child if he has ever wondered what happens to the water in a vase of flowers, or why it has to be replaced every few days.

2. Show him the white flowers and tell him you want to see how the flowers and the dropping water level are connected, and that in order to do that, you're going to use colored water.
3. Have him take a guess as to what will happen to the flowers if they are placed in colored water.

How to Play

1. Fill each vase or water bottle about three-quarters full of water. (If there are labels on the water bottles, have your child peel them off before filling them.).
2. Ask your child to add one color of food coloring to each bottle, or to mix drops of primary colors to make secondary colors in a bottle, like purple, green, and orange. Use enough food coloring to make the water very bright, about 15–20 drops per bottle.
3. Use a pair of scissors to trim the flower stems, so they can fit in the bottle without tilting over the side. Fill a large bowl with water, and place all the flower stems in the bowl. One at a time, make a diagonal cut on the bottom of each stem while they are underwater. Cutting flower stems underwater helps with this activity, because it prevents the formation of air bubbles in the tubes at the base of the stem. Air bubbles can block the capillary action that draws water up the stem like a straw. A diagonal cut also aids capillary action, because it prevents the stem from sitting flat on the bottom of the vase, which makes it more difficult for the stem to take in water.
4. Place each carnation in a separate vase or bottle of colored water, and have your child check on them every few hours. The effect of some of

the brighter colors can sometimes be seen in as few as a couple of hours, but the most drastic effect will be seen within 24 hours.

5. Leave the flowers overnight, and check them in the morning.

Observations

Once 24 hours have passed, the flowers should really be on their way to becoming very colorful. It's time to start asking your child about what he has observed. Ask questions like:

- Which color showed up first?
- What color shows up the least?
- Which color shows up the most?
- On what part of the flower is the color showing?
- Why do you think that is where the color is?
- What do you think is making this happen?

What's Going On

When plants and flowers are planted in pots or the ground, they get nutrients from the water they absorb from the soil. Cut flowers do not have roots, but are able to “drink” water through their stems in a process known as *transpiration*. As the leaves and petals of the plants lose water to evaporation, it creates a force called *cohesion* that essentially pulls other water molecules into the space the evaporated water vacated.

Water travels through small tubes in the stem, much like a liquid through a straw, though the force behind it is cohesion, not someone sucking on the flower! This traveling motion is known as *capillary action*. The water is then distributed to the parts of the flower that need water and

nutrients, including the petals. Since you and your child have dyed these “nutrients” various colors, the color also is deposited in the petals.

EXTEND THE LEARNING

Not all of the capillaries in a flower stem deliver nutrients to every single one of the petals. You can demonstrate this by splitting one of the carnation’s stems in half from the bottom to the base of the flower. Place each half in different color water, and the flower will end up multicolored!

Bottle Balloon Blow-Up

If your child jumps for joy at the thought of blowing things up, she will really enjoy the Bottle Balloon Blow-Up experiments. Though her excitement may die down temporarily when she realizes the only thing getting blown up is the balloon, it will be quickly reignited when she realizes that she can blow up balloons using various forces, none of which include forcing air from her lungs into the balloon. These experiments work best with latex balloons. However, before you begin, make sure none of your participants have latex allergies.

Skills Being Practiced

- Scientific inquiry
- Observation of the power of carbon dioxide gas
- Observation of the power of air pressure

Baking Soda Balloon Blow-Up Experiment

This experiment demonstrates the power of the chemical reaction created by combining baking soda and vinegar. It's powerful enough to blow up a balloon!

What You Need

- Empty water bottle
- Medium-sized balloon
- Funnel
- Vinegar
- Baking soda

Create a Hypothesis

Ask your child to predict what will happen when you combine baking soda and vinegar in a bottle. If she's ever seen a science-fair volcano, it's a good time to remind her that these are the same ingredients used in the volcano. Ask her to predict what will happen if you combine the same ingredients, but cover the top of the bottle with a balloon.

How to Play

1. Fill a clean, empty water bottle about one-third full with vinegar.
2. Place a funnel in the neck of the balloon, and hold onto it as your child pours in enough baking soda to fill the balloon about halfway.
3. Slip the funnel out of the neck of the balloon. Ask your child to hold the portion of the balloon with the baking soda in it to the side and downward as you stretch the neck of the balloon up over the neck of

the bottle, being careful to not let any of the baking soda slip into the bottle. Make sure it is secure.

4. Help your child slowly lift the balloon over the bottle, and let the baking soda pour inside.
5. Ask your child to move aside. Have her listen and watch the bottle carefully. As you begin to hear the fizzing and crackling noise the baking soda and vinegar solution makes, hold tight to the neck of the balloon.
6. Watch as the balloon begins to inflate!

What's Going On

When the baking soda and vinegar are combined, the acetic acid in the vinegar breaks down the chemical composition of the baking soda (calcium carbonate). The carbon combines with some of the oxygen in the bottle to create carbon dioxide gas, which then rises and inflates the balloon.

Balloon in a Bottle Experiment

This experiment demonstrates that changing the air pressure inside a bottle with a little heat can make enough of a change to completely change the position of a balloon on the top of the bottle. This experiment requires precise timing and moves very quickly, so it's more suited for your child to be an observer, not an active participant. In order to help him feel more involved, you can designate him as the "official experiment recorder." Give him your cell phone or video camera to film the experiment as you do it.

What You Need

- Large glass jar (like a pickle jar)
- Balloon
- Water
- Tissue, or half a piece of paper towel
- Tongs
- Matches

How to Play

1. Place the neck of the balloon over the neck of a faucet. Turn the water on low and fill the balloon with just enough water so that it is a little too big to fit through the mouth of the jar. Tie off the neck of the balloon.
2. Grasp the piece of paper towel or tissue with a pair of tongs, and light it on fire. Drop it into the jar.
3. Very quickly, put the water balloon on the top of the jar, and watch what happens. The balloon will dance, and then be sucked right into the jar.

What's Going On

At the beginning of the experiment, the air pressure inside and outside the jar is the same, but as the paper burns, it heats up the air inside the jar. The heated air expands, taking up more room, but the balloon is impeding the air's escape route. As the heated air pushes around the balloon to get out of the jar, the balloon "dances" out of the way.

Once the fire goes out, the air in the jar cools, but since the water balloon is blocking the opening, no new air can get into the jar. That means the air pressure in the jar is lower than that of the pressure outside the jar. The outside air pressure exerts force on the balloon, pushing it into the jar.

Film Canister Rockets

So far in this book, your child has seen how the chemical reaction between calcium carbonate and vinegar can remove an eggshell, and how it can be used to blow up a balloon. Now she can see how that reaction can be harnessed to create a flying object. With a little open space and some caution, your child can send a film canister flying through the air simply with the power of a little fizzy reaction. However, with digital cameras taking over the market, it is becoming harder and harder to find film canisters (you can try photo shops or stores that do one-hour processing, but not many people use 35mm film these days). If you are unable to locate film canisters, a clean, empty glue stick container or a small, empty candy tube with a snap cover will also work for making rockets.

The tissue is not a necessary component in the experiment, but it helps to delay the chemical reaction enough to let you have some time to get out of the way. Experimenting with different types of paper and the amounts of baking soda and vinegar can help make the rocket fly higher, faster, or even be timed to a countdown.

