

UNIT TITLE	CORE TOPICS (Key Concepts & Real World Contexts)	UNIT BENCHMARKS	SUGGESTED ASSESSMENT	POSSIBLE RESOURCES
All students will ask questions that help them learn about the world:				
WHAT IS SCIENCE?	<p>KC: Questions lead to action, including careful observation and testing; questions often begin with <i>“What happens if...?”</i> or <i>“How do these two things differ?”</i></p> <p>RWC: Any in the sections on Using Scientific Knowledge.</p>	<p>C-I.1.E.1: Generate questions about the world based on observation.</p>		
All students will design and conduct investigations using appropriate methodology and technology:				
WHAT IS SCIENCE?	<p>KC: (K-2) gather information, ask questions, think</p> <p>RWC: Any in the sections on Using Scientific Knowledge.</p> <p>KC: Manipulate simple devices that aid observations and data collection.</p> <p>RWC: Any suggested in Using Scientific Knowledge benchmarks for which students would design and/or conduct investigations.</p> <p>KC: Measurement units—milliliters, liters, teaspoon, tablespoon, ounce, cup, millimeter, centimeter, meter, gram.</p> <p>RWC: Making simple mixtures, such as food, play dough, papier maché; measuring height of a person, weight of a ball.</p>	<p>C-I.1.E.2: Develop solutions to problems through reasoning, observation, and investigations.</p> <p>C-I.1.E.3: Manipulate simple devices that aid observation and data collection.</p> <p>C-I.1.E.4: Use simple measurement devices to make measurements in scientific investigations.</p>		<p>Measuring cups and spoons Measuring tape Balance or scale</p> <p>Various data collection tools suitable for this level, such as hand lenses, wind direction indicators, grids for sampling areas of the sky or landscape.</p>
All students will learn from books and other sources of information:				
WHAT IS SCIENCE?	<p>KC: Develop strategies and skills for information gathering and problem solving.</p> <p>RWC: Seeking help from or interviewing peers, adults, experts; using libraries, World Wide Web, CD's and other computer software, other sources.</p>	<p>C-I.1.E.5: Develop strategies and skills for information gathering and problem solving.</p>		<p>Sources of information, such as reference books, trade books, magazines, web sites, other peoples' knowledge.</p>
All students will communicate findings of investigations, using appropriate technology:				
WHAT IS SCIENCE?	<p>KC: Increase, decrease, no change, bar graph, data table.</p> <p>RWC: Examples of bar charts like those found in a newspaper.</p>	<p>C-I.1.E.6: Construct charts and graphs and prepare summaries of observations.</p>		<p>Graph paper Rulers Crayons</p>

Science

Kindergarten

UNIT TITLE	CORE TOPICS (Key Concepts & Real World Contexts)	UNIT BENCHMARKS	SUGGESTED ASSESSMENT	POSSIBLE RESOURCES
All students will analyze claims for their scientific merit and explain how scientists decide what constitutes scientific knowledge:				
WHAT IS SCIENCE?	KC: (K-2) observations RWC: Deciding whether an explanation is supported by evidence in simple experiments, or relies on personal opinion.	R-II.1.E.1: Develop an awareness of the need for evidence in making decisions scientifically.		
All students will show how science is related to other ways of knowing:				
WHAT IS SCIENCE?	KC: Poetry, expository work, painting, drawing, music, diagrams, graphs, charts. RWC: Explaining simple experiments using paintings and drawings; describing natural phenomena scientifically and poetically.	R-II.1.E.2: Show how science concepts can be illustrated through creative expression such as language arts and fine arts.		
All students will show how science and technology affect our society:				
WHAT IS SCIENCE?	KC: Provide faster and farther transportation and communication, organize information and solve problems, save time. RWC: Cars, other machines, radios, telephones, computer games, calculators, appliances, e-mail, the World Wide Web. KC: Appreciation of the balance of nature and the effects organisms have on each other, including the effects humans have on the natural world. RWC: Any in the sections on Using Scientific Knowledge appropriate to elementary school	R-II.1.E.3: Describe ways in which technology is used in everyday life. R-II.1.E.4: Develop an awareness of and sensitivity to the natural world.		
All students will show how people of diverse cultures have contributed to and influenced developments in science:				
WHAT IS SCIENCE?	KC: Scientific contributions made by people of diverse cultures and backgrounds. RWC: Any in the sections on Using Scientific Knowledge appropriate to this benchmark.	R-II.1.E.5: Develop an awareness of contributions made to science by people of diverse backgrounds and cultures.		

