

Waverly Science Curriculum K-4

<u>Kindergarten</u>	<u>1st Grade</u>	<u>2nd Grade</u>	<u>3rd Grade</u>	<u>4th Grade</u>
<u>Life Science:</u> Observe and describe the characteristics and life needs of living organisms and their offspring.	<u>Life Science:</u> Observe, describe, and compare the characteristics and needs for life of organisms	<u>Life Science:</u> Investigate and describe seed plant parts Compare basic needs of plants and animals Describe life cycles of plants and animals	<u>Life Science:</u> Describe and compare organisms and their habitats Observe and describe feeding relationships in a food chain	<u>Life Science:</u> Investigate functions of plant parts Compare food, energy, and environmental needs and adaptive traits of plants and animals Describe inherited and survival characteristics of plants and animals
<u>Physical Science:</u> Observe, describe, and compare properties of common objects using 5 senses. Use appropriate words to describe location and motion of objects	<u>Physical Science:</u> Observe, describe, and classify common liquids and solids Prepare and separate mixtures <u>Balance and Motion</u>	<u>Physical Science:</u> Explain how sounds are made Investigate light and shadows Observe common physical changes	<u>Physical Science:</u> Describe and compare motions of objects Investigate how forces change the motion or direction of an object Investigate how simple machines make work easier	<u>Physical Science:</u> Describe objects by measuring Identify common energy forms: work, light, sound, heat, food, electrical Investigate magnets and static electricity
<u>Earth and Space Science:</u> Observe and describe weather conditions, appropriate clothing and safety precautions.	<u>Earth and Space Science:</u> Observe, describe and compare uses of different kinds of earth materials Observe and describe seasonal changes in weather	<u>Earth and Space Science:</u> Describe weather conditions and use simple weather instruments Observe and compare objects in the day and night sky	<u>Earth and Space Science:</u> Investigate water in the solid, liquid and gaseous state Observe and describe moon phases and moon/earth motions	<u>Earth and Space Science:</u> Investigate earth materials describe major features of Earth's surface Describe the motions of Earth and moon around the sun, explaining days, years

Waverly Community Schools K-4 Progress Report Marking

Kindergarten Progress	1 st Grade Progress	2 nd Grade Progress	3 rd Grade Progress	4 th Grade Progress
-----------------------	--------------------------------	--------------------------------	--------------------------------	--------------------------------

Kindergarten Science Curriculum

K	The student will:	Resources:	Assessments:
Life Science	Plants and animals have features that help them live in different environments.	FOSS: Trees: GEMS: Animal Defenses; Michigan Health Model Phase VI	Using GEMS Guide Animal Defenses as a resource, cut out on "defenseless animal" for each student. Provide a variety of paper shapes and colors, glue sticks, and crayons. Ask each student to design the attributes each animal needs to stay alive. Ask the children to explain the reason for each attribute they provide their animal. Ask the children to draw a picture of the offspring of their animal. Check that each animal has eyes (to see), nose (to breath and smell), ears (to hear) a mouth to take in food and at least one defense or camouflage mechanism. The sense of smell and hearing can be defense mechanisms if the students can describe that application. The animal baby must have many of the characteristics of the parent.
	Stories sometimes give plants and animals attributes they really do not have.		
	Plants and animals closely resemble their parents.		
	Organisms have basic needs. Animals need air, water, and food; plants require air, water, nutrients, and light.		
	Organisms can survive only in environments in which their needs can be met.		
	Generate reasonable questions about the world, based on observation.		
	Construct charts, graphs, and prepare summaries of observations.		
	Show how science concepts can be interpreted through creative expression such as language arts and fine arts.		
	Describe ways in which technology is used in everyday life.		
	Develop an awareness of and sensitivity to the natural world.		
	Develop an awareness of the contributions made to science by people of diverse backgrounds.		
	Observe and describe familiar organisms on the basis of observable physical characteristics. Terms: words describing plant and animal parts: skin, shell, beaks, scales, fur, roots, leaves, stems, flowers.		
	Give evidence that characteristics are passed from parents to young. Terms: parent, young, hair color, eye color, skin color, leaf shape, leaf size Real-world contexts: Examples of mature and immature organisms, such as dogs/puppies, cats/kitten, maple trees/saplings, beans/seedlings		