Skills Being Practiced

- Scientific inquiry
- Observing chemical reactions

- Following experimental procedure

What You Need

(not all materials are needed for all experiments):

- Empty film canisters or a comparable substitute
- Card stock
- Tape
- Markers
- Scissors
- Baking soda
- Vinegar
- Tissues
- Antacid tablets (such as Alka-Seltzer, or generic substitute)
- Soda (optional)

How to Make Baking Soda and Vinegar Rockets

1. Give your child a film canister (or other small tubular container with a cover), markers, and card stock. Have her draw and decorate a small rocket on the card stock.
2. Ask her to cut the rocket out and set it aside. Give her another piece of card stock to roll into a tube. Tape this tube around the container, making sure the cover of the container is accessible at the bottom. Glue the rocket to the front of the paper tube to make the whole apparatus look more like a real rocket.
3. If you have used a candy container, cut the hinge on the lid so it can be completely removed from the canister.

4. Move outside to a clear, unobstructed area.
5. Open the container, and fill it one-quarter of the way with vinegar.
6. Fold 1 teaspoon of baking soda into a small piece of tissue. Get ready to act quickly and stand back.
7. Place the folded tissue in the container, snap it shut, and stand it up (lid down) on the ground. Step away from the rocket.
8. As the tissue dissolves in the vinegar, the rocket should fly into the air.

How to Make Antacid Rockets

1. Clean out the rocket from the previous experiment.
2. Remove the lid, and drop an antacid tablet into the body of the rocket.
Though you can use generic brand antacids, Alka-Seltzer tablets just seem to work better than the alternative brands.
3. Add a teaspoon of water to the container, snap the lid on, and place the rocket on the ground, lid down.
4. Watch what happens as the water works to dissolve the tablet.

What's Going On

Both the baking soda and vinegar mixture and the water and antacid combination work together to create a chemical reaction that releases carbon dioxide gas. As the gas fills the container, the air pressure inside builds to a point where it is too great to be contained. At that point, the lid pops off the container and the rocket zooms up into the air.

EXTEND THE LEARNING

Have your child compare the two rockets. Which worked better? Does changing the amount of baking soda or vinegar make a difference? What happens if she substitutes soda for water in the antacid rocket?

Incredible Exploding Sandwich Bag

If a baking soda rocket wasn't enough of an explosion for your child, then this experiment is bound to be more his style. Using the same acid-base reaction that makes quick bread rise when you cook, this experiment shows that sometimes, combining common household products can be explosive without being dangerous. However, this experiment is definitely messy! Take your materials outside, or choose a place to “explode” your sandwich bag that can be cleaned up easily. Try the kitchen sink, the bathtub, or even a big plastic toy bin.

Skills Being Practiced

- Scientific inquiry
- Observing chemical reactions
- Following experimental procedure

What You Need

- Sandwich-size zip-top plastic bags
- Paper towels

- Scissors
- Ruler
- Measuring cup
- Measuring spoons
- Baking soda
- Vinegar
- Warm water

How to Play

1. Enlist your child's help in locating a zip-top bag that doesn't leak. Though you may think that a bag that comes right out of the box would be leak free, sometimes the seams let water through, and using a watertight bag is crucial to the experiment. To check for leaks, fill each sandwich bag about half full with water, close it, turn it upside down, and shake it around. Once you find a few nonleaky bags, empty them and set them aside.
2. Ask your child to measure a 5" × 5" square of paper towel, and use a pencil to mark it off. Check his measurements and then ask him to cut out the square.
3. Lay the paper towel square down on a flat surface. Measure 1½ tablespoons of baking soda, and place it in the middle of the paper towel.
4. Help your child fold the paper towel into a small packet. Begin by folding the top third over the mound of baking soda, then folding the bottom third up over it as well. Then fold each side into the middle of the rectangle, creating a small square. This is your timed-release "explosive" packet. Set it aside.

5. Have your child measure $\frac{1}{2}$ cup of vinegar. Hold open a sandwich bag while he pours the vinegar inside. Continue holding the bag while he measures and pours in $\frac{1}{4}$ cup of warm water.
6. This next step requires some fast moving on the part of both you and your child. Zip the sandwich bag about halfway closed. Stuff your timed-release packet inside while you very quickly zip up the rest of the bag.
7. Make sure the bag is secure, then shake it a little bit. Place it on the ground or in the designated safe zone, move back, and watch as the bag expands and explodes!

Questions to Ask

- Why didn't the sandwich bag explode right away?
- Do you think the size of the bag made a difference in the outcome of this experiment?
- What do you think would have happened with a snack-size bag, a quart bag, or a gallon bag?
- What do you think would happen if you just mixed water with baking soda?
- What would happen if you mixed just vinegar with baking soda?
- Would the experiment change if you used tissue paper or construction paper instead of a paper towel?

What's Going On

Once the paper towel dissolves, the baking soda is mixed with the vinegar-water solution. Since vinegar is an acid and baking soda is a base,

it creates a chemical reaction called an acid-base reaction. The acid-base reaction makes carbon dioxide gas, which needs more space than the sandwich bag can accommodate. It keeps filling the bag until there isn't any more room. The gas then pops out the seams and tops of the bag with a loud (and very visible) explosion.

CHAPTER 22

Social Skills

Your child is just beginning to learn her role in the many communities of which she will be a part in her lifetime. Engaging in activities to practice social skills can help your child learn to communicate better, understand herself and her ambitions better, and set her on the path to becoming a leader. Social interaction is more than just talking to other people. It's a combination of three elements: social intake, internal processing, and social output. That means your child has to understand another person's words and body cues, interpret that information, figure out her own reaction to it, then communicate and react to that person using verbal and nonverbal communication.

Activities to Increase Emotional Vocabulary

Having many words to choose from when it comes to expressing emotions is not only helpful to your child when it comes time to talk about what she is feeling, but also when she's trying to understand what other people are feeling. The benefits of teaching your child a wide variety of words to learn how to express feelings beyond happy, sad, and angry include:

- Being able to identify what she is feeling in all situations, not just the really big ones
- Having better insight into what other people are feeling

- Building stronger friendships by being able to see how other kids are reacting to her, and knowing how to appropriately respond to them

Skills Being Practiced

- Emotional intelligence
- Social skills
- Verbal communication skills

What You Need

- Paper or whiteboard
- Pencils or dry-erase markers

How to Play: The Big List of Feelings

1. What you make the Big List of Feelings with doesn't matter nearly as much as what you put on it. You can tape a large piece of paper to the wall, use a big whiteboard, or use many smaller pieces of paper, as long as you can post the list in a place where you and your child can see it.
2. Once you've tacked the paper on the wall, one of you can label it "The Big List of Feelings" in big letters. Then brainstorm all the feelings you can think of, and write them on the list. It's okay to include emotions your child isn't familiar with—just show her the face that would go with it and describe a situation in which you might experience that emotion. Following are some examples:

▼ EMOTIONS A–Z

afraid	annoyed	anxious	affectionate	affable
bummed	bored	blue	baffled	brave
calm	curious	considerate	courteous	crabby
depressed	delighted	disgusted	dumb	daring
eager	excited	enthusiastic	edgy	enraged
friendly	funny	frightened	foolish	frustrated
grumpy	guilty	great	grateful	generous
happy	hurt	horrificed	hilarious	hopeful
irritated	insecure	impatient	irrational	indifferent
joyful	judgmental	jaded	jealous	jumpy
kooky	kind	keen	knowledgeable	knotted up
loving	lousy	lucky	lazy	light-hearted
mad	miserable	marvelous	misunderstood	mischievous
nervous	nasty	noisy	nosy	needed
overjoyed	obedient	odd	offended	out-of-control
panicked	playful	proud	puzzled	preoccupied
questioned	quirky	quiet	quarrelsome	qualified
relaxed	rattled	rebellious	relieved	remorseful
surprised	silly	stressed out	stubborn	secure
thankful	tearful	tolerant	timid	threatened
understood	uneasy	uncertain	uncomfortable	undecided
vivacious	vain	vibrant	volatile	vulnerable
worried	wound up	whiny	worn out	witty
xenophobic	x'd out	yucky	yappy	yearnful
zany	zealous	zen	zapped	

How to Play: Big List of Feeling Sounds

1. You can use the Big List of Feelings you've already created with your child to add to his understanding of the connection between body language and emotions. While you may think only of how your body looks when it comes to body language, the nonlanguage noises that we make are important, too.
2. Help your child identify the sounds that go with different feelings. It may take some thinking, but you can start with the easy ones, like the sound of a sigh going with "exasperated," or the sounds of a snort being associated with "sarcastic" (or sometimes "amused"). Eventually, you'll manage to come up with a sound for most of the words.

