Introduction for Parents

Please join us in helping your child get off to the best possible start in life by guiding her interest in science. You are your child's first and most important teacher. She learns by watching what you do and listening to what you say. You can provide the best possible science foundation by expressing a sense of wonder and delight as you explore the world together.

The Missouri Department of Elementary and Secondary Education, along with a broad-based group of individuals whose backgrounds are representative of the Missouri early childhood community, developed a set of standards of what most children should know and be able to do by the time they enter kindergarten. They are intended for use in diverse early childhood settings by a variety of people including parents, parent educators, child-care providers, and Head Start and public or private school teachers. They are consistent with current research and recommendations from other state and national initiatives.

Not all children learn at the same rate. Just as we recognize that adults are individually different, we also recognize that variability in children is normal. The standards are not intended to be used to determine if a child is "ready" to enter kindergarten but are goals for adults to use to support development of preschool children.

Your child builds science knowledge and understanding through firsthand, direct experiences with real objects that allow her to learn and discover. At the preschool level, children should learn to observe the world around them, gather information, ask questions, experiment and evaluate results. You can provide safe, interesting materials and allow your child to make mistakes and get messy. The learning process is more important than the result. If your child senses you are disappointed in her discoveries, she may begin to focus on getting the "right answer" and lose her enthusiasm and desire to learn.

Your child will begin the scientific process by simple exploration. She will then become more purposeful and try to cause a specific reaction. Eventually she will begin to identify and try to solve problems. Activities that encourage the use of her senses (e.g., guessing what an object is by touch alone) will help her become more observant and curious. Ask her questions that encourage her to think and to see that there often is more than one right answer. Questions such as "What do you think would happen if you ... ?" and "Can you think of another way to do that?" will help her think creatively. Reading science-related books and magazines to her supports her science learning.

Allow your child to take the lead and explore her own interests. Provide experiences that give her a chance to create her own knowledge rather than telling her all the answers. She learns best when included in activities in ways that allow her to use her whole body. Pretend play and music and art activities help your child experience new concepts in concrete and personal ways. This book suggests ways to help you support your child's science development.

I. Physical Science

Physical science is the study of nonliving things. It includes chemistry and physics. Young children learn about physical science when they engage in activities such as throwing a ball, playing with magnets, rolling a toy car down a ramp or playing in water.

1. Explores physical properties of objects and materials.

Physical properties are those qualities that can be seen, felt, heard, smelled or tasted. When children explore, they use all their senses to observe and learn about the world. Your child will begin to think like a scientist if he has opportunities to try things out for himself, experiment, explore, solve problems and take reasonable risks.

Your child will learn best through activities that are of his own choosing and that allow him to independently:

- Vary his actions to produce different results (e.g., toss a ball gently, then throw it harder).
- Observe the results of his actions immediately (e.g., be able to see how far the ball moved each time it was thrown).
- Change his actions based on those results (e.g., throw a ball harder if he wants it to move farther).

Look for your child to ...	**Your child may ...**
a. Show interest in the physical world.	Comment on changes in the physical world (e.g., say, "We made play dough out of salt, flour and water.")
	Look at fiction and nonfiction books (e.g., *Mouse Paint, Trucks, Freight Train, Snow Balls, Stone Soup, How Things Work)* about the physical world.
	You can support your child ...
	Give your child many opportunities to explore. Be enthusiastic and curious while helping your child make discoveries in the natural world.
	Fill small paper cups with various white, dry substances (e.g., flour, baking soda, baking powder, powdered sugar, granulated sugar, salt) and clear liquids (e.g., vinegar, water, oil, corn syrup) from your kitchen. Let your child examine them and mix them to see what happens.
	Combine equal parts water (dyed with blue food coloring) and vegetable oil (dyed yellow) in a plastic bottle. Have your child shake the bottle to see the colors blend to create green then slowly move apart.
	Read both fiction and nonfiction books to your child about the physical world. It's okay to have some books and magazines available that are beyond her age level, too. She will enjoy just looking at the pictures.
Look for your child to ...	**Your child may ...**
b. Use one or more senses to observe the physical world.	Comment on changes when substances are mixed, shaken or cooked (e.g., mixing paint, making butter from cream, cooking play dough).
	Collect objects of different shapes and sizes (e.g., marbles, coins, blocks).
	Listen to and identify environmental sounds (e.g., cars, wind, rain, birds).
	You can support your child ...
	Look at objects from other perspectives (e.g., upside down, inside out).
	Experiment with cooking the same foods in different ways. Compare fried, scrambled and hard-boiled eggs or mashed, baked and french-fried potatoes. See how the same substance can look and feel different.
	Have your child help you make pancakes from scratch or a mix. Show your child the pancakes while they cook, and talk about how the batter changes from runny to firm and puffy.
	Provide a wide source of objects that produce sound through vibration (e.g., rubber bands, glasses filled with different amounts of water, toy drums, cymbals, different lengths of string, a guitar).
	Cut two squares from each of several grades of sandpaper. Have your child try to match the grades by touch alone (with eyes closed).
	Tell your child you are going to play a listening game. With your child, sit very still and listen quietly for a minute. Afterward, ask him to name all the sounds he heard. Mention any additional sounds you noticed.
	To the tune of "The Wheels on the Bus," create a song with your child about the sounds of various objects (e.g., "the bird in the tree goes tweet, tweet, tweet," "the drill in the shop goes b-r-r-r, b-r-r-r, b-r-r-r.").

Look for your child to ...	Your child may ...
c. Experiment with simple tools.	Explore ramps, magnets, magnifying glasses, scales, eyedroppers, unbreakable mirrors, cups, funnels, etc.
	You can support your child ...
	Set aside a small space in your home to be a science center. Provide magnets, an unbreakable mirror, measuring cups, a measuring tape, a compass, cardboard tubes with small cars or balls, a screwdriver, broken gadgets that can be taken apart, and science-related children's books. Have your child use the items with your supervision. Help your child create ramps by propping up one end of a flat board with a small box. Challenge your child to find objects that will roll down the ramp. Look for ramps in playgrounds or other places. Talk about how ramps make life easier for people riding in wheelchairs or on bicycles. Create a simple balance scale by tying a paper cup to each side of the horizontal wire of a coat hanger. Hook the coat hanger over a door handle. Have your child put small objects into the cup and notice which cup is lower (heavier). Have your child look in a mirror and describe what he sees in the room behind him. Have him turn around and see if things look different. Put a chocolate chip cookie into a resealable plastic bag; do the same with an oatmeal raisin cookie. Put the dry ingredients from each of the two cookies into resealable bags. Seal all four bags tightly with duct tape. Have your child look at the bags through a magnifying glass, and encourage him to draw the differences he sees. Attach a string to the brim of a baseball cap that fits tightly on your child's head. Tie a yarn pompom to the end of the string so that it hangs at your child's chin level. Tell your child to watch the pompom while bending forward and backward and then while leaning to one side. Ask him to describe the movement of the pompom. Can he change the movement? Allow your child to explore objects with a magnet (magnets should be kept away from TV screens, computer monitors, and all forms of magnetic information storage such as floppy disks, VCR tapes, audio cassettes and credit cards). Have your child shine a flashlight on a prism to see how light is broken up into separate colors. Point out the colors when you see examples in soap bubbles or rain puddles.