	Explain how physical and/ or behavioral characteristics of organisms help them to survive in their environments. Terms: Words describing traits and their adaptive values; sharp teeth or claws for catching and killing prey, color for camouflage Real- world contexts: Adaptations such as white polar bears, sharp claws; Behaviors such as migration, communication of danger		
Physical Science	Objects can be describes in terms of the materials they are made of (clay, cloth, paper, etc.) and their physical properties (color, size, shape, weight, texture, flexibility, etc.)	Integration with Social Studies, P.E., Michigan Health Model Phase II, AIMS, and FOSS Fabrics	Using If the Shoe Fits from AIMS Glide into Winter as a resource, the children will be able to sort their shoes by one attribute at a time. A story and poem are included in the resource.
	Construct charts, graphs, and prepare summaries of observations.		
	Show how science concepts can be interpreted through creative expression such as language arts and fine arts.		
	Classify common objects and substance according to observable attributes; color, size, shape, small, hardness, texture, flexibility, length, weight, buoyancy, states of matter, magnetic properties. Terms: Texture: rough, smooth; Flexibility: rigid, stiff, firm, flexible, strong; Smell: pleasant, unpleasant; Magnetic properties: attract, repel, push, pull; Size Large, small, larger, smaller; Buoyancy: sink, float; Color: common color words; Shape: circle, square, triangle, rectangle, oval; Weight: heavy, light, heavier, lighter Real-world contexts: common objects such as desks, coins, pencils, buildings, snowflakes; Common substances including: Solids- iron, wood, plastic, Styrofoam; Liquids- water, milk, juice, gasoline; Gases- air		
Earth and Space Science	Objects can be described in terms of the materials they are made of (clay, cloth, paper, etc.) and their physical properties (color, size, shape, weight, texture, flexibility, etc.)	FOSS: Trees; Michigan Health Models Phase III	
	Things move in many different ways, such as straight, zigzag, round and round, back and forth, and fast and slow.		
	The position and motion of objects can be changed by pushing or pulling. The size of the change is related to the strength of the push or pull.		
	Things near the earth fall to the ground unless something holds them up.		
	Generate reasonable questions about the world, based on observation.		
	Construct charts, graphs, and prepare summaries of observations.		
	Show how science concepts can be interpreted through creative expression such as language arts and fine arts.		
	Describe or compare motions of common objects in terms of speed and direction. Terms, tools, concepts: Direction words: east, west, north, south, right, left; Speed words: fast, slow, faster, slower Rea-world contexts: rolling or thrown balls, wheeled vehicles, sliding objects		
	Weather changes from day to day and over seasons.		
	Change is something that happens to many things.		
	The sun warms the land, air, and water.		
	Describe seasonal changes in weather. Terms, tools, concepts: Season: fall, winter spring, summer Real-world contexts: Examples of visible seasonal changes in nature		
	Explain appropriate safety precautions during severe weather. Terms, tools, concepts: Safety precautions: safe locations, sirens, radio broadcasts, severe weather watch and warning Real-world contexts: Examples of local severe weather: thunderstorms and tornadoes, that change with seasons; Examples of local community safety precautions including weather bulletins and tornado sirens		

1st Grade Science Curriculum

Ist	The student will:	Resources:	Assessments:
Life Science	Plants and animals have features that help them live in different environments.	Science and Technology for Children Unit: Organisms, AIMS: Critters	Students or student groups will choose an animal from list/pictures provided. Use AIMS: Critters for a resource. The students will design an environment by (1) drawing, (2) building a model, or (3) writing a story that clearly describes the animal's needs for staying alive. Choices can include such animals as earthworms, spiders, frogs, insects, birds, and mammals.
	Some animals and plants are alike in the way they look and in the things they do, and others are very different from one another.		
	Most living things need water, food, and air.		
	Stories sometimes give plants and animals attributes they really do not have.		