How to Play: Emotional Charades

1. Emotional charades is also a really good tie-in with the Big List of Feelings. Write the list on a smaller piece of paper and cut it apart so each word is on a slip of paper. Put those slips in a bowl.
2. As each player takes a slip, they need to convey the emotion picked using their facial expressions and the rest of their body.
3. If your child doesn't understand the feeling you're showing, ask her to imitate what you're doing. She may be able to identify the emotion when she feels her own body doing it.

How to Play: Modified "If You're Happy and You Know It"

1. Most kids know the song "If You're Happy and You Know It," but what do you do when you're not happy? Sing a new version of the song!

2. You can add new verses by using some feelings words from your list, and the sounds and body motions associated with them. For example, try singing: “If you’re uncertain and you know it, shrug your shoulders.”

How to Play: Mirror, Mirror

1. This activity can be done with literal or metaphorical mirrors. You can begin by sitting face to face, so that you and your child mirror each other. One of you must make a facial expression that expresses an emotion, and the other one must guess what that feeling is.
2. Once the player has guessed, he must imitate the face or make another that conveys the same emotion.
3. When your child is having trouble imitating or understanding your expressions, it’s time to get out the real mirrors. Stand him in front of a mirror to help him see the nuances of things like how his “frustrated” face differs slightly from his “angry” face.

How to Play: Role-Playing

1. It may be a cliché to say that kids learn by doing, but it’s still true. One of the more effective ways to increase your child’s emotional vocabulary is to practice situations in which he needs to use it. You can do this one of two ways. The first way is to create fictional (but realistic) situations your child might come across and have him pretend to react to them.
2. The second way is to talk to him about things that came up during his day, how they made him feel, and how he and other kids reacted.

3. Either way, the most important part of this activity is to revisit situations that didn't go well—in real life or in fantasy—and take a look at what all the people involved could have said or done differently.

Emotional Treasure Hunt

Once your child is more able to recognize the facial expressions and body language that accompany emotion, it's a good time to see if she can generalize this skill beyond her family members. The Emotional Treasure Hunt gives her the opportunity to practice these skills using pictures before she practices them on live people.

Skills Being Practiced

- Emotional intelligence
- Social skills
- Verbal communication skills

What You Need

- Scissors
- Glue
- Paper
- Old magazines or newspapers

How to Play

1. You might be surprised at how many different emotions your child will be able to find, if she goes looking for them. Since it's unlikely that she'll be able to capture people's split-second reactions on camera, use old magazines or newspapers as a substitute.
2. Name an emotion, and give your child sixty seconds to find a picture of someone feeling that way.
3. To extend the learning, ask her to tell you a story of when she felt that feeling. If she can't think of one, ask her to make up a story when she might feel that way.

Feelings Bingo

The great thing about the game Bingo is that it can be modified to teach a number of different skills, and your child doesn't even feel like he's learning! Feelings Bingo is no exception; it's just a matter of using emotional vocabulary or feeling pictures on the cards instead of numbers.

Skills Being Practiced

- Emotional intelligence
- Social skills
- Verbal communication skills

What You Need

- Paper
- Feelings Bingo cards (made from online template or freehand)

- Something to cover the bingo squares, such as pennies

How to Play

1. To make Bingo cards—either 3×3 or 5×5 —you can use an online Bingo card creator program, like the one found on the Teach-Nology website (www.teach-nology.com/web_tools/materials/bingo/), or you can just create your own. You can either put the words for different feelings in the squares, or you can put pictures of different faces with different feelings in the squares.
2. Play the game by calling out feelings words, making the sounds that accompany an emotion, or acting out an emotion.
3. Just like regular Bingo, the object of this game is to be the first player to cover an entire row.

Social Narratives

Creating social stories is a combination game-and-storytelling activity that can help your child understand different types of situations she may come across in her daily life, and how she, and other people involved in the situation, might act and react. The nice thing about creating social narratives with your child is that they don't always have to deal with problems. Social scripting provides your child the opportunity to practice what she can say, do, and expect in situations that she may not have encountered before.

Social scripts are also known as Social Stories™ or as a Social Story™, a phrase coined and trademarked (in both capitalized and noncapitalized variations) by Carol Gray. Ms. Gray developed the concept in depth to help

children with Autism Spectrum Disorders as a way develop better social competence, understand social cues, and learn common responses in social situations.

Skills Being Practiced

- Emotional vocabulary
- Recognizing social cues
- Using predetermined language and phrases in a new or unfamiliar situation
- Understanding of new or unfamiliar social “rules”

What You Need

- Paper and pencil
- Pictures of things your child wants to learn, try, or places she might be going

How to Play

1. Ask your child to choose one picture from the pictures that you have gathered, or to tell you about something new she’s going to do and isn’t quite sure how to handle. For example, she might be going to a fast-food restaurant with her sports team after a game and is not confident that she will be able to order all by herself, or she may choose a picture of two children fighting over a toy.
2. Talk to your child about who will be involved in the situation. In the first example, it would be her and the cashier at the restaurant. In the

second example, it would be her and another child, whom you can give a name.

3. Begin writing your story with that information. Since the social narrative is a short piece designed to teach your child how to handle a situation, it will not include a lot of unnecessary detail. The two stories might begin as such:

Story #1: On Tuesday, Amanda and her soccer team will be stopping at a fast-food restaurant after the game.

Story #2: Amanda and another child, Jennifer, both want to play with the same toy.

4. Next, ask your child what is going to happen, and in what order. If she doesn't know, this is likely to be the part when she needs a little help and you will need to begin to take over the narrative. Since you have more life experience, it is likely that you know what will happen and can provide the sequence of how things occur and the social interaction cues your child might not be able to recognize.
5. Incorporate "what," "when," "how," and "why" into the story, using language that explains what other people will say and what your child can say in response.

Story #1: On Tuesday, Amanda and her soccer team will be stopping at a fast-food restaurant after the game. The bus will stop in the parking lot, and the coaches will ask the kids to get off the bus, walk into the restaurant, and line up at the counter to order. Amanda will wait until it is her turn. The cashier will say, "What can I get for

you?” Amanda will say, “I want chicken and fries with a milkshake.” The cashier will enter the information into her machine and say, “Okay, that will be \$5.50.” Amanda will give the cashier 10 dollars, wait for her change, say “Thank you,” and step to the side to let the next person order. While Amanda waits for her food, she will put away her change. When her food is ready, she will take the tray and go sit down with her friends.

Story #2: Amanda and another child, Jennifer, both want to play with the same toy. Amanda and Jennifer grab the toy at the same time and each of them holds on to it tightly. Neither Amanda nor Jennifer is able to play with the toy because they are both holding on to it. Jennifer may yell at Amanda, or Amanda might yell at Jennifer. They might pull at the toy, but this is not going to solve the problem. Amanda can say, “Can we both play?” Jennifer might say, “No,” in a mean voice. That means she doesn’t want to solve the problem, so Amanda can either tell a grownup or choose another toy.