Science

Kindergarten

UNIT TITLE	CORE TOPICS (Key Concepts & Real World Contexts)	UNIT BENCHMARKS	SUGGESTED ASSESSMENT	POSSIBLE RESOURCES
All students will measure and describe the things around us:				
WHAT IS SCIENCE?	<p>KC: Useful properties – unbreakable, water-proof, light-weight, conducts electricity (see PME-IV.1.E.4, electrical circuits), conducts heat, attracted to a Magnet, clear. See EG-V.1.E.4 (uses of earth materials).</p> <p>RWC: Appropriate selection of materials for a particular use, such as waterproof raincoat, cotton or wool for clothing, glass for windows, metal pan to conduct heat, copper wire to conduct electricity.</p>	PME-IV.1.E.2: Identify properties of materials which make them useful.		
All students will investigate, describe and analyze ways in which changes:				
WHAT IS SCIENCE?	<p>KC: Mixture, solution. Separation techniques–(K-2) filtration, using sieves, using magnets, floating vs. sinking;</p> <p>RWC: Mixtures of various kinds – salt and pepper, iron filings and sand, sand and sugar, rocks and wood chips, sand and gravel, sugar or salt solutions.</p>	PCM-IV.2.E.2: Prepare mixtures and separate them into their component parts: filtration, using sieves, using magnets, floating vs. sinking		Filter paper Funnels Magnets Sieves Beakers Solar stills
All students will describe how things around us move, explain why things move as they do and demonstrate and explain how we control the motions of objects:				
WHAT IS SCIENCE?	<p>KC: Magnetic poles, magnetic attraction and repulsion.</p> <p>RWC: Common magnets, using a magnetic compass to find directions.</p>	PMO-IV.3.E.3: Describe patterns of interaction of magnetic materials with other magnetic and non-magnetic materials.		Magnets Variety of magnetic and non-magnetic materials
All students will explain shadows, color, and other light phenomena.				
WHAT IS SCIENCE?	<p>KC: White light is composed of different colors.</p> <p>RWC: Light from common sources, such as the sun, stars, light bulb, colored lights, firefly, candle, flashlight, various sources.</p>	PWV-IV.4.E.3: Use prisms and filters with light sources to produce various colors of light.		Prisms, color filters, colored lights
All students will ask questions that help them learn about the world:				
SEASONS AND WEATHER	<p>KC: Questions lead to action, including careful observation and testing; questions often begin with <i>“What happens if...?”</i> or <i>“How do these two things differ?”</i></p> <p>RWC: Any in the sections on Using Scientific Knowledge.</p>	C-I.1.E.1: Generate questions about the world based on observation.		

UNIT TITLE	CORE TOPICS (Key Concepts & Real World Contexts)	UNIT BENCHMARKS	SUGGESTED ASSESSMENT	POSSIBLE RESOURCES
All students will design and conduct investigations using appropriate methodology and technology:				
SEASONS AND WEATHER	<p>KC: (K-2) gather information, ask questions, think RWC: Any in the sections on Using Scientific Knowledge.</p> <p>KC: Manipulate simple devices that aid observations and data collection. RWC: Any suggested in Using Scientific Knowledge benchmarks for which students would design and/or conduct investigations.</p> <p>KC: Measurement units—milliliters, liters, teaspoon, tablespoon, ounce, cup, millimeter, centimeter, meter, gram. RWC: Making simple mixtures, such as food, play dough, papier maché; measuring height of a person, weight of a ball.</p>	<p>C-I.1.E.2: Develop solutions to problems through reasoning, observation, and investigations.</p> <p>C-I.1.E.3: Manipulate simple devices that aid observation and data collection.</p> <p>C-I.1.E.4: Use simple measurement devices to make measurements in scientific investigations.</p>		<p>Measuring cups and spoons Measuring tape Balance or scale</p> <p>Various data collection tools suitable for this level, such as hand lenses, wind direction indicators, grids for sampling areas of the sky or landscape.</p>
All students will learn from books and other sources of information:				
SEASONS AND WEATHER	<p>KC: Develop strategies and skills for information gathering and problem solving. RWC: Seeking help from or interviewing peers, adults, experts; using libraries, World Wide Web, CD's and other computer software, other sources.</p>	<p>C-I.1.E.5: Develop strategies and skills for information gathering and problem solving.</p>		<p>Sources of information, such as reference books, trade books, magazines, web sites, other peoples' knowledge.</p>
All students will communicate findings of investigations, using appropriate technology:				
SEASONS AND WEATHER	<p>KC: Increase, decrease, no change, bar graph, data table. RWC: Examples of bar charts like those found in a newspaper.</p>	<p>C-I.1.E.6: Construct charts and graphs and prepare summaries of observations.</p>		<p>Graph paper Rulers Crayons</p>
All students will analyze claims for their scientific merit and explain how scientists decide what constitutes scientific knowledge:				
SEASONS AND WEATHER	<p>KC: (K-2) observations RWC: Deciding whether an explanation is supported by evidence in simple experiments, or relies on personal opinion.</p>	<p>R-II.1.E.1: Develop an awareness of the need for evidence in making decisions scientifically.</p>		