	Change is something that happens to many things.		
	Develop solutions to unfamiliar problems through reasoning, observation, and/or experiment.		
	Construct charts, graphs, and prepare summaries of observations.		
	Show how science concepts can be interpreted through creative expression such as language arts and fine arts.		
	Develop an awareness of and sensitivity to the natural world.		
	Compare and classify familiar organisms on the basis of observable physical characteristics. Terms, tools, concepts: words describing plant and animal parts: backbone, skin, shell, limbs, roots, leaves, stems, flowers. Real-world contexts: Animals that look similar: snakes, worms, millipedes; Plants: pine tree, oak tree, rose, algae		
	Describe vertebrates in terms of observable body parts and characteristics. Terms, tools, concepts: vertebrate characteristics; fur, scales, feathers, horns, claws, eyes, quills, beaks, teeth, skeleton, muscles Real-world contexts: Vertebrate and non-vertebrate animals, such as humans, cow, sparrow, goldfish, spider, and animals listed above		
	Compare and contrast food, energy, and environmental needs of selected organisms. Terms, tools, concepts: Life requirements: food, air, water, minerals, sunlight, space, habitat Real-world contexts: Germinating seeds, such as beans and corn Aquarium or terrarium life, such as guppy, goldfish, snail		
	Explain how physical and /or behavioral characteristics of organisms help them to survive in their environments. Terms, tools, concepts: adaptation, fitness, instinct, learning, habit: Words describing traits and their adaptive values; sharp teeth or claws for catching and killing prey, color for camouflage Real-world contexts: Adaptations such as white polar bears, sharp claws; Behaviors such as migration, communication of danger		
	Describe the basic requirements for all living things to maintain their existence. Terms, tools, concepts: Needs of life: food, habitat, water, shelter, air, light, minerals Real-world contexts: Selected ecosystems: aquarium, rotting log, terrarium, backyard, local pond or wetland, wood lot		
Physical Science	Observe, describe, and classify common solids and liquids.	FOSS: Solids and Liquids	Students or groups of students will use one cup of dry lima beans and one scoop of cornmeal. Challenge them to separate the mixture at least two different ways, and describe the characteristics that they used to make the separation. The materials can be separated by using their fingers to pick out the larger beans from the smaller particles or cornmeal. The characteristic is color, size, or shape. The materials can be separated by using a screen that the cornmeal can pass through the beans cannot pass through. The characteristic is size of the materials.
	Prepare and separate simple mixtures.		
	Observe, describe and compare different kinds of earth materials.		
	Observe and describe seasonal changes in weather.		
	Material can exist in different states-solid, liquid, (and gas). Some common materials, such as water, can be changed from one state to another by heating or cooling.		
	Chunks of rocks come in many sizes and shapes, from boulders to grains of sand and even smaller.		
	Soils have properties of color and texture, and the ability to support growth of many kinds of plants.		
	Objects can be described in terms of the materials they are made of (clay, cloth, paper, etc.) and their physical properties (color, size, shape, weight, texture, flexibility, etc.)		
	Objects have properties and those properties can be used to separate or sort a group of objects.		
	Weather changes from day to day and over the seasons.		
	Change is something that happens to many things.		
	Magnifiers help people see things they could not see without them.		
	Develop solutions to unfamiliar problems through reasoning, observation, and/or experiment.		
	Manipulate simple mechanical devices and explain how they work. [sieves and magnifiers]		
	Develop strategies and skills for information gathering and problem solving.		
	Construct charts, graphs, and prepare summaries of observations.		
	Describe ways in which technology is used in everyday life.		
	Classify common objects and substance according to observable attributes: color, size, shape, small, hardness, texture, flexibility, length, weight, buoyancy, states of matter, magnetic properties. Terms: Texture: rough, smooth; Flexibility: rigid, stiff, firm, flexible, strong; Smell: pleasant, unpleasant; Magnetic properties: attract, repel, push, pull; Size Large, small, larger, smaller; Buoyancy: sink, float; Color: common color words; Shape: circle, square, triangle, rectangle, oval; Weight: heavy, light, heavier, lighter Real-world contexts: common objects such as desks, coins, pencils, buildings, snowflakes; Common substances including: Solids- iron, wood, plastic, Styrofoam; Liquids- water, milk, juice		
	Prepare mixtures and separate them into their component parts. Terms, tools, concepts: Mixtures solution; Separation techniques: using sieve, dissolving soluble substances, magnets, floating us. Sinking: Tools: filter paper, funnels, magnets, sieves Real-world contexts: mixtures of various kinds: such as sand and gravel		
Earth and Space Science	Recognize and describe different types of earth materials. Terms, tools, concepts: Materials: sand, clay, silt, soil, rock, minerals; Tools: hand lens Real-world context: Samples of earth materials, such as rocks, sand, soil, ores		
	Describe seasonal changes in weather. Terms, tools, concepts: Seasons: Fall, winter, spring, summer real-world contexts: Examples of visible seasonal changes		
Physical Science	Students should make proposals to building something or get something to work better; they should be able to describe and communicate their ideas.	FOSS: Balance and Motion	
	Make something out of paper, cardboard, wood, plastic, metal, or existing objects that can actually be used to perform a task.		
	Communicate a problem, design, and solution. Students' abilities should include oral, written and pictorial communication of the design process and product. The communication might be show and tell, group discussions, short written reports, or pictures, depending on the students' abilities and the design project.		
	Develop solutions to unfamiliar problems through reasoning, observation, and/or experimentation.		
	Describe how technology is used in everyday life.		
	Change is something that happens to many things.		
	Weather changes from day to day and over the seasons.		
	Describe seasonal changes in weather. Terms, tools, concepts: Seasons: fall, winter, spring, summer Real-world contexts: Examples of visible seasonal changes		

2nd Grade Science Curriculum

2nd	The student will:	Resources:	Assessments:
------------	--------------------------	-------------------	---------------------