6. Read the story with your child, and ask her to practice the narrative with you, like she is acting out a play.
7. Tell her about a situation that makes you nervous, or give her another picture and ask her to write a social narrative that can help you through a nerve-racking situation.

Feelings Journals

Once your child has started to develop a wider emotional vocabulary and a better understanding of how to interact in social situations, creating a

Feelings Journal is a good way to keep track of those emotions and interactions. It gives him a chance to practice writing, and also gives him a safe place to look more carefully at what he's feeling, when he's feeling it, and to come up with his own ideas of how to handle difficult social situations. There are a few different types of Feelings Journals he can keep, depending on his interest, age, and skill level.

Skills Being Practiced

- Written communication
- Emotional intelligence
- Vocabulary
- Recognizing social cues
- Social problem solving
- Identifying emotions

A Good Feelings Journal

A Good Feelings journal is an easy way for your younger child to start identifying positive emotions, and things that make him feel those emotions. This journal combines writing and drawing, and can be used daily or just once in a while.

What You Need

- Pencil
- Crayons or markers
- Blank paper
- Brass fasteners

- Single-hole punch
- Big List of Feelings (see the Activities to Increase Emotional Vocabulary and Emotions A–Z table)

How to Make a Good Feelings Journal

1. With your child, go over the Big List of Feelings you previously created together, and ask him to circle all the words that go with feeling good. Remind him that “happy” is just one word that expresses positive feelings. If he’s having trouble, or if you haven’t made a Big List of Feelings, then sit down with him and talk to him about other words that he might use, like “silly,” “excited,” or “goofy.”
2. After you have a substantial list of good feelings words, talk to your child about when he might experience those emotions. Does he feel happy when he spends time with you? Is he excited to go to birthday parties? Does he act or feel goofy when he’s swimming with his friends?
3. For each situation he comes up with, give him a piece of paper and ask him to draw a picture that matches the situation he has described. Then ask him to write or dictate a sentence or two beneath the picture that tells what is going on, and which includes the feeling word.
4. Add a few pieces of blank paper to his drawings, gather them in a neat pile, and punch two holes at the top. Secure them with brass fasteners and tell your child this is now his Good Feelings Journal.
5. Encourage your child to draw and write in his journal at least a few times a week, when he experiences something particularly positive, or as a way to keep track of things he’d like to do that would make

him happy. You can add more paper as it is needed. Over time, you and your child can look back and see how much he has grown in his ability to write and express emotions.

A How Do I Feel Today? Journal

This journal is a little more complex than the Good Feelings journal, and it is a good way for your older child to keep track of his moods on a more consistent basis. To help your child identify feelings, print a “This Is How I Feel Today” chart from the Center on the Social and Emotional Foundations for Early Learning website (<http://csefel.vanderbilt.edu/modules/2006/feelingchart.pdf>) to keep in his journal. It’s a picture chart of feelings faces with the feelings word printed underneath.

What You Need

- Printout of the “This Is How I Feel Today” chart
- Pencil and crayons
- Bound sketchpad

How to Make a How Do I Feel Today? Journal

1. This journal is less about exploring feelings in depth, and more about helping your child learn how to take his “emotional temperature” on a regular basis. Each day, perhaps after breakfast, have your child choose one feeling or feeling face that is the best expression of his present emotional state.

2. Ask him turn to the next blank page in his sketchpad, and write the date and time. Then he can write or draw the emotion he is feeling with a brief description of why.
3. He can do this again after he comes home from school, before or after dinner, or right before he goes to bed. It's helpful to have all the entries for one day on the same page in order to see if his "emotional temperature" fluctuated throughout the day.
4. Conduct a weekly emotional audit. By the end of each week, your child should have a fair number of daily entries in his journal. Sit down with him and discuss how his days looked, in an emotional sense. Talk about the differences between the beginning of the day and the end of the day, as well as any happenings or people that seem to be tied to a certain emotion.
5. Ask him to identify what his overall emotional state was for the week, and any unusual peaks or lows. Those "abnormalities" are a good opening to talk more in depth about how to deal with tough situations that cause mood changes. The more able he is to recognize those mood changes and triggers, the better he will be at being able to verbalize them when they occur.

EXTEND THE LEARNING

If you have an older child, many professionals who work with moody teenagers recommend keeping a mood calendar. It can help to identify significant mood changes or patterns that might indicate the need for some sort of intervention.

How to Make a Situational Feelings Journal

1. All you need for the Situational Feelings Journal is a spiral-bound notebook, or a composition book, and a pencil. This type of feelings journal is great for tweens and teens, and is one that your child can use on as-needed basis as a way to work through the emotional repercussions of one-time events or ongoing drama.
2. Encourage your child to write a page when something happens to upset him, anger him, or bring him happiness or joy in an unexpected way.
3. Explain that writing down what happened, who was involved, and how everything played out is a good way to remember a situation and analyze how he could have handled things differently or what he did well. That way, he has some insight into what he might do the next time a similar situation comes up.

How to Make a Communication Journal

1. As your child gets older, both of you may find it more difficult to talk to each other about things that are important to you. Sometimes this is because one of you is embarrassed or angry, and sometimes it is just because emotion can make it difficult to find the words to express what you want to say.
2. This journal is a tool that you and your child can use to start tough conversations, let each other know how you are feeling about something, or simply let each other know when to stay out of each other's way. All you need is a spiral-bound notebook and a pen.
3. When something comes up that your child wants to talk to you about but doesn't feel comfortable saying out loud, he can write an entry in the notebook expressing his situation and his feelings about it. He can

also let you know if he wants you to write back to him or approach him to talk about it.

Goal-Setting Activities

Learning to set goals plays an important role as your child starts to gain independence and feel as though she has some control over her own life. When she begins figuring out what she wants to achieve and accomplish, it can set the stage for her to be more self-motivated and not depend as much on external rewards and praise. That said, setting goals doesn't come naturally to your child, so helping her to learn the process should probably be one of your goals!

Skills Being Practiced

- Goal setting
- Life skills
- Self-directed learning

Teach Your Child How to Set Goals

1. Start by defining the word "goal." Your child may know what a goal is when it comes to hockey or soccer, but she may not understand what it means in the context of everyday life. Since it will be difficult to set goals without understanding what they are, you can extend the sports analogy to help explain it to her. Talk to her about whether or not it's easy for a player to make a goal in soccer. Ask: *Are there obstacles in his way? Do you think he has a plan to get around the*

things that are in his way? Do you think he comes up with that plan ahead of time?

2. Explain that the goal is the place a hockey player is trying to get to. He needs a plan of how he's going to make it to that goal. Tell her that in real life people use the word "goal" to talk about something that they want to get done, learn, or be able to do or understand better.
3. Listen to your child. Ideally, you want your child to be able to decide for herself what her goals are and what she wants to achieve. Let her talk about what she thinks she does well and what she thinks needs to improve instead of telling her what you think. If she's stuck, you can provide some examples of your own personal goals as well as talk through some observations about what you think she does well and how she can build on that. Try sentences like: *Is there something you find hard to do? I see that you can do _____. What do you think comes after learning that skill?*
4. Teach goal-setting language. Setting a goal is much easier once your child knows the lingo. Essentially, setting a goal can be as easy as filling in the blanks in a formulaic sentence: *I would like to do/learn/know how to [insert skill] by [insert time frame]. I can already [insert related skills].*
5. Help keep goals realistic and reachable. While you don't want to squash your child's enthusiasm, if you know that a goal is beyond her reach, help her refine it by asking her to break it down into smaller pieces that add up to the bigger goal. For example, if your child wants to be a champion swimmer, but can't swim an entire lap of the pool yet, you can suggest she start by making that her first goal.
6. Make a visual goal reminder. Help your child write down her goals in an easy-to-follow, not-so-overwhelming format. Being able to see and

check off the steps on the way to her goal is key in keeping her motivated. A really simple way to make a visual reminder is to have your child draw a ladder on a piece of paper, writing her goal at the top and each step to that goal on the rungs. She can “climb” the ladder as she gets closer to her goal. Once your child has set some goals and has a plan for achieving them, she may find them more difficult, or easier, to achieve than she originally thought.