I. Physical Science

Once children become interested in an object or material, they begin to examine it more closely. They may shake it, open it, roll it and see what else they can do with it. Their exploration becomes more purposeful.

2. Investigates properties of objects and materials.

Look for your child to ...	Your child asks ...
a. Ask questions about objects and materials.	"Why does the ice cube melt?" "Why does this ball roll faster than that one?" "Why do magnets stick together?"
	You can support your child ...
	Have your child top a graham cracker with a marshmallow, and do the same yourself. Put the crackers in a warm oven until the marshmallows melt. Ask your child how the heat affected the marshmallows. Let the crackers cool. Enjoy your treats! Fill a sink or a small tub with water, and give your child materials to encourage experimentation. Possibilities include plastic containers of various sizes (some with holes punched in the bottom), a turkey baster, an egg beater, a plastic squeeze bottle, plastic tubing and funnels. Draw a road on a cardboard box lid. Show your child how to hold a magnet under the lid and "drive" a metal toy car along the road. Fill a plastic liter soda bottle halfway with water. Have your child add drops of blue food coloring until the water resembles the color of the ocean. Fill the bottle with mineral oil. Put the lid on tightly. Have your child hold the bottle sideways and slowly rock it back and forth to see the "ocean waves."

Look for your child to ...

b. Experiment with objects and materials to gather information and observe reactions.

Your child may ...

Play in water with objects that sink and float.

Repeatedly roll a car down a ramp.

Mix colors using paint, watercolors, food coloring, etc.

You can support your child ...

With your child, put various objects (e.g., a ping-pong ball, plastic cup, screw, paper clip, block, cork, empty soda can, full soda can, quarter, sponge) into a tub of water to see which ones sink and which float. Provide an empty plastic 2-liter soda bottle. To observe the effects, have your child float it on top of the water, then fill it partway with water, then fill it all the way. It takes many experiences for your child to understand that an object's floatability relates to its weight and how much room it takes up in the water.

Provide objects that roll (e.g., balls, toy cars) and materials to make ramps (e.g., cardboard tubes, flat pieces of cardboard or boards, blocks).

When your child experiments with objects, help him talk about his observations. Record them in a special science notebook.

Punch holes at varying heights in the sides of a plastic 2-liter bottle. Fill the bottle with water, and hold it over the sink. With your child, notice how far the water spurts from each of the holes. Which holes spurt for the longest time? Cover each hole with masking tape. Have your child uncover them, one at a time, starting at the bottom of the bottle. Observe the speed of water flow from each hole as it is uncovered.

Pour enough milk into a pie pan to cover the bottom of the pan. Have your child put a few drops of food coloring in several places on the milk, then pour some dish detergent into the center of the pan. In a few minutes, colorful swirls will appear in the milk.

Purchase about 6 feet of flexible transparent tubing from the plumbing department of a hardware store. Cut the tube in half, and glue a cork securely into one end of each piece. Drop two marbles into one tube, and glue a cork into the other end. Use a funnel to fill the other tube with mineral or vegetable oil. Drop two marbles into the tube, and glue a cork securely into the open end. Have your child lift up the ends of each tube to watch and compare the movement of the marbles.

With a pencil, poke a small hole in the centers of two paper cups. Put the end of a string (at least several yards long) through the bottom of one of the cups. Tie a knot in the string so it won't come out of the bottom of the cup. Do the same thing with the other cup at the other end of the string. Give one cup to your child, and have her hold it up to her ear. Hold the other cup, and stand away from your child so the string is tight. Speak softly into your cup, and see if your child can understand you.

Look for your child to ...

c. Show knowledge of physical properties of objects.

Your child may ...

Sort objects and materials by what they are made of (e.g., rock, metal, plastic, wood, glass, cloth).

Sort objects and materials by various characteristics (e.g., soft/hard, float/sink, loud/quiet).

Tell (not always accurately) how ice, play dough, pudding, etc., is made.

You can support your child ...

Offer objects such as craft sticks, Styrofoam blocks, aluminum trays and egg cartons for your child to use in building boats and rafts. Have your child put small plastic animals on board and launch the fleet into a tub of water.

Provide an assortment of lightweight objects (e.g., feathers, scarves, paper, tissues) and heavier ones (e.g., popsicle sticks, buttons, juice bottle lids). With your child, experiment with the objects to see which ones fall to the ground fastest when dropped. Have your child blow at the objects through a straw to see which ones move.

With your child, examine both sides of a shiny spoon. Help your child notice the difference in her reflection between the concave (curved in) side and the convex (curved out) side. Have your child hold the convex side about a foot away from her and look into it as she moves the spoon back and forth and side to side.

Provide different colors of cellophane (often available at craft stores) and have your child look through the pieces. Say, "I wonder what would happen if you put the red and blue pieces together and looked through them."

Make play dough with your child. Mix together a cup of flour, a cup of water, 2 teaspoons of cream of tartar, ½ cup of salt, 1 tablespoon of cooking oil, 1 teaspoon of powdered alum (available in pharmacies, craft stores or with the spices in grocery stores), and a few drops of food coloring. Help your child combine the ingredients. Heat the mixture, while stirring, for a few minutes until it hardens enough to form a soft ball. Pour onto wax paper until cool. With your child, knead the dough until it is smooth.

I. Physical Science

3. Solves problems involving physical properties of objects and materials.

Look for your child to ...	Your child says ...
a. Identify problems involving physical properties of objects and materials.	"I want the car to go faster." "I want to build a taller tower." "I have red, blue and yellow paint, but I want green."
	You can support your child ...
	Allow your child to work through simple problems. For example, if she spills her milk, ask her what she can do to fix it (e.g., she might say she can wipe it up). Provide a variety of blocks for your child. These can be purchased or made at home from sponges, paper or boxes (packed lightly with crumpled newspapers and taped shut). Spend time building together with the blocks. Use watercolors, tempera paint, chalk or food coloring to explore with your child what happens when you mix different colors together. A plastic eyedropper or pipette and an ice cube tray filled with water provide an easy way to mix colors. When your child makes an observation, say, "What makes you say that?" or "How do you know?" When your child asks a question, answer simply and honestly. If you don't know the answer, find out together. Search in a book or on the Internet, ask someone knowledgeable about the topic, or help your child set up an "experiment" to find out the answer.