Life Science	Plants and animals closely resemble their parents.	FOSS: New Plants; Life Cycle of Butterflies	Place a series of plant pictures representing germination, growth, flowering, and seed development in correct order. Name the parts of the plant that are represented in each picture. Describe what the plant or animal needs to stay alive in each stage of the cycle. Place a series of pictures representing the life cycle stages of a butterfly or other insect in correct order and name the parts and life needs of the animal that are represented in each picture.
	Plants and animals have features that help them live in different environments.		Students could draw the life cycles using their Science Journal observations and descriptions and pictures as a resource. Students should describe what the plant or animal needs to stay alive in each stage of the cycle.
	Some animals and plants are alike in the way they look and in the things they do, and others are very different from one another.		Students could place seed and real plants in different stages of the life cycle in the correct order. Students should describe what the plant or animal needs to stay alive in each stage of the cycle.
	Most living things need water, food, and air.		
	Stories sometimes give plants and animals attributes they really do not have.		
	Change is something that happens to many things.		
	Magnifiers help people see things they could not see without them.		
	Over the whole earth, organisms are growing; dying, decaying and new organisms are being produced by the old ones.		
	Generate reasonable questions about the world, based on observation.		
	Develop solutions to unfamiliar problems through reasoning, observation, and /or experiment.		
	Use simple measurement devices.		
	Construct charts, graphs, and prepare summaries of observations.		
	Show how science concepts can be interpreted through creative expression such as language arts and fine arts.		
	Develop an awareness of and sensitivity to the natural world.		
	Describe life cycles of familiar organisms. Terms, tools, concepts: Life cycle stages: Egg, young, adult, seed, flower, fruit Real-world contexts: Common plants and animals such as beans, apples, butterflies, grasshoppers, frogs, birds		
	Describe functions of selected seed plant parts. Terms, tools, concepts: roots, stems, leaves, flowers, fruits, seeds Real-world contexts: common plants such as beans, grass		
	Give evidence that characteristics are passed from parents to young. Terms, tools, concepts: parent, young, hair color, eye color, skin color, leaf shape, leaf size Real-world contexts: Examples of mature and immature organisms, such as dogs/puppies, cats/kittens, maple trees/saplings, beans/seedlings		
	Describe the basic requirements for all living things to maintain their existence. Terms, tools, concepts: Needs of life: food, habitat, water, shelter, air, light, minerals Real-world contexts: Selected ecosystems such as aquarium, rotting log, terrarium, backyard, local pond or wetland, wood lot plants.		
Physical Science	Sound is produced by vibrating objects. The pitch of the sound can be varied by changing the rate of vibration.	FOSS: Physics of Sound: Battle Creek Math and Science Center Unit: Light and Shadows Michigan Health Model Phase IV	
	Light travels in a straight line until it strikes an object. Light can be reflected by a mirror.		
	Shadows are made by blocked light.		
	Things that make sound vibrate.		
	Light travels in a straight line until it strikes an object. Light can be reflected by a mirror.		
	People can often learn about things around them by just observing those things carefully. Sometimes they can learn more by doing something to the things and noting what happens.		
	People have always had questions about their world. Science is one way of answering questions and explaining the natural world.		
	Generate reasonable questions about the world, based on observation.		
	Develop solutions to unfamiliar problems through reasoning, observation, and /or experiment.		
	Use simple measurement devices.		
	Construct charts, graphs, and prepare summaries of observations		
	Show how science concepts can be interpreted through creative expression such as language arts and fine arts.		
	Develop an awareness of and sensitivity to the natural world.		
	Describes sounds in terms of their properties (pitch, loudness). Terms, tools concepts: Pitch: high, low; Loudness: loud, soft Real-world contexts: Sound from common sources, such as musical instruments, radio, television, animal sounds, thunder, human voices.		
	Explain how sounds are made. Terms, tools, concepts: Vibrations: fast, slow, large, small Real-world contexts: Sound from common sources, such as musical instruments, radio, television, animal sounds, thunder, human voices		
	Describe light from a source in terms of its properties. Terms, tools, concepts: Brightness: bright, dim; Color of light: red, orange, yellow, green, blue, violet Real-world contexts: Light from common sources such as sun, stars, light bulb, colored lights, firefly, candle, flashlight		
	Explain how shadows are made. Terms: shadow, blocked light Contexts: Make shadows by placing objects in the path of light from common sources.		
Earth and Space Science	Weather changes from day to day and over the seasons. Weather can be described by measurable quantities, such as temperature, wind direction and speed, and precipitation.	FOSS: Air and Weather	Begin a story about weather in one of the four seasons. Ask students to finish the story describing how the weather influences the plot. Include illustrations.
	Some events in nature have a repeating pattern. The weather changes some from day to day, but things such as temperature and rain or snow tend to be high, low, or medium in the same months every year.		
	Some events in nature have a repeating pattern. The weather changes some from day to day, but things such as temperature and rain or snow tend to be high, low, or medium in the same months every year.		
	The sun warms the land, air, and water.		
	Water in an open container disappears, but water in a closed container does not disappear.		
	Change is something that happens to many things.		
	Material can exist in different states- solid, liquid, and gas. Some common materials, such as water, can be changed from one state to another by heating or cooling.		
	Develop solutions to unfamiliar problems through reasoning, observation, and/or experiment.		
	Manipulate simple mechanical devices and explain how they work.		
	Develop strategies and skills for information gathering and problem solving.		
	Construct charts, graphs, and prepare summaries of observations.		
	Describe ways in which technology is used in everyday life.		
	Describe common physical changes in matter. Terms: Changes in states of matter: melting, freezing, dissolving, invisible, heat source Real-world contexts: freezing of ponds, etc.		