7. It's a good idea to revisit goals every so often, celebrating the ones she's met, and modifying those that are too daunting.

How to Make a Goal Board

This goal board plays on the connection between the word “goal” and the games of soccer and hockey. Your child will be making a three-dimensional goal as a visual reminder on which to keep track of his short- and long-term goals.

What You Need

- Small bulletin board (about 8.5" × 11")
- Small mesh laundry bag or netting
- Ruler
- Glue gun with glue sticks
- Craft sticks (popsicle sticks)
- Markers
- Scissors
- Construction paper
- Pushpins

Get Ready: How to Make a Three-Dimensional Goal

1. Give your child a small bulletin board and four craft sticks. Have him arrange the craft sticks into a square in the middle of the bulletin board, making sure the ends of the sticks touch, but do not overlap. Help him glue them in place with a hot glue gun.
2. Ask your child to measure the square's length and width with a ruler, and take note of the measurements.
3. Cut the laundry bag open, or lay the netting out, so that it is only a single layer of fabric. Using the ruler and a marker, ask your child to measure and cut a swatch of the fabric the same size as the craft stick square. Glue the netting inside the square.
4. Place a large dab of hot glue on the bottom right corner of the craft stick square. Quickly, before the glue hardens, have your child stick a craft stick in the glue so that it is sticking outward from the bulletin board. (It will look like a sideways *L*.) Have him hold it in place until the glue sets. Repeat this process in the bottom left-hand corner of the square.
5. Place a large dab of hot glue on the top right corner of the square, and a dab on the end of the craft stick that is sticking out of the bottom right-hand corner. Help your child place another craft stick with one end in each dab of glue, essentially creating a three-dimensional right triangle. Again, have him hold it in place until the glue sets, and then repeat on the other side of the square. Placing the craft sticks to make the sides of the goal can be tricky, and the hot glue may harden before your child has done it. If that happens, just add more glue to hold the sticks in place.
6. By now, your child's goal board should be starting to look like it has a miniature goal attached to it. Have your child measure the triangles

on the sides, draw the same measurements on the netting, and cut out two new pieces of material for the goal. Use hot glue to attach these pieces of fabric to the crafts sticks that make up the sides of the goal.

How to Make Goal Cards and Use the Goal Board

1. Once your child has his goal board put together, it's time to make some goal cards to go with it. Have him decide whether his goal is a hockey goal or a soccer goal. Then give him some construction paper and a pencil.
2. Have him draw the outline of soccer balls or hockey pucks. Inside each ball or puck, ask him to write a goal he has set.
3. Cut out the cards, and use pushpins to attach them on the bulletin board, outside the goal.
4. Once your child has accomplished a goal, he can move the card into net, because he "made" a goal!

Cause and Effect Game

Understanding cause and effect is a skill that will serve your child well in all realms of learning. In literacy, it is a crucial skill in knowing how to interpret and create compelling stories and characters. In math, it is a way to make sense of operations and formulas. In science, it is a skill that can help to understand the results of an experiment. In history, crucial historical events are the result of a chain of cause-and-effect relationships. The importance of cause and effect doesn't stop there, though. It is also a key social skill that can help your child learn how to interact with other people.

Both in writing and in conversation, there are “clue words” that your child can look for that link cause and effect. Those words and phrases include, but are not limited to: *since, so, because, consequently, therefore, due to, as a result of, the reason for, thus, and nevertheless.*

Skills Being Practiced

- Reading comprehension
- Emotional intelligence
- Understanding of how the outcome of an event is affected by prior actions or events

What You Need

- Pencil
- Markers/crayons
- Balloon and pin (optional)
- Large piece of poster board or cardboard
- Sticky notes, or index cards and tape
- Six-sided die (dice)

Get Ready to Play

1. Talk to your child about the idea of cause and effect. Ask her if she can explain how they are connected and which comes first. Explain to her that the *cause* is what makes something happen, and the *effect* is what happens in reaction to the cause.

2. Continue the conversation by talking about whether things always happen in a single cause-and-effect pattern, or whether there can be many causes and effects that are connected to each other. Provide an example of a multipronged event, such as a child who was told not to climb a tree on a windy day and did so anyway. If the child falls and breaks a bone, what are the causes and effects in that story?

Answer: There are many. The child disobeying was the cause of her being in the tree, and the blowing wind was the cause of the tree being unstable. Falling out of the tree was the cause of breaking a bone; the breaking of a bone will be the cause of pain, not being able to climb trees for a while, and all sorts of other unknown effects.

3. Once you have discussed this example (or one like it) with your child, ask her to tell you a story about cause and effect. Then ask her if she can think of smaller examples of cause and effect. As a visual prop, blow up a balloon and tie it off. Then prick it with a pin. Ask your child about the various causes and effects she noted in your demonstration.

How to Play

1. On a piece of poster board or cardboard, use a pencil to help your child outline a large tree with a sturdy trunk and many branches. Make sure that the branches also have offshoots. Let her color the tree with markers or crayons. This will be your game board.
2. Set the game board in the middle of the table, along with a pad of sticky notes and a pencil for each player.
3. Take turns rolling the die. The player who rolls the lowest number gets to go first.

4. The first player begins by writing an effect on a sticky note. It can be as simple as “The boy ran home crying,” or as complex as “The Revolutionary War began.” The player can also choose to write down the ending of a science experiment, movie, or a book, but must first check with the rest of the players to make sure they have all done the experiment, seen the movie, or read the book.
5. The player then sticks her “effect” note on the trunk of the tree.
6. The next player must write down a contributing cause to the first player’s effect. If he is responding to a historical event, experiment, book, or movie, he can choose the originating cause or another cause, but it must really have occurred. If not, he can respond to the effect with something made up, such as “His friend said something mean to him.”
7. The player then sticks his note on the top branch of the tree. It’s then the next player’s turn. He can choose to move the second player’s cause down a branch and add something that turns the second player’s cause into an effect (such as “The boy broke his friend’s favorite toy”), or add a co-contributing cause to another branch. This is more likely to happen with historical events for which there are many causes.
8. Play continues until none of the players can come up with any more causes and effects, or when the entire tree is filled.

EXTEND THE LEARNING

To help your young child understand this abstract concept, provide a more concrete example. Read one of Laura Numeroff's books, like *If You Give a Mouse a Cookie* or *If You Give a Moose a Muffin*. The stories clearly outline cause and effect, so you can talk about which action (cause) led to the next step (effect) in the book.

CHAPTER 23

History and Geography

Despite the fact that history and geography are each content-heavy subjects, it is hard to separate them when teaching. Geography may help your child learn to answer the age-old question of “What’s over there?” However, it is history that will help answer the questions of “What happened over there?” and how that has shaped both the cultural and physical lay of the land. Before he is able to understand the implication of world history, and understand the world’s geography, your child needs a more personalized context. This chapter provides activities for you and your child to use to explore his own history and surroundings, before moving onto bigger things.