Look for your child to ...	Your child may ...
b. Experiment with objects to produce desired effects.	Move the ramp to make a toy car go different speeds. Try to make a new color of paint by mixing other paint colors. Try to throw a ball at a target.
	You can support your child ...
	With your child, roll toy vehicles down ramps made from cardboard tubes (e.g., tubes saved from gift wrap or paper towels). Vary the angle of the ramps to see how the angle affects the speed of the cars. Cut a piece of thread about 5 yards long. Tie one end to the bottom of a chair leg. Slip the other end through the hole on a spool of thread, and hold onto the end of the thread and the spool. Back away from the chair until the thread is tight. Have your child stand halfway between you and the chair. Let go of the spool and, with your child, watch how it moves. Try raising and lowering your end of the thread to see if that affects the speed of the spool. Blow up a latex balloon, and have your child press it to his ear. Whisper into the other side of the balloon so he can hear the sound waves vibrating. Try this with different shapes and sizes of balloons, but be sure to throw the used balloons away afterward so your child won't accidentally choke on them. With your child, rinse off a few old pennies. Spread the pennies out into a shallow bowl. Have your child cover them with salt. Pour just enough vinegar over the pennies to cover them. With your child, watch and see what happens. Help your child rinse off the pennies. Do they look shinier? Draw a big circle with chalk on a basement or outdoor wall. Take turns throwing a ball at the target.

Look for your child to ...	Your child may ...
c. Make predictions based on experiences with objects and materials. **Note:** Your child will need many opportunities to observe, explore and examine objects and materials before reaching this step. Resist the temptation to jump in and correct him if he makes an incorrect prediction. Your child will learn more if you allow him to find things out by his own actions.	Suggest which objects will sink or float. Guess which ramp the car will go down faster. Predict which objects magnets attract or repel (e.g., leaves, cotton balls, paper clips, nuts and bolts). Make suggestions that will cause ice to melt faster. **You can support your child ...** Give your child a magnet and a small collection of both metal and nonmetal objects. With your child, explore which objects are attracted to the magnet. Give your child many opportunities to ride tricycles and other riding toys with pedals. Riding on a variety of surfaces and slopes familiarizes children with energy concepts. Guess with your child what will happen to the apples in a pie as they are baked. Comment on the results as you and your child eat the pie later. After a snowfall, bring a bowl of snow inside your home and watch what happens to it. Does your child notice that heat melts snow? With your child, fill empty glasses with varying amounts of water and tap them with a spoon to see if the sounds created are different. Put enough sand in a bucket to make it heavy, and have your child lift it. Tie a rope to the handle, and toss it over a porch rail or other horizontal bar. Have your child lift the pail by pulling on the string. Ask if it is any easier to pick up that way. You and your child can be food "detectives" and find out how food changes when left in different places. Have your child soak beans in a jar of water, leave bread out in the open, store fruit in a brown paper bag, place a small container of water in the freezer and then on a sunny window sill, or leave grapes in a sunny spot. Encourage him to predict what will happen. Talk about the results, and record his comments for him in a science journal.

I. Physical Science

4. Represents observations of the physical world in a variety of ways.

Look for your child to ...	Your child may ...
a. Represent observations through pretend play.	Pretend to prepare/cook food. Use simple tools (e.g., magnets, magnifying glasses, ramps, tape measures, balls, prisms) in pretend play. Engage in role playing (e.g., act like a scientist, chef, construction worker, artist, race car driver/pit crew member). **You can support your child ...** Provide props for your child that encourage pretend play (e.g., child-size kitchen utensils and equipment; various hats such as a chef's hat, hard hat or safety helmet; old lab coats; child-size tools). Garage sales and thrift shops are good places to find clothing to use as costumes. Provide simple tools (e.g., tape measure, magnifying glass, magnet, paintbrush, binoculars, notebook) for you and your child to use in pretend play. Expose your child to people who work in jobs related to physical science (e.g., cook, carpenter, builder, boat driver, scientist, painter), either in person or through books and videos. Engage in role playing with your child. Take turns playing roles of people who work in jobs related to physical science.

Look for your child to ...	Your child may ...
b. Represent observations through music and movement.	Pretend to skate on ice. Act out a melting snowman, popping popcorn or an object rolling down a hill. Sing action songs (e.g., *I'm a Little Teapot, Johnny Works With One Hammer, Grand Old Duke of York, Jack and Jill Went Up the Hill*). Create songs about experiences in the physical world.
	You can support your child ...
	Ask your child to think how she would move if she were popcorn popping or a jack-in-the-box. How would she move to mix ingredients for a recipe, skate, swim or lick an ice cream cone quickly before it melts? With your child, pretend to perform these various actions related to the physical world. Make a set of cards by pasting on each card a picture of a movement from the physical world (e.g., a leaf falling, an elephant walking, rain hitting a puddle). Take turns drawing a card and imitating the movement. Read books and magazines to your child about the natural world. Sing action songs to your child, and act out the parts together. Read library books to your child about snow melting in the sun. Sing *Frosty the Snowman* together.
Look for your child to ...	**Your child may ...**
c. Represent observations through art and construction.	Build and/or draw towers, enclosures, roads, bridges, tunnels, ramps and vehicles. Intentionally mix blue and yellow paint to make green. Draw "maps" or "blueprints" of constructions.
	You can support your child ...
	Provide blocks and pieces of wood for your child. Build structures and roads together. Provide crayons, markers, paint and other art materials. Create pictures with your child that represent things she sees in the physical world (e.g., a slide, a boat floating on water, vehicles, buildings, food, someone throwing a ball). With your child, mix various colors of paint together to create new colors. Purchase worms at a bait shop (or find them outside), and put one on a piece of white paper. Have your child drop food coloring on the worm and watch it crawl over the paper and create a design. Try it with different worms and different colors.
Look for your child to ...	**Your child may ...**
d. Talk about the physical world.	Ask, "How did you do that?" Tell a friend, "If you add another block to the tower, it will fall." Describe objects according to size, shape, color or speed. Use names for tools (e.g., magnifying glass, magnet, scale, ramp). Use texture words (e.g., bumpy, rough, soft, smooth, slick, hard). Use measurement words (e.g., heavy/light, hot/cold, big/little, long/short, fast/slow).
	You can support your child ...
	Ask open-ended questions (that can't be answered with yes or no) that will encourage your child to talk about her observations and ideas about the physical world. To help your child think and wonder, make comments and ask questions such as, "I wonder what would happen if ...," "I wonder if you could build a bridge," and "What would happen if you put that salt into water?" Parent–child conversations are an important way for children to learn about the world. Talk with your child frequently about your observations, and ask her about hers. When your child asks questions, take time to answer them. This encourages conversation and curiosity. If you don't know the answer, that's OK, too. You can learn about science along with your child through exploration, looking up answers in books or on the Internet, and trial and error. Children construct knowledge based on their own experiences. Take your child on "field trips" to playgrounds, parks, science museums, construction sites, bakeries and any other places she can experience and observe physical science. Make a follow-up trip to a library or bookstore to find books that will expand on your child's observations. With your child, paint white glue on a piece of poster board. Help her sprinkle various materials (e.g., sand, glitter, rice, dry lentils, dry split peas, salt, cotton balls) over the glue on different areas of the poster board. Let the glue dry. With your child, feel the various materials and talk about how the textures are different.

II. Life Science

Life science is the study of living things. It also is called biology and includes zoology (the study of animals) and botany (the study of plants).