	Describe seasonal changes in weather. Terms, tools, concepts: Seasons: Fall, winter, spring, summer Real-world contexts: Examples of visible seasonal changes		
	Describe how water exists on earth in three states. Terms, tools, concepts: liquid: visible, flowing, melting, dew, stream: Solid: hard, visible; freezing, ice; Gas: invisible, evaporation, water vapor; real-world contexts: Examples of water in each state, including dew, rain, snow, ice, steam; Examples of melting, freezing, and evaporating		

3rd Grade Science Curriculum

3rd	The student will:	Resources:	Assessments:
Life Science	Each plant or animal has different structures that serve different functions in growth, survival, and reproduction.	Science and Technology for Children Unit : Animal Studies Michigan Health Model, Phase VI Delta Science Module: Food Chains, and Webs	
	Organisms have basic needs. For example, animals need air, water, and food; plants require air, water, nutrients, and light. Organisms can survive only in environments in which their needs can be met. The world has many different environments, and distinct environments support the life of different types of organisms.		
	All animals depend on plants. Some animals eat plants for food. Other animals eat animals that eat the plants.		
	Over the whole earth, organisms are growing; dying, decaying, and new organisms are being produced by the old ones.		
	Organisms interact with one another in various ways besides providing food. Many plants depend on animals for carrying their pollen to other plants or for dispensing their seeds. Seek better reasons for believing something than "everybody knows that," or "I just know" and discount such reasons when given by others.		
	Generate reasonable questions about the world, based on observation.		
	Develop solutions to unfamiliar problems through reasoning, observation, and/or experiment.		
	Construct charts, graphs, and prepare summaries of observations.		
	Show how science concepts can be interpreted through creative expression such as language arts and fine arts.		
	Develop an awareness of and sensitivity to the natural world.		
	Compare and contrast food, energy, and environmental needs of selected organisms. Life requirements are: food, air, water, minerals, space, and habitat. Terms, tools, concepts: Life requirements: food, air, water, minerals, sunlight, space, habitat; Real-world contexts: Germinating seeds, such as beans and corn; Aquarium or terrarium life, such as guppy, goldfish, snail.		
	Explain how physical and or behavioral characteristics of organisms help them to survive in their environments. Terms, tools, concepts: adaptation, fitness, instinct, learning, habit; Words describing traits and their adaptive values; sharp teeth or claws for catching and killing prey, color for camouflage; Real-world contexts: Adaptations such as white polar bears, sharp claws and sharp canines for predators, changing colors of chameleon; Behaviors such as migration, communication of danger, adaptation to changes in the environment		
	Identify familiar organisms as part of a food chain or food web and describe their feeding relationships within the web Terms, tools, concepts: Words describing parts of a food web: producer, consumer, predator, prey, decomposer, habitat Real-world contexts: Food chains and food webs involving organisms, such as rabbits, birds, snakes, grasshoppers, plants		

	Explain common patterns of interdependence and interrelationships of living things Real-world contexts: Relationships among plants and animals in an ecosystem: Symbiotic relationships, such as insects and flowering plants, birds eating fruit and spreading seeds; Parasitic relationships, such as humans and mosquitoes, trees and mistletoe		
	Describe the basic requirements for all living things to maintain their existence. Terms, tools, concepts: Needs of life: food, habitat, water, shelter, air, light, minerals Real-world contexts: Selected ecosystems, such as a backyard, aquarium, rotting log, terrarium, local pond or wetland, wood lot		
	Design systems that encourage growing of particular plants or animals. Terms, tools, concepts: Words describing needs of life: food, habitat, water, shelter, air, light, minerals Real-world contexts: Ecosystems managed by humans including farms, ranches, gardens, lawns, potted plants.		
Physical Science	The position of an object can be described by locating it relative to another object or the background.	Battle Creek Math and Science Center	Unit: How Things Move
	An object's motion can be described by tracing and measuring its position over time.		
	The position and motion of objects can be changed by pushing or pulling. The size of the change is related to the strength of the push or pull.		
	Changes in speed or direction of motion are caused by forces. The greater the force is, the greater the change in motion will be. The more massive an object is, the less effect a given force will have.		
	Make something useful out of paper, cardboard, wood, plastic, metal, or existing objects that can actually be used to perform a task.		
	Choose appropriate common materials for making simple mechanical constructions and repairing things.		
	Doing science involves many different kinds of work and engages men and women of all ages and backgrounds.		
	Generate reasonable questions about the world, based on observation.		
	Develop solutions to unfamiliar problems through reasoning, observation and/or experimentation.		
	Manipulate simple mechanical devices and explain how they work. Terms, tools, concepts: Names and uses for parts of machines, such as levers, wheel and axles, pulleys, inclined planes, gears, screws, wedges Real-world contexts: Simple mechanical devices such as bicycles, bicycle pumps, pulleys, faucets, clothespins		
	Use simple measurement devices to make metric measurements. Terms, tools, concepts: Measurement units: milliliters, liters, teaspoon, tablespoon, ounce, cup, millimeter, centimeter, meter, gram; Measurement tools: measuring cups and spoons, measuring tape, balance or scale Real-world contexts: Measuring height of a person, mass of a ball		
	Develop strategies and skills for information gathering and problem solving.		
	Construct charts, graphs, and prepare summaries of observations. Terms, tools, concepts: Terms: increase, decrease, steady; Tools: graph paper, rulers, crayons Real-world contexts: Examples of simple charts and graphs like those found in a newspaper		
	Develop an awareness of the need for evidence in making decisions scientifically. Terms, tools, concepts: data, evidence, sample, guess, opinion Real-world contexts: Deciding whether an explanation is supported by evidence in simple experiments		
	Describe how technology is used in everyday life. Terms, tools, concepts: Provide faster and farther transportation, communication organize information and solve problems, save time Real-world contexts: cars, machines, radios, telephones, computers, calculators, appliances		
	Develop an awareness of the contributions made to science by people of diverse backgrounds. Terms, tools, concepts: Scientific contributions made by people of diverse cultures and backgrounds		
	Describe or compare motions of common objects in terms of speed and direction. Terms, tools, concepts: Direction words, east, west, north, south, right left: Speed words: fast, slow, faster, slower Real-world contexts: Motions of familiar objects in 2-D, including rolling or thrown balls, wheeled vehicles, sliding objects.		