3-D Family Tree

Making a family tree is a good way to visualize all the complicated relationships that create a family. The structure of a tree and its branches lends itself well to moving from the top of the family down, and allows your child to look at the many “branches” of your family. Taking the family tree one step further, making it three-dimensional, can really make family history come alive for your child.

Skills Being Practiced

- Genealogical research
- Fine motor skills
- Classification and organization

What You Need

- Scissors and/or a utility knife
- Large piece of sturdy cardboard, poster board, or mat board, approximately 20" × 20"
- Green construction paper
- Pencil
- Crayons/markers/paint
- Ruler
- Paper
- Glue
- String
- Single-hole punch
- Small pictures of many generations of family members

Get Ready

1. Discuss the idea of family with your child, explaining that each person in his family has a different relationship to the others. His grandmother, for example, is also your mother and (perhaps) his grandfather's wife, just as you are not only your child's parent, but also your mother's child, and so forth.
2. Ask your child to name his family members, both by name and relationship. Then ask him to write them down on a piece of paper.

Ask questions like: *What do you know about each person? How old is she? What year was she born? Who is he married to? What are his children's names? Do you know what her last name was before she was married (her maiden name)?* Learning information like maiden names and birth dates may take some research on your child's part. Ideally, he could call relatives and ask the questions, but if you and he are stuck for more information, and you want to delve further, you may want to try a free genealogical website like the US GenWeb Project (www.usgenweb.org), WorldGen Web Project (www.worldgenweb.org) or FamilySearch (www.familysearch.org).

3. Once you and your child have gathered answers to these questions, write the information down next to each person's name, and try to locate a picture of each person.
4. On the green construction paper, help your child draw the outline of a small, oval leaf for each person he will be placing on the tree. Cut out the leaves.
5. Ask him to glue a picture to each leaf, then turn the leaf over and write all the information he knows about that person.

How to Make the Tree

1. Cut the piece of cardboard or poster board in half, reserving one half for later use in the project. On the first half of the piece of board, use a pencil to draw the outline of a tree with a trunk and branches. The trunk needs to be at least 6" wide and 6" tall before dividing into branches, and should flare out at the bottom.
2. Make sure that there is a branch for each generation of the family, and that each branch has enough "twigs" to support the number of family

members associated with that branch.

3. Measure 2" inward from the bottom left edge of the trunk, and make a small mark. Do the same from the bottom right edge of the tree trunk so that you have two marks about 2" apart at the bottom of the trunk. Extend each mark into a 2" vertical line going upward. You will now have a set of parallel lines in the middle of the tree trunk. Draw a line connecting them at the top.
4. Use scissors or a utility knife to cut out the rectangle you have just drawn on the tree trunk. Help your child cut out the rest of the tree. He should have a sturdy tree with a rectangular notch in the bottom of the trunk.
5. Place the tree flat on the unused half of the board, and ask your child to trace the tree trunk. Once he reaches the point where the tree branches off, he can stop tracing. Cut out the "extra" tree trunk.
6. At the top of the "extra" tree trunk, measure the same way you did at the bottom of the tree. Extend the marks in 4" vertical lines going downward. Connect them and cut out the rectangle. You will now have a tree with a 2" long notch at the bottom of the trunk and an "extra" trunk with a 4" notch at the top.
7. Hold the "extra" trunk upright so that it is facing you, with the base of the trunk on a flat surface. Turn the family tree perpendicular to the trunk. Slide the notch at the bottom of the tree into the notch in the top of "extra" trunk. This makes the bottom into a stand and the family tree will stand up on its own.
8. Disassemble the tree, and let your child color or paint the tree to look like bark.
9. Punch a hole in the top of each leaf, and cut a small piece of thread to loop through the holes. Next, with the tree flat on your work surface,

have your child lay the leaves in the correct order on the tree, starting with the oldest generation and working his way down to his generation.

10. Use the single-hole punch or your utility knife to poke a small hole where each leaf is placed. Help your child loop the strings through the hole and tie the leaves in place.
11. Set up the tree. With each leaf in place, you should be able to see and read about your child's ancestry!

EXTEND THE LEARNING

Joan Sweeney's book for children, *Me and My Family Tree*, is a good resource to use to help introduce the idea of family relationships and the organization of a family tree.

My Life Timeline

One of the hardest things for a child to grasp about history is that at some time or another, all those historical events were the present. Not to mention that at the time, people probably didn't know they were making history! Your child, too, has a history marked by important events. Making a My Life Timeline can help her see that, even in her short life, she has accomplished great things.

Keep in mind that children who were adopted can find sometimes personal timelines challenging, but you can adapt the activity to make it easier. Instead of starting at birth, use the more general terms of "past" and "present." Your child can choose what events are significant in her

personal history without the pressure of knowing the details of the time before she was adopted.

Skills Being Practiced

- Sequencing
- Historical perspective
- Expository writing

What You Need

- Long roll of paper (or many pieces of paper taped together to create one piece) approximately 10 feet long
- Pencil
- Markers
- Scissors
- Tape
- Index cards
- Ruler
- Pictures of your child throughout her lifetime

What to Do

1. Give your child a bunch of index cards, and tell her that you are going to help her think of some of the most memorable or important events in her life. Ask her to write her birth date on the first index card. If you remember what day of the week it was, tell her and have her add

that information to the card as well. This will be her starting card, which she can label with “I was born!” or a similar statement.

2. Ask her to think of other important or big events in her life, like when her siblings were born, her first day of school, her first family vacation, or anything else that stands out in her mind. For now it does not matter whether or not the events are in order.
3. Help her work her way up to the present, writing each event on a separate index card with a short description of the event.
4. When she is finished, ask her to lay the index cards on the floor or another large work surface. Have her sequence the events from left to right, beginning with the day she was born and working to the present. It may be hard for your child to remember exactly when an event occurred. In order to sequence correctly, she may need your help in identifying when an event happened. Once she has that information, have her add it to the card, and remind her that when she sequences, she needs to pay attention to month, as well as year.
5. Once the cards are laid out in a line, help your child go through old photos to find one that matches each event. If you can’t find one, don’t worry about it too much. She can always draw a picture to illustrate the event.
6. Gather the cards and pictures in a pile, keeping them in timeline order.
7. Lay the long piece of paper horizontally on a hard, flat work surface. Help your child use a ruler and a pencil to draw a horizontal line across the middle of the paper.
8. Starting at left side of the paper, have your child draw a 1” vertical line upward from the middle line to mark the day she was born. Show

her how to write the date above that line and a short description of the day or event.

9. Move her to the very end of the paper, and have her make a 1" vertical line upward to mark today. Have her write the date above the line, her age, and a little bit about herself right now.
10. Place the sequenced index cards in between those two dates, and ask your child to make a line for each one. Make sure she writes the date and a description of each "historical" event.
11. Help her match up and place the pictures in the correct spots under the horizontal line. Glue the pictures in place.
12. Give your child some markers to either trace the information she has already written, or to decorate her timeline.

Sugar Cube Pyramids

If your child has seen pictures of Egyptian pyramids or studied them in school, he's likely to be as fascinated by their construction as by their history. Building a small-scale version of a pyramid can give your child a better idea of how difficult and tasking it must have been for an ancient society to calculate, measure, and actually construct the huge, geometrically complex buildings. Recommended reading materials might include *National Geographic Kids Everything Ancient Egypt, You Wouldn't Want to Be a Pyramid Builder!* by Jacqueline Morley and David Salariva and *Who Built the Pyramid?* by Meredith Hooper.