1. Explores characteristics of living things.

Look for your child to ...	Your child may ... / You can support your child ...
a. Show interest in plant and animal changes.	**Your child may ...** Comment on changes in living things (e.g., babies grow to adults, seeds become plants, caterpillars become butterflies, birds hatch from eggs). Remark that the leaves are changing colors, the trees have buds, the flowers are blooming. Look at books, magazines and posters that feature living things (e.g., *The Very Hungry Caterpillar; Ranger Rick's Your Big Backyard; Zoo Book;* magazines and posters from the Missouri Department of Conservation). **You can support your child ...** Take your child on frequent walks outdoors, and talk about your observations of plants and animals. Write down your child's comments in a science journal to help her remember what she saw. Help your child turn over a rock to find insects. Help your child plant fast-growing seeds such as grass seed in an interesting container (e.g., an old shoe, sponge, cookie cutter). Check the container periodically. Look for ants outside, and observe them with a magnifying glass. Read books and magazines that feature plant and animal changes and other characteristics of living things to your child. Talk about the pictures and stories. Put books and magazines in a basket or low shelf so your child can easily pick them up and look at the pictures. Hang posters of living things on the walls in your child's room.
b. Use one or more senses to observe the natural world.	**Your child may ...** Express wonder/excitement about living things (e.g., rabbits, deer, fish, spiders, birds, blooming flowers). Say, "I hear the birds singing," or "The dog is barking." Say, "I smell a skunk," or "Smell this flower." Comment on the different tastes of food. Hold or watch a caterpillar or worm to see how it moves. Catch bugs and place them in a container. Use a magnifying glass to observe living things. Examine leaves, pine cones, shells, etc. **You can support your child ...** Spend time outside listening in the early morning or evening. Close your eyes, and focus on the sounds of nature (e.g., dogs barking, birds singing, crickets chirping). Open your eyes and try to find the sounds' sources. Place a hula hoop on the ground outside, or tie the ends of a 4-foot length of rope together to form a circle on the ground. With your child, describe all the objects you see in the circle. Help your child place a solid object (e.g., a large rock or garbage can lid) on the grass. Leave it there for three to four days. Have your child check to see what has happened to the grass without any sunlight. Talk about what happened and why. Place a sheet of newspaper or colored construction paper in the sun. On the paper, place some objects with interesting shapes (e.g., leaves, toys, blocks). Wait several hours, then have your child remove the objects and describe what happened to the paper. Fill a crockpot with water, and place some potpourri in it. Turn on the crockpot. Have your child smell the potpourri when it is cold, and then compare it to the scent after it is warmed. Allspice, clove and/or cinnamon sticks could be used instead of potpourri. Take a walk outside, and look for plants with distinctive scents. With your child, cut open plants and large seeds to explore what's inside. With your child, put some seeds on a wet sponge. Check the sponge each day, and keep it wet as you watch the seeds sprout and grow. Talk about what might happen next. Encourage your child to observe nature from many perspectives (e.g., looking at the legs and underside of an insect by watching it crawl up the outside of a window pane).

II. Life Science

2. Investigates characteristics of living things.

Look for your child to ...	Your child asks ...
a. Ask questions about the natural world.	"Why didn't the seed grow?" "Where do babies come from?" "Where do the frogs go in winter?" "How do fish breathe?" "What do animals eat?"
	You can support your child ...
	Repeat the questions back to your child. That way, you can find out what your child already knows and help her build on that. Your child will learn more if she can find out the answers herself. For example, if your child asks, "Why do we have fingers instead of paws?," have her build with blocks while wearing mittens. This will help her discover how fingers help us. Encourage your child to ask questions by taking the time to respond. Learn with your child. The process of discovering answers is more important than knowing the facts. Help your child set up experiments to find the answer. Visit zoos, pet stores, aquariums and natural history museums to find out information. Read fiction and nonfiction books about living things to your child. Talk about the characteristics of plants and animals with your child. Hang posters of plants and animals.
Look for your child to ...	**Your child may ...**
b. Collect information to learn about living things.	Collect leaves, pine cones, shells, seeds, bugs, etc. Use a magnifying glass to investigate a spider web. Use real or pretend binoculars to observe nature (e.g., birds, trees). Look at books and magazines to learn about living things.
	You can support your child ...
	Go on a nature hunt with your child. Attach a piece of wide masking or packing tape sticky side out around your child's wrist. Collect small objects of interest (e.g., leaves, small rocks, seeds), and help your child stick them onto the tape to form a nature bracelet. Or, tape a large square of contact paper onto a wall, sticky side out, and have your child stick the collected objects on the paper to create a collage. With your child, examine dirt outside with a magnifying glass. Look for earthworms and bugs, and talk about how they help the earth by helping keep the soil soft and by eating other insects and organic materials. Help your child collect leaves from both deciduous (leaf-shedding) and coniferous (evergreen) trees. With your child, press the leaves into play dough to make impressions. Talk about how the impressions are alike and different. Create a temporary ant farm. Soak a cotton ball in sugar water. Shovel an anthill into a glass jar. Drop the cotton ball into the jar. Cover the top of the jar with a piece of old pantyhose and secure it tightly with a rubber band. Cover the jar with a dark towel or cloth so the ants will calm down. Remove the towel, and watch the ants. Create a growth chart of your child's height and weight. Measure and weigh your child at regular intervals, then record it and talk about how much he's grown. Keep books and magazines that show pictures of living things on a low shelf or basket. Put a small chair or large pillow nearby. Remember that preschoolers also enjoy looking at pictures in books that are intended for school-age children.

Look for your child to ...	Your child may ...
c. Show knowledge of the characteristics of living things.	Match mother animals with their babies using pictures, stuffed animals, animal matching games, animal figurines, etc. Sort collections (e.g., leaves, pine cones, shells, seeds, bugs). Talk about the differences in animals (e.g., birds have feathers, fish live in water, dogs and cats have fur). Identify living versus nonliving things (e.g., say, "That's just a plastic snake!").
	You can support your child ...
	If possible, visit a zoo or farm to observe parent animals with their babies. Look at pictures of parent animals and babies in books and magazines. Collect a variety of feathers with your child. Touch the feathers, and talk about the differences among them. You can do this with leaves, too. Talk about body parts and functions with your child. Help him accept and feel good about his body. Talk about what makes him unique. How does your child recognize himself in the mirror? What makes him look different from another child? Bring your child to a fitting room of a department store, and have him look at himself in a three-way mirror. This will help him understand that he looks different from various angles. Provide a toy (or inexpensive real) stethoscope so your child can listen to his heartbeat. Have him listen to yours, too. Some science museums have stethoscopes for children's use. Provide containers (e.g., small plastic bowls, tackle boxes, vegetable trays) for sorting nature collections.