	<p>Use simple machines to make work easier. Terms, tools, concepts: Inclined planes, levers, pulleys, gears, wheel and axles, screws, wedges real-world contexts: Blocks and tackles, ramps, screwdrivers, can openers</p>		
<p>Earth and Space Science</p>	<p>The sun, moon, stars, clouds, birds, and airplanes all have properties, locations, and movements that can be observed and described.</p>	<p>Battle Creek Math and Science Center Unit: Changes Over Time and Our Changing Earth FOSS: Water</p>	<p>When assessing what students know about objects in the sky, we stress the skills students have acquired in observing and describing, and how well they base their explanations on their observations. Arranging out-of-sequence images puts to good use the middle elementary students; abilities to place objects in logical order. These images may include the phases of the Moon, weather patterns, and seasonal changes.</p>
	<p>The sun can be seen only in the daytime, but the moon can be seen sometimes at night and sometimes during the day. The sun, moon, and stars all appear to move slowly across the sky.</p>		<p>Students keep a learning log that reflects some sequential observations. This includes observations of the phases of the Moon or other planetary events. IF students track the data for an extended period, the log may be useful to them in uncovering patterns and cycles based on observations.</p>
	<p>The moon's orbit around the earth once in about 28 days changes what part of the moon is lighted by the sun and how much of that part can be seen from the earth-the phases of the moon.</p>		<p>Students use their data to make predictions of which Moon phase will appear in the sky.</p>

	Develop solutions to unfamiliar problems through reasoning, observation, and/or experimentation.		Students interpret information that appears on the weather page in the Lansing State Journal relative to moon phases, moon rise, and moon set.
	Develop strategies and skills for information gathering and problem solving.		
	Construct charts, graphs, and prepare summaries of observations. Terms, tools, concepts: Terms: increase, decrease, steady; Tools: graph paper, rulers, crayons Real-world contexts: Examples of simple charts and graphs like those found in a newspaper		
	Develop an awareness of the contributions made to science by people of diverse backgrounds. Terms, tools, concepts: Scientific contributions made by people of diverse cultures and backgrounds		
	Compare and contrast the sun, moon, and earth. Terms, tools, concepts: Planet, star, sphere, space, solar system, larger/smaller, closer, farther, heat, light Real-world contexts: Photos and videos of the sun, earth, moon, and other planets.		
	Describe the motions of the earth and moon around the sun. Terms, tools, concepts: Perceived movement of the sun across the sky, orbit, month, year, day, night, spin, calendar Real-world contexts: Models or diagrams of the positions and relative distances between the sun, earth, and moon; Models showing the motions of the earth and moon; Outdoor observing of the moon phases.		
	Earth materials are solid rocks and soils, water, and gases of the atmosphere. These varied materials have different physical properties which make them useful in different ways. Earth materials provide many of the resources that humans use.		
	Materials can exist in different states- solid, liquid, and gas. Some common materials, such as water, can be changed from one state to another by heating or cooling.		
	Fresh water, limited in supply, is essential for life and also for most industrial processes.		
	Measure and mix dry and liquid materials in prescribed amounts, exercising reasonable safety.		
	Use numerical data in describing and comparing objects and events.		
	Doing science involves many different kinds of work and engages men and women of all ages and backgrounds.		
	Recognize when comparisons might not be fair because some conditions are not kept the same.		
	Generate reasonable questions about the world, based on observation.		
	Develop solutions to unfamiliar problems through reasoning, observation, and/or experimentation.		
	Use simple measurement devices to make metric measurements. Terms, tools, concepts: Measurement units: milliliters, liters, teaspoon, tablespoon, ounce, cup, millimeter, centimeter, meter, gram; Measurement tools: measuring cups and spoons, measuring tape, balance or scale Real-world contexts: Measuring height of a person, mass of a ball		
	Develop strategies and skills for information gathering and problem solving.		
	Construct charts, graphs, and prepare summaries of observations. Terms, tools, concepts: Terms: increase, decrease, steady; Tools: graph paper, rulers, crayons Real-world contexts: Examples of simple charts and graphs like those found in a newspaper		

