

GRADE

1



Science Curriculum Guide

SCIENCE INDICATOR	Strategies and Resources
Earth and Space Sciences	See Unit on <i>Resources</i> for Read Alouds
1. Identify that resources are things that we get from the living (e.g., forests) and nonliving (e.g., minerals, water) environment and that resources are necessary to meet the needs and wants of a population.	<ul style="list-style-type: none">• Compile a list/photos of living/nonliving things sub sort into items we need to live and things we want• Create a collage• Write about a way you use a living and a nonliving resource. Illustrate.
2. Explain that the supply of many resources is limited but the supply can be extended through careful use, decreased use, reusing and/or recycling.	<ul style="list-style-type: none">• Guest speaker from local recycling center, Division Natural Resources, Ronald McDonald Program, Trumbull Geauga Co. Waste Mngt. Program• Create Litter posters, rhymes, songs, and display• Buddy up students with packed lunches and decide what things can be reused/recycled/reduced• Students bring in a clean recyclable object and assemble class sculpture• Sing recycling songs www.songs4teachers.com• Save scrap papers and create new/homemade paper with the students

	<ul style="list-style-type: none"> • Tour garbage bins on property and point out recycling needs/haves
3. Explain that all organisms cause changes in the environment where they live; the changes can be very noticeable or slightly noticeable, fast or slow (e.g., spread of grass cover slowing soil erosion, tree roots slowly breaking sidewalks).	<ul style="list-style-type: none"> • School Yard Safari: take a walk and look for signs how organisms have changed the environment (snake holes, tree roots) • Guest speaker /Teaching Kits=Trumbull Soil and Water
Life Sciences	<ul style="list-style-type: none"> • See Unit on <i>Plants and Animals also Environment for Read Alouds</i>
1. Explore that organisms, including people, have basic needs which include air, water, food, living space and shelter.	<ul style="list-style-type: none"> • Find pictures of plants and animals separate into groups • Review basic needs of people compare to all organisms • Grow plants, experiment with variables of life
2. Explain that food comes from sources other than grocery stores (e.g., farm crops, farm animals, oceans, lakes and forests).	<ul style="list-style-type: none"> • Field trip to community food source area • Guest speaker from local farm or grocery • Examine packed lunches • Discuss origins of foods
3. Explore that humans and other animals have body parts that help to seek, find and take in food when they are hungry (e.g., sharp teeth, flat teeth, good nose and sharp vision).	<ul style="list-style-type: none"> • Field trip to zoo • Venn diagram plants/animals • Analyze ways organisms take in food
4. Investigate that animals eat plants and/or other animals for food and may also use plants or other animals for shelter and nesting.	<ul style="list-style-type: none"> • <u>Chipmunk Song</u> by Joanne Ryder, write animals and plants from story on cards. Manipulate cards into a food chain. • Project Wild: Oh Deer, Observation Walk
5. Recognize that seasonal changes can influence the health, survival or activities of organisms.	<ul style="list-style-type: none"> • Discuss ways that enable you to be comfortable in the classroom. • Collect pictures of people and animals in different climates. Cooperative groups, choose favorite and present. Venn diagram people and animals adaptations to seasons. • Select favorite animal. Report habits, lifestyle, identify adaptations.

Physical Sciences	<ul style="list-style-type: none"> • See Unit on Matter and Energy for Read Alouds
1. Classify objects according to the materials they are made of and their physical properties.	<ul style="list-style-type: none"> • Provide a variety of materials for students to sort. They report/share why chose those groups. • List properties of matter (bendable, soft, smooth, shiny, etc)
2. Investigate that water can change from liquid to solid or solid to liquid.	<ul style="list-style-type: none"> • Make ice cubes • Collect snow in winter and let it melt • Try to change an ice cube • List solids, liquids, gases found in classroom/school • Venn diagram liquids/solids • Play Name that Liquid. Ex: What liquid makes a car go? • Ice Balls- equal amounts of water into balloons and freeze. Use flashlight, salt, float/sink. See Matter Unit
3. Explore and observe that things can be done to materials to change their properties (e.g., heating, freezing, mixing, cutting, wetting, dissolving, bending and exposing to light).	<ul style="list-style-type: none"> • Melt crayons • Make Slime/Oobleck See Matter Unit • Melt chocolate chips • Burn a candle • Make ice cream or popcorn • Whisk egg whites into foam/fluff • Make caramel apples by melting caramel or stretching the caramel blocks • Salt/sugar into water • Wet a sponge and then let it dry out • Too much sunlight = sunburn • Solar dough see Brice Harris
4. Explore changes that greatly change the properties of an object (e.g., burning paper) and changes that leave the properties largely unchanged (e.g., tearing paper).	<ul style="list-style-type: none"> • Rip paper, burn paper, wet paper, and cut paper and discuss • Burning wood, light a craft stick/balsa wood/wooden match • Cooking scrambled eggs • Washing dishes vs. dissolving Kool-Aid
5. Explore the effects some objects have on others even when the two objects might not touch (e.g., magnets).	<ul style="list-style-type: none"> • Use a magnet to attract objects under paper, oak tag, desktop • Line up magnets so that they repel each other