II. Life Science

3. Solves problems related to living things.

Look for your child to ...	Your child may ...
a. Identify problems involving living things.	Comment that the plant is drooping (wilting). Complain that the animal cage is smelly. Say, "I can't play outside because the bugs will bite."
	You can support your child ...
	Soak several dry lima beans in water overnight. Fill a clear jar with wet paper towels. Carefully place lima beans between the paper towels and the glass surface so that your child can see them. Put the beans near a window, and have your child spray the towels with water occasionally for a few days. With your child, check for signs of sprouting. At a pet store or zoo, explain to your child that animal cages must be cleaned out. Encourage your child to ask an attendant how they clean the cages. Talk with your child about the needs that plants and animals have for food, water and sunlight. With your child, make a bird feeder by spreading peanut butter onto a pine cone and hanging it from a tree. Watch the types of birds that are attracted to the feeder. Take pictures of them if possible.

Look for your child to ...	Your child may say ...
b. Recognize that living things have needs.	"The plant needs water." "I'm hungry." "The dog wants to play."
	You can support your child ...
	Plant a garden with your child. It can be in a small area in your yard or in a container indoors near a window. With your child, plant the seeds and tend the garden. Help your child plant seeds in different types of materials (e.g., soil, sand, clay, water) and see what happens. With your child, plant the same type of seeds in the same type of soil, but vary other things (e.g., water some and not others, put some in the light and some in the dark, keep some warm and put some in the refrigerator). Talk about the results, and write them down in a science notebook. Involve your child in the care of a family pet.

Look for your child to ...	Your child may say ...
c. Make predictions based on experiences with living things. **Note:** Your child will need many opportunities to observe, explore and examine living things before reaching this step.	"I think a baby chick will come out of the egg." "If we don't water the plant, it will die." "When the dog brings the ball, he wants to play." "When the baby cries, she needs you."
	You can support your child ...
	Talk with your child about life-cycle sequences (e.g., chicks hatch from eggs, caterpillars turn into butterflies). Give your child opportunities to observe the sequences, either in person or through pictures in books or magazines. Have your child pretend to be a chick coming out of an egg or a baby bird being fed in a nest. Read books to your child that show the life cycle of plants or animals.

II. Life Science

4. Represents observations about living things in a variety of ways.

Look for your child to ...	Your child may ...
a. Represent observations through pretend play.	Engage in role playing (e.g., play a gardener, doctor, farmer, florist). Pretend to be an animal (e.g., dog, elephant, bird).
	You can support your child ...
	Play pretend games. After a visit to a doctor, veterinarian, florist or anyone who works with living things, take turns acting out that role. Provide pretend play props (e.g., old lab coats, a child's doctor kit, toy animals, gardening tools). Expressing her ideas and experiences through role play will help your child remember and understand what she learns. If your child pretends to be an animal, join in the game. Pat her and say, "Nice doggie," or pretend to cower in fear of the ferocious lion.

Look for your child to ...	Your child may ... / You can support your child ...
b. Represent observations through music and movement.	**Your child may ...** Move like an elephant, spider or snake. Sing songs about living things (e.g., *Six Little Ducks, Old MacDonald Had a Farm, Five Little Speckled Frogs, Baby Bumble Bee, And the Green Grass Grew All Around, Sweetly Sings the Donkey*). Create songs about living things. **You can support your child ...** Glue pictures of animals onto index cards, and turn the stack over. Take turns drawing cards and moving like the animal in the picture. Play animal tag. Take turns calling out instructions (e.g., say, "Crawl like a puppy."). Chase your child as you both move in the way specified. Sing and play songs about living things with your child. Your child learns through repetition. Visit the library or music shop for more songs. Make up words to familiar tunes, substituting lyrics about animals or plants for the real ones.
c. Represent observations through art and construction.	**Your child may ...** Draw or paint pictures of animals. Use blocks to build a farm or zoo. Draw or paint pictures of his own family. **You can support your child ...** Make colored pencils, markers, crayons, watercolors, tempera paint and paper easily available to your child. After a trip to a zoo, farm or pet store, create pictures of animals together. Provide plastic zoo or farm animals for your child. Help your child use blocks to build cages or a barn for the animals. Draw pictures of family members for your child, and encourage her to draw them, too. Talk about the physical characteristics of different family members.
d. Talk about plants and animals.	**Your child may ...** Tell about family pets, trips to the zoo, etc. Comment on how to care for a pet. Use words such as leaf, tree and flower in conversation. Use names of living things (e.g., elephant, cow, bird, fish, dog, spider, insect, flower, tree, grass). Use words such as beak, wings, skin, shell, claws, head, tail, feathers, horns and fur in conversation. **You can support your child ...** Read picture books and magazines about animals to your child frequently. Ask open-ended questions and make "wonder" statements (e.g., say, "I wonder why polar bears have white fur and the other bears have brown fur."). Take your child to a zoo or pet store to look at animals and reptiles. If possible, get a pet and involve your child in its care. Visit a nursery with your child and look at interesting plants such as the Venus' flytrap, which closes up when "hairs" inside are triggered, or the type of mimosa known as the "sensitive" plant, which has leaves that fold up when touched. When you talk with your child, use simple science words. This will help her talk about her own ideas and experiences.

III. Earth and Space

Earth and space study includes the earth's structure and history (geology), space surrounding earth (astronomy), weather (meteorology), water (oceanography) and surfaces (geography).

1. Explores properties of earth and space.

Look for your child to ...	Your child may ...
a. Shows interest in earth and space.	Comment on changes in the weather, clouds or seasons. Look at books and magazines about earth and space (e.g., *In the Night Sky; Happy Birthday Moon; Goodnight Moon; In the Small, Small Pond; The Snowy Day; Mud Puddle; Let's Go Rock Collecting; Star Gazers; Ranger Rick's Your Big Backyard*).
	You can support your child ...
	Frequently explore and enjoy the outdoors with your child. Show curiosity about and enthusiasm for the world around you. Read books and magazines about earth and space to your child frequently. Store them in a place that is easily accessible to your child. Talk with her about the pictures, and respond to questions. Watch weather reports, and talk with your child about the weather for that day. Talk about how the report affects what to wear outside. Record each day's weather on a blank calendar. Let your child do some of the writing or draw pictures (e.g., a cloud to show a rainy day).
Look for your child to ...	**Your child may ...**
b. Use one or more senses to observe earth and space.	Play with, collect and examine rocks, soil (dirt), mud, sand, shells, etc. Notice shadows. Say, "I hear the rain (thunder, wind)." Look at the clouds, the stars and the moon.
	You can support your child ...
	Bury a variety of small rocks in a container of sand. Help your child sift through the sand to find the rocks. Or, help your child find rocks outside. Talk about how the rocks are alike and different. On a sunny day, have your child stand so that his shadow is cast on the sidewalk. Draw around it with chalk. Have him lie down on the sidewalk so he can compare his real height to his shadow height. Show your child how to make shadow puppets. On a rainy day, cut off the bottom of an empty milk carton. Cut a piece of heavy plastic wrap big enough to cover the bottom of the carton and go about halfway up the sides. Secure the plastic wrap to the carton with rubber bands. After it stops raining, go outside with your child and find a puddle of water. Have your child put the viewer partway into the water and look through it. Talk about what's in the puddle. Help your child blow into a small paper bag or an inflatable toy. Ask him how the bag changes. Although you can't see air, you can tell it's there.