Skills Being Practiced

- Geometric design

- Basic engineering
- Multiplication
- Building to scale
- Fine motor skills
- Historical perspective

What You Need

- 200 sugar cubes
- 1 can white frosting and a plastic butter knife, or a bottle of school glue
- Cardboard
- Scissors
- Pencil
- Ruler
- Gold glitter, or a can of gold spray paint

How to Play

1. Read about the pyramids with your child, and take some time to explore the pictures. If you don't have any books about pyramids, there are many educational websites, including the National Science Foundation (www.nsf.gov) and NASA (www.nasa.gov) that have both pictures of and information about the pyramids.
2. Talk about the construction of the pyramids. Ask: *What does the base of the pyramid look like? What shape is it? How does a pyramid slowly build up to a point? What do you notice about the spacing of the blocks/bricks?*

3. Once your child has had a chance to explore the answers to these questions, point out to him that each layer of a pyramid is an exact square, just a little bit smaller than the layer before it.
4. Explain to him that if the bottom of a pyramid is 100 square feet, that it is constructed of 10 rows of 10 blocks apiece. If necessary, draw a diagram to demonstrate. Then ask him how many square feet the next layer would be if there was one row fewer, and each row had one fewer block. (Answer: $9 \text{ rows} \times 9 \text{ blocks} = 81$) As you can see, calculating how big to make the pyramid requires starting with a number, squaring it (multiplying it by itself), and then doing the same with each layer until you reach one cube. Add the numbers together to see if you have enough sugar cubes, or if your child needs to recalculate.
5. Show him the sugar cubes, and tell him you are going to build a small pyramid using 200 sugar cubes. Help him do the math to figure out how many cubes can be used to make the first layer and still have enough cubes left to build the rest of the pyramid.
6. As your child begins doing the calculations, he will discover that to use exactly 200 sugar cubes, he will need to start with an 8×8 square (64 cubes), followed by a 7×7 square (49 cubes), then a 6×6 (36 cubes), then a 5×5 (25 cubes), then a 4×4 (16 cubes), then a 3×3 (9 cubes) and, finally, 1 cube.
7. Have your child use a ruler to measure a sugar cube. Then ask him to calculate the length of eight sugar cubes in a row, and multiply that number by itself. (Assuming a sugar cube is $\frac{1}{2}$ " long, your child will end up multiplying $4" \times 4"$, making an area of 16" square.)
8. Use a ruler to help your child draw a $4" \times 4"$ square on a piece of cardboard, and cut it out. Do the same with each layer except for the

last cube. When your child is done, he should have 6 cardboard squares, each a little bit smaller than the one before it.

9. Cover each piece of cardboard with glue or white frosting, and have your child place sugar cubes in tight rows covering the cardboard. They should not stick off the edge.
10. Help your child center and glue (or frost) the second-largest square on top of the largest square. Do this with all layers of the pyramid, and then glue one sugar cube on the top of the pyramid.
11. Let the glue dry, or the frosting harden. Now you can either take the entire pyramid outside and spray-paint it gold, or cover it in glue and shake gold glitter all over it.

Following Up

Talk to your child about all the steps he took to make sure his pyramid had the right number of blocks, that they were stuck together tightly, and centered correctly.

- Was it hard to do?
- What was the hardest part?
- What was the easiest part?
- What would you have to do if the sugar cubes weren't all exactly the same size?
- How do you think the ancient Egyptians measured and cut their blocks?
- What do you think the Egyptians used for mortar to hold their pyramids together?
- How do you think they got all the blocks on top of each other?

Mapping Your Neighborhood

It is not always easy to understand how to read a map, particularly when looking at places in the world to which you've never been. To start understanding the basics of reading and making maps, it can be very helpful for your child to begin with an area she knows well. This activity is not only a fun way to help your child understand how a map works, but also gives you both the chance to explore your neighborhood in depth. The landmarks you never noticed before might surprise you! If you'd like to read more about maps with your child, try *Me on the Map* by Joan Sweeney, *As the Crow Flies: A First Book of Maps* by Gail Hartman, and *Follow That Map!: A First Book of Mapping Skills* by Scot Ritchie.

Skills Being Practiced

- Observation
- Recording data
- Transcribing data into a map format
- Creating an easy-to-read map key
- Map-related vocabulary

What You Need

- Clipboard
- Scratch paper
- Pencil
- Ruler
- Piece of poster board
- Markers

TEN BASIC MAP TERMS

Vocabulary Word	Definition	Also Known As
bar scale	A line on a map that shows how to read the distance on a map and compare it to real distances.	linear scale, graphical scale
cardinal directions	The four main directions on a map.	north, east, south, and west
compass	A tool used for navigating that always points north.	range
compass rose	A flower-shaped design on a map that shows the cardinal and intermediate directions.	windrose
key	A table on a map that tells what the symbols mean.	legend, map key
landmark	A recognizable object that can be used to help determine location on a map.	marker
legend	A small inset on a map that gives the explanation of the symbols used.	map key, key
map	A visual or graphical representation of a place or area.	navigational map, chart
scale	The ratio between points on a map as compared to the distance between these points in the real world.	map scale
symbols	The lines, shapes, and other pictures used to represent places or features on a map.	

Get Ready

1. Read one or more of the recommended books, or look at maps in an atlas or online. Talk about the different things you see on the map, naming and defining them for your child as you go along. Talk about how a map can help people find where they are going, as well as help them get to know their neighborhood better, too.

2. Give your child a piece of paper, and help her divide it into three columns. Label the columns: Streets, Landmarks, and Other.
3. In the “Streets” column, ask her to write down the name of your street and any of the streets nearby. If she doesn’t know them, that’s okay. Then ask her if there are any notable landmarks in your area and have her write those in the “Landmarks” column.
4. In the “Other” column, have her write down things like stop signs, places that are unique to your neighborhood, or things that are important to her. (This could range from a friend’s house to a favorite store, or even to a tree she particularly likes.)
5. Place the paper on a clipboard, along with a blank piece of paper. Grab a pencil and set out for a walk around the neighborhood.
6. Before you begin your walk, stand in your yard or on your steps, and help your child sketch a basic outline of the blocks in your neighborhood. Start by drawing a large box with a line to represent your street. Help your child label the line with your street name, mark an X in the right place for your house, and then draw lines for the connecting and nearby streets and roads.
7. Begin walking the neighborhood slowly, giving your child a chance to write street names and mark landmarks on the draft of the map.
8. When you get home, review the map with your child, and help her to fill in types of terrain or anything big she may have missed.

How to Play: Drawing a Detailed Map

1. Talk to your child about the walk you just took. Ask her if it was difficult to see the whole neighborhood as she stood in front of your house, and whether or not that got easier as she walked along. Ask her

- if it would be easier to see the neighborhood from your roof or your steps, then introduce the concept of a “bird’s-eye view,” or being able to see the area as though she is flying above it.
2. Tell her that you have a much bigger piece of paper for her to use to make a detailed map of the neighborhood from a bird’s-eye view (from up above). Explain that even though it is a big piece of paper, it’s not big enough to draw everything, so she’ll need to use symbols for some things and create a key or legend to help you read the map.
 3. Give your child the draft map, a piece of poster board, and the other supplies she’ll need to make a big map of the neighborhood, and set her loose to create it.
 4. When she is done, ask her to help you read her legend and find various places on the map.

EXTEND THE LEARNING

While your child is creating her map, make one of your own. When you are both done, you can compare the maps to look for similarities and differences in how you view the neighborhood, or what each of you consider to be important landmarks. If your child would like to try a more technologically oriented way of exploring the neighborhood, try geocaching together. The activity uses a handheld GPS device to combine treasure hunting with mapping and geography skills to help you find one of the over 600,000 containers hidden worldwide. Caches are registered with [Geocaching.com](http://www.geocaching.com) (www.geocaching.com), from which you can download directions and GPS locations.