	Develop an awareness of the need for evidence in making decisions scientifically. Terms, tools, concepts: data, evidence, sample, guess, opinion Real-world contexts: Deciding whether an explanation is supported by evidence in simple experiments.		
	Describe how water exists on earth in three states. Terms, tools, concepts: liquid: visible, flowing, melting, dew, stream; Solid: hard, visible, freezing, ice; Gas: invisible, evaporation, water vapor Real-world contexts: Examples of water in each state including dew, rain, snow, ice, steam. Examples of melting, freezing, and evaporating.		
	Identify sources of drinking water. Terms, tools, concepts: Domestic uses: drinking, cleaning, food preparation; Public uses: generate electricity, recreation, irrigation, transportation Real-world contexts: Examples of local occasions when water is used, including car wash, swimming pools, fire hydrants, drinking, food preparation, cleaning		
	Describe common physical changes in matter (size, shape, melting, freezing, evaporating, condensing, and dissolving.) Terms: solid, liquid, gas: freezing, melting, evaporating, condensing; dissolving, heat source Real-world context: making snowballs, changes in state of water and other substances such as freezing of ice cream or ponds, melting wax.		

4th Grade Science Curriculum

4th	The student will:	Resources:	Assessments:
Life Science	Each plant or animal has different structures that serve different functions in growth, survival, and reproduction.	Michigan Dept. Ed. Running on Plants Michigan Health Model Phase IV	Sequencing activity, where students put life cycle cards in the correct order and write about the characteristics and life needs of the plant at each stage of the life cycle.
	Organisms have basic needs. For example, animals need air, water, and food; plants require air, water, nutrients, and light. Organisms can survive only in environments in which their needs can be met. The world has many different environments, and distinct environments support the life of different types of organisms.		Task that uses student drawings to show a cooperative symbiotic between a plant and an animal.
	Plants and animals both need to take in water, and animals need to take in food. In addition, plants need light.		Students draw or build a model of an imaginary flowering plant and describe all the parts that it needs to stay alive and their function.
	The most general distinction among plants and animals is that plants (producers) use sunlight to make their own food energy; and animals (consumers) which consume energy-rich foods.		
	Organisms interact with one another in various ways besides providing food. Many plants depend on animals for carrying their pollen to other plants or for dispensing their seeds. Develop solutions to unfamiliar problems through reasoning, observation, and/or experiment.		
	Develop strategies and skills for information gathering and problem solving.		
	Construct charts, graphs, and prepare summaries of observations.		
	Develop an awareness of and sensitivity to the natural world.		
	Develop an awareness of the contributions made to science by people of diverse backgrounds.		
	Compare and contrast food, energy, and environmental needs of selected organisms. Life requirements: food, air, water, minerals, sunlight, space, habitat real-world contexts: Germinating seeds, such as beans and corn		
	Describe functions of selected seed parts. Terms, tools, concepts; Plant parts: Roots, stems, leaves, flowers, fruits, seeds real-world contexts: Common edible plant parts, such as bean, cauliflower, carrot, apple, tomato, spinach		

	Give evidence that characteristics are passed from parents to young. Terms, tools, concepts: parent, young; leaf shape, leaf size Real-world contexts: Examples of mature an immature organisms, such as maple trees/saplings, beans/seedlings		
	Explain common patterns of interdependence and interrelationships of living things. Symbiotic relationships, such as insects and flowering plants, birds eating fruit and spreading seeds.		
	Describe the basic requirements for all living things to maintain their existence. Needs of life: food, habitat, water, shelter, air, light, minerals Real-world contexts: Selected ecosystems, such as a backyard, terrarium, local pond or wetland, wood lot		
Physical Science	Electricity in circuits can produce light, heat, sound, and magnetic effects. Electrical circuits require a complete loop through which an electric current can pass.	Battle Creek Math and Science Center Unit: Motion, Force and Energy FOSS: Magnetism and Electricity FOSS: Measurement	
	Magnets attract and repel each other and certain kinds of other materials.		
	Without touching them, a magnet pulls on all things made of iron and either pushes or pulls on other magnets.		
	When warmer things are put with cooler ones, the warm ones lose heat and the cool ones gain it until they are all the same temperature.		
	Some materials conduct heat much better than others. Poor conductors can reduce heat loss.		
	The sun is the main source of energy for people and they use it in many ways. The energy in fossil fuels such as oil comes indirectly from the sun, because fuels come from plants that grew a long time ago.		
	Develop solutions to unfamiliar problems through reasoning, observation, and/or experiment.		
	Use simple measurement devices to make metric measurement.		
	Develop strategies and skills for information gathering and problem solving.		
	Construct charts, graphs, and prepare summaries of observations. Terms, tools, concepts: Terms: increase, decrease, steady; Tools: graph paper, rulers, crayons Real-world contexts: Examples of simple charts and graphs like those found in a newspaper		
	Develop an awareness of the need for evidence in making decisions scientifically.		
	Describe ways in which technology is used in everyday life.		
	Measure weight, dimensions, and temperature of appropriate objects and materials. Tools: ruler, meter stick, balance or scale, thermometer		
	Identify forms of energy associated with common phenomena. Energy: work, heat, sound, energy of motion, electrical Context: melting chocolate, sun warming skin, food for plants and animals, electrical appliances, wind-up toys, water wheels, windmills, music from guitar, heat conduction in the handle of a pan on a stove.		
	Describe the interaction of magnetic materials with other magnetic and non-magnetic materials. Terms, tools, concepts: Magnetic/non-magnetic, magnetic poles, magnetic attraction and repulsion; Tools: magnetic compass Real-world contexts: Common magnets, using a magnetic compass to find direction		
	Describe electron flow in simple electrical circuits. Terms, tools, concepts: complete circuit, closed circuit Real-world contexts: Electrical conductivity testing, flashlights		
	Describe possible electrical shock hazards to be avoided at home and at school. Terms, tools, concepts: Shock, wall outlet, hazards Real-world contexts: Electric outlets, power lines, frayed electric cords, electric appliances, lightning		
	Construct simple objects that fulfill a technological purpose. Terms, tools, concepts: Materials: rubber bands, paper, corks, scrap wood Real-world contexts: Simple bridges, boats, planes, ramps that can be made from common materials		
Earth and Space Science	Rock is composed of different combinations of materials. Smaller rocks come from the breakage and weathering of bedrock and larger rocks. Soil is made partly from weathered rock, partly from plant remains- and also contains many living organisms.	FOSS: Earth Materials Battle Creek Mathematics and Science Unit: Our Changing Earth Michigan Health Model Phase VI	
	Waves, wind, water, and ice shape and reshape the earth's land surface by eroding rock and soil in some areas and depositing them in other areas.		