Look for your child to ...	Your child may ...
c. Use simple tools to explore earth and space.	Use a sand sifter, garden tools, etc., to explore the dirt, mud, sand and rocks. Use a flashlight to make shadows. Play with measuring devices (e.g., thermometer, rain gauge, ruler, cup, bowl). Experiment with windsocks, pinwheels, telescopes, binoculars, kites, magnifying glasses, etc.
	You can support your child ...
	Join your child on an archaeological dig. Fill a shallow pan with sand, and bury small items (e.g., plastic toys, rocks, shells) in it. Provide spoons, brushes and a strainer to use as tools. In a darkened room, point a flashlight at an object and have your child name it. Take turns pointing the flashlight and naming objects. Cover the end of a flashlight with colored cellophane (available in craft stores), and have your child shine it at different objects to see how it affects their appearance. Look through various colors of cellophane. Provide measuring cups and spoons your child can use in sand or water. Let your child see you using a thermometer. Describe how it is used. With your child, fly a homemade or purchased kite. With your child, try to keep a tissue or feather in the air by blowing at it through straws. Try to move lightweight objects by blowing at them.

III. Earth and Space

2. Investigates properties of earth and space.

Look for your child to ...	Your child may ask ...
a. Ask questions about earth and space.	"How do you make mud?" "Why is this rock shiny?" "What makes the thunder and lightning?" "What happened to the snow?" "Why is the moon out in the daytime?" "Where does the sun go to sleep?" "Why is the moon following me?"
	You can support your child ...
	Visit your local library or bookstore to find books with pictures about weather, outer space, rocks, mountains, volcanoes and other earth science topics. Read the books frequently, and talk about the pictures. Take the time to respond to your child's questions. Tell her you're glad she's curious about the world. Have your child put rocks into an old athletic sock. Outside, have her use a hammer to pound the sock. After pounding, have her open up the sock and see what happened to the rocks. Explain that pebbles and sand come from big rocks. Help your child create a "volcano." Create a small mound of dirt or sand with a hole in the center. Have your child pour about 2 tablespoons of baking soda into the hole followed by ½ cup of vinegar tinted with a little red food coloring.

Look for your child to ...

b. Conduct experiments to gain knowledge of earth and space.

Your child may ...

Add water to soil (dirt) to make mud.

Look for rocks that will write on concrete.

Try to change rocks (e.g., break them into smaller pieces or make them shiny by using water or oil).

Paint with water on outside surfaces.

You can support your child ...

Outdoors, give your child a variety of paintbrushes and a small bucket of water (or a squirt bottle filled with water). Have your child "paint" whatever he likes. He'll see the color brighten and shine when it's wet then become duller as it dries. If it is sunny, tell him to paint something that is in the sun and something in the shade. Ask him to identify which one dries faster. Discuss whether different materials dry faster than others.

Help your child make a cloud. You will need an empty glass jar with a metal lid. Cool the jar by putting it briefly in the refrigerator. Pour several inches of hot water into the jar, then put the lid on it. Have your child place an ice cube on top of the lid. As the warm moist air in the jar rises, it is cooled and forms a little cloud.

With your child, collect smooth, round rocks (often found around streams or riverbeds). Your child will enjoy experimenting with various ways to make the rocks shiny. Provide old toothbrushes, a tub of water, and several substances (e.g., toothpaste, petroleum jelly, baby oil, paste wax, baking soda, white glue, water, vinegar, or anything else your child might want to try) your child can use to polish the rocks .

Help your child observe that warm air rises. Briefly warm up a small bowl of bubble solution. Take the warm solution outside, and watch what happens when you and your child blow bubbles. Try again after the solution cools off. Notice what happens to the cold bubbles.

Fill a large container or bowl with cold water and a few drops of food coloring. Have your child crumple up a dry paper towel and push it into a clear drinking glass. Hold the glass upside down, and push it straight down to the bottom of the container. Pull the glass back out, and have your child touch the paper towel. Explain that the towel is still dry because the glass is full of air.

Play shadow tag so your child can see how shadows change as he moves around. First, have your child find his shadow. Then, have him try to chase his shadow or lose it. To play tag, whoever is "it" tries to step on the other person's shadow. When this happens, that person becomes "it."

Look for your child to ...

c. Show knowledge of changes in earth and space.

Your child may ...

Comment on changes in the weather, clouds, temperature, daylight and darkness.

Say, "The moon is different tonight."

Comment on changes in puddles, grass, soil, sand, wood chips, etc.

You can support your child ...

Lie on your backs and look at clouds together with your child. Talk about differences in clouds and whether or not you can see them moving.

Keep a weather chart with your child. Create a grid on a piece of poster board, and draw a yellow sun for sunny days, white clouds for cloudy days, gray drops for rain, and white flakes for snow. At the end of a month, count the number of days it was sunny, cloudy, rainy, etc.

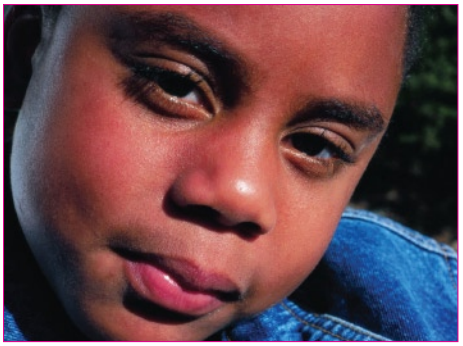
With your child, collect pictures of wind-powered objects (e.g., kites, sailboats, pinwheels, windmills, hang gliders). Talk about how the wind affects the objects. Turn on an electric fan, and have your child put objects in front of it to see whether the "wind" affects them.

With your child, make a bubble solution of ½ cup water, ¼ cup liquid detergent and 1 tablespoon glycerin (available at pharmacies). Help him find a variety of objects to blow bubbles with (e.g., drinking straw, empty frozen concentrated juice can with both ends and any sharp edges removed, cookie cutter, pipe cleaner or wire bent into an enclosed shape). Blow bubbles with your child.

III. Earth and Space

3. Solves problems involving earth and space.

Look for your child to ...	Your child says ...
a. Identify problems involving earth and space.	"There is no grass under the slide." "It's cold outside." "I can't walk on the sidewalk (sand). It is too hot." "My shoes got wet when I stepped in the puddle." "I can't dig in this hard dirt."
	You can support your child ...
	Give your child many opportunities to play outdoors. Go for nature walks together, and talk about the way the sky looks and the air feels. Participate in recycling and conservation efforts, and involve your child. Talk with your child frequently about conservation, air and water pollution, trash disposal, and soil erosion. Encourage your child to conserve paper by using both sides when drawing. Be a good role model by using cloth instead of paper (for cleaning, napkins, etc.) when possible.
Look for your child to ...	**Your child says ...**
b. Make predictions based on experiences with earth and space.	"I hear thunder. It's going to rain." "We get to play outside because it is sunny." "I think the snow will melt because the sun is shining." "I might fall on the ice." "If it snows too much, we can't go anywhere." "Water and dirt make mud."
	You can support your child ...
Note: Your child will need many experiences before reaching this step. Resist the temptation to jump in and correct her if she makes an incorrect prediction. Your child will learn more if you let her find it out on her own.	Draw a vertical line and a horizontal line on a paper plate, dividing it into quarters. In each quarter, draw a simple picture of the sun, clouds, rain or snow. Each morning, look outside with your child and have him put a paper clip on the quarter representing the weather that day. Ask, "What do you think the weather will be like later today?" Play pretend games with your child about being outside in various types of weather (e.g., say, "It's raining today. Let's open our umbrellas so we don't get wet," or say, "It's hot and sunny today. Let's put on sunscreen and a sun hat."). On a sunny day, fill two shallow pans with water in the morning. With your child, place one in the sun and the other in the shade. Ask, "What do you think will happen to the water?" Later that afternoon, have your child feel the water in each pan to see if one is warmer than the other. Have your child look at the water to see if one has less water than the other. Talk about what happened.