Where Am I?: Follow My Map

This activity combines elements of the game hide-and-seek and treasure hunting to help your child hone map-reading and map-making skills.

There are a couple of different ways to play the game, making it a great outdoor activity as well as one to try indoors on a rainy day.

Skills Being Practiced

- Drawing a simple map
- Reading a simple map
- Recognizing landmarks

What You Need

- Portable whiteboard or drawing paper
- Dry-erase markers or a pencil
- Small prizes (optional)

How to Play: Find Me on *Our* Map

1. Choose an area in which to play the game. It can be inside your house, in the park, or within a certain perimeter of your house and neighborhood. Have all the players sit down to create a map of the area together, putting in landmarks and using symbols to represent landmarks and buildings. Make sure there is a key, so that all players know what each symbol stands for.

2. Choose a player to hide “on the map.” As the other player closes his eyes and counts to fifty, the first player must make a mark on the map indicating where he plans to hide. He then goes to hide in that place, leaving the map for the other player to follow and find him.
3. If there are more than a few people playing this game, split the group into teams. One team can hide, marking each person’s location on the map, while the other team can split up to find all of the hiding people.
4. Once the first player has been found, reconvene. Let the next player mark the map and hide.

How to Play: Find Me on *My* Map

1. This version of the game ups the ante from the first version. It’s played exactly the same way, with one important exception. This time, instead of all the players creating a map together, the player (or team) who is going to hide creates a map for the other player(s) to follow.
2. While the “seeking” player closes his eyes and counts, the “hiding” player must draw a quick, basic map and place an X to indicate his location.
3. The “seeking” player must use this map to find the other player(s).

How to Play: Find the Treasure on the Map

1. This game requires a little preplanning on your part, but it is well worth it to see your child’s face at the end. Sit down with your child and work together to draw a series of maps of your house, yard, and

- neighborhood. Set them aside for another day, or ask your child to occupy himself with another activity for a little while.
2. While he is otherwise occupied, take the opportunity to hide little prizes in various places around the house or outside. Mark each hiding spot on the corresponding map.
 3. Give your child the map and see if he can find all the prizes.

EXTEND THE LEARNING

Instead of marking the location of the prizes on the map, write directions for your child to follow. Remember to use cardinal directions (i.e., “Go north on this street”) and landmarks to help him find the way.

Grapefruit Globes

All flat maps of the earth provide a slightly distorted of the world, because it's not possible to make a flat scale of a round object. This activity provides a way to help your child realize that there are different ways of representing geographical areas, and that not all ways are equal in terms of scale and proportion. It's easy to look at a globe and a map and think they show the world the same way, but once you and your child try to flatten out a globe, he'll begin to see that that maps aren't just flattened versions of globes.

In fact, flat maps are made via map projections, of which there are three basic types: planar, conical, and cylindrical. Planar projections look at the world from the top down; conical projections place a cone on the top of

the globe, and then are cut open; and cylindrical projections wrap around the globe and are then flattened to make a map.

Skills Being Practiced

- Understanding the basic differences between maps and globes
- Basic understanding of map projections
- Ability to explain why maps provide a more distorted view of the world than a globe

What You Need

- Large grapefruit or orange
- Paper towels
- Map of the world
- Globe
- Ballpoint pen
- Knife or citrus peeler

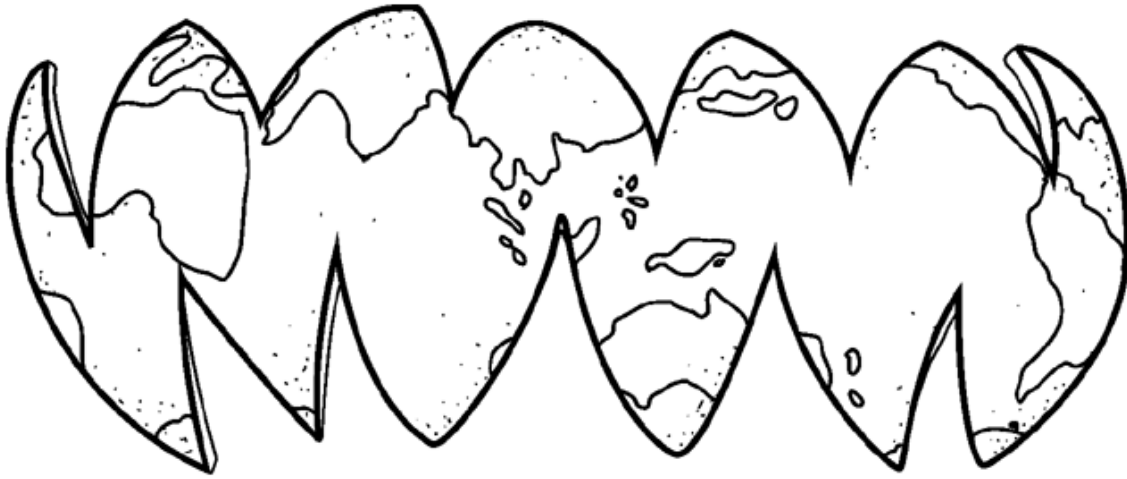
What to Do

1. Begin by showing your child a globe. Ask him if he can tell you what geometric shape the globe is (Answer: a sphere) and how that compares to the shape of the earth. Talk to him about the advantages of using a sphere to represent the land and water masses around the world. Things to talk about include the ability to show things in proper scale, and the ability to see the whole world as a three-dimensional object.

2. Show your child a world map, and ask him to compare it to the globe.
Ask: How do they look different from each other? What are the disadvantages of trying to represent a three-dimensional object as two-dimensional drawing? What do you think gets lost or isn't quite right?
3. Ask your child to try to make the map into a three-dimensional representation of the world. Can he do it? What happens?
4. Now tell your child that you're going to help him try to do the same thing in reverse. Give him the grapefruit and a ballpoint pen (permanent markers tend to smear on the skin). Ask him to mark off the North and South Poles on his grapefruit, and to draw a line around the middle to represent the equator.
5. Using the globe as a model, ask him to draw the landmasses of the earth on his grapefruit. Reassure him that they don't need to look perfect or be the exact correct shape; all he needs to do is to have landmasses in approximately the correct places in relation to the poles and the equator.



6. Ask your child if, in peeling the grapefruit, he thinks he will be able to create a nondistorted flat map of the world. Then use your knife or citrus peeler to start peeling the grapefruit at the North Pole. Help your child remove the rest of the peel (in one piece if possible).



7. Place a few paper towels on a table, and ask your child to flatten out the grapefruit peel to make a world map. Ask: *What happened? Does the map look the same as the globe? Why or why not? Is it easy to flatten the peel?*

What's Going On

Your child is facing the same issues that have faced cartographers (mapmakers) for hundreds of years. It is not possible to make a flat version of a spherical object without pulling, ripping, cutting, or creating distortion. In order to try to solve this problem when it comes to making world maps, cartographers had to find ways to portray the world as accurately as possible.

They have done this by using different types of “map projections,” the most common of which are the Eckert projection and the Mercator projection. Each type of projection still shows some of the world in a distorted view, but also has benefits for different purposes. Mercator maps are good for navigation, as distances are portrayed accurately even though

landmasses are out of scale. Eckert maps distort the shape of land and water, but show the size of landmasses in correct proportion to one another.

EXTEND THE LEARNING

Help your child learn more about how map projections are made using three-dimensional modeling, using an interactive online tutorial like National Geographic's Round Earth, Flat Maps lesson (www.nationalgeographic.com/features/2000/exploration/projections/).

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