	<ul style="list-style-type: none"> • Use a paper plate. Draw a race track. Put a paper plate in the track. Put a magnet under the plate to move the clip.
6. Investigate a variety of ways to make things move and what causes them to change speed, direction and/or stop.	<ul style="list-style-type: none"> • Move marbles and balls across horizontal , sloped surfaces: through tilted tubes, etc. • Make a spool racer: thread spool, rubber band, cotton swab, washer, paper clip. Use various sized bands. Twist. Record lengths. Discuss. • Make curved sides for tracks (balls and marbles) and add obstacles.
7. Explore how energy makes things work (e.g., batteries in a toy and electricity turning fan blades).	<ul style="list-style-type: none"> • Use a variety of battery-operated and electric devices (fans, can openers, walkie-talkies) • Light up a small bulb using a battery. • Make observations about the workings of a wind up toy. • Remove/provide light to solar powered object (calculator).
8. Recognize that the sun is an energy source that warms the land, air and water.	<ul style="list-style-type: none"> • Use glasses of water and soil. Keep two on window sill, two in closet. Compare temperature (by touch). • Fill three jars with sand. Cover two completely: one with foil, one with black paper. Put thermometer in jars and place in sun. Check temperature every 15 minutes for three hours. Compare and discuss. Remove from sun. Continue checking temp. for next two hours. Discuss. • Observe outside the heat difference of air and land, in and out of shade.
9. Describe that energy can be obtained from many sources in many ways (e.g., food, gasoline, electricity or batteries).	<ul style="list-style-type: none"> • Read <u>Energy Makes Things Happen</u> by Bradley (Scholastic) Class discussion: running out of gas, not eating breakfast,. • Explain how the sun gives us energy. Illustrate.
Science and Technology	<ul style="list-style-type: none"> • See Unit on <i>Building and Resources</i> for Read Alouds
1. Explore that some kinds of materials are better suited than others for making something new (e.g., the building materials used in the <i>Three Little Pigs</i>).	<ul style="list-style-type: none"> • In groups create houses made of only 1 material (paper, straws, craft sticks, toothpicks). Test for durability using hairdryer, water spray bottle. • Use 2 blocks and 1 piece of paper, oak tag, thin wood. Put

	<p>pennies on, compare strength.</p> <ul style="list-style-type: none"> • Make boats-foil, paper- try to float , which works?
2. Explain that when trying to build something or get something to work better, it helps to follow directions and ask someone who has done it before.	<ul style="list-style-type: none"> • Investigate: try to build a specific structure with and without step by step directions. ex: origami, paper airplanes • Introduce new board/card game to children-without directions. Ask them to play it. With directions they are able to play fairly and the correct way. • Tying shoes
3. Identify some materials that can be saved for community recycling projects (e.g., newspapers, glass and aluminum).	<ul style="list-style-type: none"> • See Earth and Space Sciences Indicator #2 • Classroom recycling bins
4. Explore ways people use energy to cook their food and warm their homes (e.g., wood, coal, natural gas and electricity).	<ul style="list-style-type: none"> • Graph or list ways to heat homes and cook • Visit school cafeteria to see stoves/ovens. • fieldtripfactory.com to Eat n'Park • Classroom cooking • Amish, Indians, Settlers
5. Identify how people can save energy by turning things off when they are not using them (e.g., lights and motors).	<ul style="list-style-type: none"> • Leave one flashlight on, turn one off during the school day, as you come and go from the classroom. Examine dimness, heat. • Leave toy on, how long do the batteries last? • Lights off when leave classroom • Turn car off when get out of it at the store, at home for night
6. Investigate that tools are used to help make things and some things cannot be made without tools.	<ul style="list-style-type: none"> • Demonstrate tools (hammer, screwdriver, manual can opener, scissors, saw, cheese slicer, bottle opener, carrot peeler, whisk) • Student made bulletin board-Kinds of Tools-write how tools make work/jobs easier • List tools (pencil, ruler, tacks, pins) and their uses • List tools found at home and tell their use • What do we need tools to do/build? Houses, clothes, keys,
7. Explore that several steps are usually needed to make things (e.g., building with blocks).	<ul style="list-style-type: none"> • Teacher will build a block structure in front of students. List steps needed • Use legos/zaks/Lincoln logs/kids k'nex/tinkertoys, to reproduce existing structures • Making sandwiches