III. Earth and Space

4. Represent observations about earth and space in a variety of ways.

Look for your child to ...	Your child may ... / You can support your child ...
a. Represent observations through pretend play.	**Your child may ...** Engage in role playing (e.g., play a weather person, astronaut, farmer). Dress dolls, puppets or flannel-board characters according to the weather. Use simple tools (e.g., magnifying glasses, binoculars, telescopes, scales, maps, digging tools, brushes, buckets) to pretend. **You can support your child ...** Provide paper dolls with seasonal clothing. Play with your child, and make comments such as, "It's hot outside today. What clothes should we put on this doll?" For pretend play, provide props such as a plastic helmet and boots (astronaut), old overalls and straw hat (farmer), or a large map and pointer stick (weather person). Visit used clothing stores, garage sales or military surplus stores for inexpensive clothes. Party shops often have inexpensive hats and other props. Keep the props in a large container for easy access, and hang costumes on low hooks. If possible, hang a full-length mirror on a nearby wall. Pretend to be archaeologists. Bury clean chicken or rib bones in a tub of sand. With your child, use sifters or your fingers to uncover the bones. Clean the sand off with an old toothbrush or large paintbrush. Compare the sizes and colors of the bones. Use scientific words such as geologist, paleontologist, archaeologist and conservation agent to describe your child's pretend play so that those terms become familiar.
b. Represent observations through music and movement.	**Your child may ...** Move like the wind, snowman, snowflake, rocket, astronaut in space, tornado, dinosaur, etc. Sing songs such as *Twinkle, Twinkle, Little Star; The Itsy, Bitsy Spider; Hey Diddle Diddle; and If All the Raindrops Were Lemondrops and Gumdrops*. Create songs about earth and space. **You can support your child ...** Read a story or poem about the weather (e.g., *The Snowy Day* by Ezra Jack Keats). Have your child act out parts of it. Engage your child in pretend play. Pretend to be a melting snowman, a rocket, the wind, a tornado, a falling star, a blowing leaf, or other representation of earth or space. Sing songs and show fingerplays about the earth and space to your child. Be creative and make up your own.
c. Represent observations through art and construction.	**Your child may ...** Make landscapes with mud, sand and water. Draw or paint pictures of the sky, moon, stars, sun, earth, etc. Use play dough or blocks to make mountains, snowmen, spaceships, caves, dinosaurs, etc. **You can support your child ...** Help your child collect objects from the outdoors (e.g., rocks, sticks, sand, leaves) to use in creating art projects. Provide a wide variety of art materials, and store them where they are easily accessible to your child. Sit with your child and draw or paint pictures of the earth and sky. Talk about your creations. With your child, tear white paper into cloud shapes. Look at the shapes, and talk about objects they may resemble. Give your child a dishpan or plastic storage box filled with potting soil. Let her make mountains, gullies and plains. Gently fill depressions with water to make lakes or rivers.

Look for your child to ...

d. Talk about earth and space.

Your child may ...

Describe rocks according to size, shape and color.

Say, "The moon and stars come out at night."

Talk about night and day.

Talk about winter, spring, summer and fall.

Use earth words (e.g., soil, ocean, mountain, sand, rock, river, lake, creek).

Use weather words (e.g., rainy, windy, snowy, foggy, sunny, cloudy, temperature).

Use seasonal words (e.g., winter, spring, summer and fall).

Use space words (e.g., moon, star, sun, sky, air).

You can support your child ...

Talk with your child about the sun coming out during the daytime and the moon and stars appearing at night. Go outside at night to look at the sky together.

You and your child might be able to see a satellite or international space station in the night sky. Schedules of satellites or the space station sometimes can be found in the newspaper or on the National Aeronautics and Space Administration (NASA) Web site (www.nasa.gov). Talk with your child about which is closer, an airplane or a satellite.

Do some favorite activities after dark. Talk about what's different about playing on the swing set or taking a walk after dark.

Collect rocks with your child. Let her sort them any way she likes. Ask, "Why did you put those rocks together?" to see if she had a plan in mind.

Take a special hike with your child and relate it to the time of day or the weather. If it's raining, call it a "rain hike," and put on raincoats and boots. If it's dusk, call it a "twilight hike," and so on.

Read books, poems and magazines to your child about the earth and sky. Afterward, point out things pictured in the stories that your child can see, hear or feel (e.g., say, "Remember that story about the mud puddle? Look, there's a mud puddle!").

Make up a story about a child who lives in a warm climate and has never seen snow. Ask your child how she would describe snow to someone who had never experienced it.

Create a simple sundial with your child. Pound a pole or stick into the ground on a sunny day. Spread several rocks around the stick. Every few hours, check the pole's shadow with her. Talk about how it has changed.

Science Materials

Your child gains science knowledge from observing and acting on objects he sees around the house and outdoors every day. Here are some items you might want to have available for your child to encourage science learning.

- Adventure kit for exploring (e.g., a backpack containing items such as a compass, binoculars, magnifying glass and flashlight)
- Ant farm (purchased or homemade)
- Bird's nest
- Blocks or small boxes to stack
- Books with pictures to help identify plants, rocks, animals and insects
- Broken gadgets and small appliances that your child can take apart
- Bug study kit (e.g., a box with a small hole or piece of screen on the top and a magnifying glass)
- Cardboard tubes with toy cars or small balls to roll through them
- Clear plastic containers for sorting and storing collections and for planting seeds so the child can see the roots
- Collections of rocks, shells, leaves or other objects and a small fishing tackle box for sorting
- Dinosaurs (e.g., realistic vinyl dinosaurs, puzzles or kites with dinosaurs on them or shaped like dinosaurs)
- Kaleidoscope and prism
- Locks and keys
- Magnets (e.g., magnetic block set, magnetic marbles)
- Measuring cups and spoons
- Measuring tape with big numbers
- Notebooks and pencils to "write down" findings
- Nuts and bolts
- Old clocks and wristwatches
- Realistic vinyl zoo animals
- Screwdriver and other small tools
- Seeds to plant
- Unbreakable mirror
- Variety of textured materials to explore (e.g., sandpaper, cotton balls, aluminum foil, sponges, corks, waxed paper, scraps of textured fabric such as velvet, corduroy and burlap)
- Water play tote and accessories (e.g., funnels; cups with holes; items that float and sink; items that absorb water and those that don't; containers of various sizes; plastic eyedroppers; plastic tubing; turkey basters)