Some changes in earth's surface are abrupt (such as earthquakes and volcanic eruptions) while others happen very slowly *such as uplift and wearing down of mountains). The earth's surface is shaped in part by the motion of water and wind over very long times, which act to level mountain ranges.		
The rotation of the earth on its axis every 24 hours produces the night and day cycle. To people on earth, this turning of the planet makes it seem as though the sun, moon, planets, and stars are orbiting the earth once a day.		
The earth is one of several planets that orbit the sun, and the moon orbits around the earth.		
Telescopes magnify the appearance of some distant objects in the sky, including the moon and planets.		
Generate reasonable questions about the world, based on observation.		
Develop solutions to unfamiliar problems through reasoning, observations, and/or experimentation.		
Manipulate simple mechanical devices and explain how they work. Terms, tools, concepts: Names and uses for parts of machines, such as levers, wheel and axles, pulleys, inclined planes, gears, screws, wedges Real-world contexts: Simple mechanical devices such as bicycles, bicycle pumps, pulleys, faucets, clothespins		
Use simple measurement devices to make metric measurements. Terms, tools, concepts:: Measurement units: milliliters, liters, teaspoon, tablespoon, ounce, cup, millimeter, centimeter, meter, gram; Measurement tools: measuring cups and spoons, measuring tape, balance or scale Real-world contexts: Measuring height of a person, mass of a ball		
Develop strategies and skills for information gathering and problem solving		
Construct charts, graphs, and prepare summaries of observations. Terms, tools, concepts: Terms: increase, decrease, steady; Tools: graph paper, rulers, crayons Real-world contexts: Examples of simple charts and graphs like those found in a newspaper		
Develop an awareness of the need for evidence in making decisions scientifically Terms, tools, concepts: data, evidence, sample, guess, opinion Real-world contexts: Deciding whether an explanation is supported by evidence in simple experiments		
Describe how technology is used in everyday life. Terms, tools, concepts: Provide faster and farther transportation, communication organize information and solve problems, save time Real-world contexts: cars, machines, radios, telephones, computers, calculators, appliances		
Develop an awareness of the contributions made to science by people of diverse backgrounds		
Recognize and describe different types of earth materials. Terms, tools, concepts: Materials: sand, clay, silt, soil, rock, minerals; Origins: molten rock, river beds, natural vs. manufactured; Tools: hand lens Real-world contexts: Samples of earth materials, such as rocks, sand, soil, ores		
Describe natural changes in earth's surface. Terms, tools, concepts: Cause of changes: volcanoes, earthquakes, erosion, rivers; Results of change: valleys, mountains Real-world contexts: Places around school where erosion has occurred, such as gullies formed in down-hill gravel areas, cracks in asphalt		
Describe uses of materials taken from the earth. Terms, tools, concepts: Transportations: oil into gasoline; Building materials: sand into glass, ores into metals, gravel into concrete and asphalt; Energy: coal burned to produce electricity, uranium for nuclear power; Water: drinking, cleaning, cooking Real-world contexts: Examples of uses of earth materials: concrete walls, glass windows, metal chairs		
Demonstrate means to recycle manufactured materials. Terms, tools, concepts: Recyclable materials: paper, metal, glass, plastic; Antipollution activities: reduce, reuse, recycle Real-world contexts: collections of recyclable materials, plans for recycling at home and school		
Describe the motions of the earth and moon around the sun. Terms, tools, concepts: Perceived movement of the sun across the sky, orbit, month, year, day, night, spin, calendar Real-world contexts: Models or diagrams of the positions and relative distances between the sun, earth, and moon; Models showing the motions of the earth and moon; Outdoor observing of the moon phases		