	<ul style="list-style-type: none"> • Perform teacher chosen activity by listing necessary steps/directions (doing cartwheels, dress for outside, washing hands, write a letter of the alphabet)
8. Investigate that when parts are put together they can do things that they could not do by themselves (e.g., blocks, gears and wheels).	<ul style="list-style-type: none"> • Use toy cars remove/disassemble wheels. Reassemble so that all parts work. • Show parts of gears. Assemble parts and use. • Compare one block to many to create a structure. • Make thread spool racer; rubber band, spool, cotton swab, washer, paperclip. Use various size twisted rubber bands, record distance that car travels and discuss.
Scientific Inquiry	
1. Ask "what happens when" questions.	<ul style="list-style-type: none"> • Model good questioning techniques • Take time during investigations to allow students to ask questions • Use question board during activities
2. Explore and pursue student-generated "what happens when" questions.	<ul style="list-style-type: none"> • Refer to KWL Chart during investigations • Allow children time to think back and reflect/ask and act on it. • Predict during read alouds
3. Use appropriate safety procedures when completing scientific investigations.	<ul style="list-style-type: none"> • Model as a teacher • Have students model/demonstrate to each other
4. Work in a small group to complete an investigation and then share findings with others.	<ul style="list-style-type: none"> • Schedule time in lessons/activities • Set up cooperative groups • Go over procedures and expectations for groups
5. Create individual conclusions about group findings.	<ul style="list-style-type: none"> • Allow children time to journal after group work • Turn and tell-turn to neighbor and tell them what you think/found
6. Use appropriate tools and simple equipment/instruments to safely gather scientific data (e.g., magnifiers, timers and simple balances and other appropriate tools).	<ul style="list-style-type: none"> • Model and demonstrate • Make tools available during the day • Display safety posters
7. Make estimates to compare familiar lengths, weights and time intervals.	<ul style="list-style-type: none"> • Provide practice in estimation and checking for accuracy • Display measurement posters

	<ul style="list-style-type: none"> • Sammy’s Science House computer cd
8. Use oral, written and pictorial representation to communicate work.	<ul style="list-style-type: none"> • Create science logs, journals, illustrations, label diagrams, class discussion, group/individual presentation of findings
9. Describe things as accurately as possible and compare with the observations of others.	<ul style="list-style-type: none"> • Modeling appropriate term usage • Time to share and compare • Adjective Games
Scientific Ways of Knowing	
1. Discover that when a science investigation is done the same way multiple times, one can expect to get very similar results each time it is performed.	<ul style="list-style-type: none"> • Repeat investigations • Hypothesize • Graph findings • Share results
2. Demonstrate good explanations based on evidence from investigations and observations.	<ul style="list-style-type: none"> • Model good explanations by recording in chart form and referring to • Plan many investigations for the students throughout the year
3. Explain that everybody can do science, invent things and have scientific ideas no matter where they live.	<ul style="list-style-type: none"> • Introduce and discuss many inventors from many nationalities and ages • Share multimedia examples of famous inventors and inventions • Have children create inventions • Field trip-National Inventors Hall of Fame, Inventure Place • Discuss occupational names for people who study science (botanist, engineer, physician, dentist, chemist, zoologist). Give students these titles as they study/ explore and perform experiments

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