Books for Parents

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Links for Parents

- American Association for the Advancement of Science — www.aaas.org
- American Library Association — www.ala.org
- The Butterfly Web Site — www.butterflywebsite.com
- Cool Science for Curious Kids — www.hhmi.org/coolscience
- Desert USA — www.desertusa.com
- Discovery Channel — www.discovery.com
- First Science Preschool Activities and Crafts — www.first-school.ws/theme/science.htm
- Missouri Department of Conservation — mdc.mo.gov
- National Audubon Society — www.audubon.org
- National Wildlife Federation — www.nwf.org
- NASA Goddard Space Flight Center — www.NASA.gov/goddard
- Rainforest Action Network: Kids' Corner — www.ran.org/kids_action
- San Diego Zoo — www.sandiegozoo.org
- Sea World — www.seaworld.org
- U.S. Department of Education: Helping Your Child Learn Science — www.ed.gov/pubs/parents/Science/
- U.S. Environmental Protection Agency Environmental Kids Club — www.epa.gov/kids
- University of Illinois Early Childhood and Parenting (ECAP) Collaborative — ecap.crc.uiuc.edu
- University of North Dakota's Volcano World — volcano.oregonstate.edu
- The Weather Dude — www.wxdude.com

Books for Children

Physical Science: *Mama Played Baseball* — David A. Adler and Chris O'Leary; *Who Sank the Boat?* — Pamela Allen; *Water* — Frank Asch; *Marsh Music* — Marianne Collins Berkes and Robert Noreika; *Mr. Gumpy's Outing* — John Burningham; *Freight Train* — Donald Crews; *Strega Nona* — Tomie dePaola; *Science With Magnets* — Helen Edom; *Eight Animals Play Ball* — Susan Middleton Elya and Lee Chapman; *What Magnets Can Do* — Allan Fowler; *We Love Baseball* — Peggy Harrison; *The Wonder Thing* — Libby Hathorn and Peter Gouldthorpe; *Simple Machines* —Deborah Hodge; *Molasses Man* — Felicia Marshall and Kathy L. May; *Just a Baseball Game* — Gina Mayer and Mercer Mayer; *A Drop Around the World* — Barbara Shaw McKinney; *Take Me Out to the Ballgame* — Jack Norworth and Alec Gillman; *How Many Trucks Can a Tow Truck Tow?* — Charlotte Pomerantz; *Those That Float, Those That Don't* — Keith R. Potter, Jana Leo and Ken Fulk; *Big Wheels* — Anne F. Rockwell; *Hold the Anchovies! A Book About Pizza* — Shelley Rotner and Julia Pemberton Hellums; *Mr. Fixit's Magnet Machine* — Richard Scarry; *What's Faster Than a Speeding Cheetah?* — Robert E. Wells; *A Drop of Water* — Walter Wick.

Life Science: *Chicka Chicka Boom Boom* — John Archambault, Lois Ehlert and Bill Martin Jr.; *All About Frogs* — Jim Arnosky; *I See Animals Hiding* — Jim Arnosky; *Otters Under Water* — Jim Arnosky; *Animals Should Definitely Not Act Like People* — Judi Barrett; *The Very Hungry Caterpillar* — Eric Carle; *Rooster's Off to See the World* — Eric Carle; Beaks! — Sneed B. Collard III and Joanna Yardley; *Who Hops?* — Katie Davis; *Can You Find Me? A Book About Animal Camouflage* — Jennifer Dewey; *Planting a Rainbow* — Lois Ehlert; *In the Tall, Tall Grass* — Denise Fleming; *How Do Birds Find Their Way?* — Roma Gans and Paul Mirocha; *Why Frogs Are Wet* — Judy Hawes; *Flit, Flutter, Fly! Poems About Bugs and Other Crawly Creatures* — Lee Bennett Hopkins; *A Nest Full of Eggs* — Priscilla Belz Jenkins and Lizzy Rockwell; *How a Seed Grows* — Helene J. Jordan and Joseph Low; *The Carrot Seed* — Ruth Krauss and Crockett Johnson; *Swimmy* — Leo Lionni; *Whose Tracks Are These? A Clue Book of Familiar Forest Animals* — James Nail and Hyla Skudder; *Bugs* — Nancy Winslow Parker and Joan Richards Wright; *Animal Actions* — Richard Powell and Ana Larranaga; *A Pinky Is a Baby Mouse and Other Baby Animal Names* — Pamela Munoz Ryan; *Pick, Pull, Snap! Where Once a Flower Bloomed* — Lola M. Schaefer and Lindsay Barrett George; *About Birds: A Guide for Children* — Cathryn P. Sill and John Sill; *Look Closer: Pond Life* — Barbara Taylor and Frank Greenaway; *DK Readers: Tale of a Tadpole* — Karen Wallace; *Mouse Paint* — Ellen Stoll Walsh; *Frogs Sing Songs* — Yvonne Winer and Tony Oliver.

Earth and Space: *Happy Birthday, Moon* — Frank Asch; *Air Is All Around You* — Franklyn M. Branley and Holly Keller; *Stone Soup* — Marcia Brown; *Give Yourself to the Rain: Poems for the Very Young* — Margaret Wise Brown; *Goodnight Moon* — Margaret Wise Brown; *Katy and the Big Snow* — Virginia Lee Burton; *If You Find a Rock* — Peggy Christian and Barbara Hirsch Lember; *Feel the Wind* — Arthur Dorros; *Me and My Shadow* — Arthur Dorros; *Snowballs* — Lois Ehlert; *Let's Go Rock Collecting* — Roma Gans; *Shadows and Reflections* — Tana Hoban; *The Snowy Day* — Ezra Jack Keats; *Now It's Fall* — Lois Lenski; *Spring Is Here* — Lois Lenski; *When Winter Comes* — Robert Maass; *Mirandy and Brother Wind* — Patricia McKissack and Jerry Pinkney; *Mud Puddle* — Robert N. Munsch; *Shadows* — Carolyn G. Otto; *The First Snowfall* — Anne F. Rockwell; *My Shadow* — Robert Louis Stevenson and Glenna Lang; *Guess Whose Shadow?* — Stephen R. Swinburne; *The Three Little Pigs: An Old Story* — Margot Zemach.

Magazines for Children

- *Chirp*
  1-800-551-6957
  www.owlkids.com/chirp
- *National Geographic Kids*
  1-800-647-5463
  www.nationalgeographic.com/kids
- *Nick Jr.*
  P.O. Box 3234, Harlan, IL 60009-0773
  www.nickjr.com/home/nick_jr_magazine/index.jhtml
- *Your Big Backyard*
  1-800-611-1599
  www.nwf.org/yourbigbackyard
- *Zoobooks Magazine*
  1-800-992-5034
  www.zoobooks.com