Science

Kindergarten

UNIT TITLE	CORE TOPICS (Key Concepts & Real World Contexts)	UNIT BENCHMARKS	SUGGESTED ASSESSMENT	POSSIBLE RESOURCES
All students will show how science is related to other ways of knowing:				
SEASONS AND WEATHER	<p>KC: Poetry, expository work, painting, drawing, music, diagrams, graphs, charts.</p> <p>RWC: Explaining simple experiments using paintings and drawings; describing natural phenomena scientifically and poetically.</p>	<p>R-II.1.E.2: Show how science concepts can be illustrated through creative expression such as language arts and fine arts.</p>		
All students will show how science and technology affect our society:				
SEASONS AND WEATHER	<p>KC: Provide faster and farther transportation and communication, organize information and solve problems, save time.</p> <p>RWC: Cars, other machines, radios, telephones, computer games, calculators, appliances, e-mail, the World Wide Web.</p> <p>KC: Appreciation of the balance of nature and the effects organisms have on each other, including the effects humans have on the natural world.</p> <p>RWC: Any in the sections on Using Scientific Knowledge appropriate to elementary school.</p>	<p>R-II.1.E.3: Describe ways in which technology is used in everyday life.</p> <p>R-II.1.E.4: Develop an awareness of and sensitivity to the natural world.</p>		
All students will show how people of diverse cultures have contributed to and influenced developments in science:				
SEASONS AND WEATHER	<p>KC: Scientific contributions made by people of diverse cultures and backgrounds.</p> <p>RWC: Any in the sections on Using Scientific Knowledge appropriate to this benchmark.</p>	<p>R-II.1.E.5: Develop an awareness of contributions made to science by people of diverse backgrounds and cultures.</p>		
All students will investigate, describe and analyze ways in which changes:				
SEASONS AND WEATHER	<p>KC: States of matter – solid, liquid, gas. Changes in size and shape - bending tearing, breaking. Processes that cause change of state: heating, cooling. See EH-V.2.E.1 (water in three states).</p> <p>RWC: Changes in size or shape of familiar objects, such as making snowballs, breaking glass, crumbling cookies, making clay models, carving wood, breaking bones; changes in state of water or other substances, such as freezing of ice cream, or ponds, melting wax or steel, puddles drying up.</p>	<p>PCM-IV.2.E.1: Describe common physical changes in matter – size, shape, melting, freezing</p>		<p>Filter paper Funnels Magnets Sieves Beakers Solar stills</p>

UNIT TITLE	CORE TOPICS (Key Concepts & Real World Contexts)	UNIT BENCHMARKS	SUGGESTED ASSESSMENT	POSSIBLE RESOURCES
All students will investigate and describe what makes up weather and how it changes from day to day, from season to season and over long periods of time:				
SEASONS AND WEATHER	<p>KC: Atmosphere is a blanket of air around the earth, air is a substance; see PME e-1 (attributes of substances). Air has temperature—cold, hot, warm, cool. Cloud cover—cloudy, partly cloudy; foggy. Precipitation—rain, snow, hail, freezing rain. Wind—breezy, windy, calm. Severe weather—thunderstorms, lightning, tornadoes, high winds, blizzards.</p> <p>RWC: Daily changes in weather; examples of severe weather.</p> <p>KC: Seasons and types of weather—fall, cool nights and warm days; winter—snowy and constantly cold, getting dark early in the evening; spring—warmer days, often rainy with thunderstorms; summer—hot days and warm nights, daylight lasting until late in the evening.</p> <p>RWC: Examples of visible seasonal changes in nature.</p>	<p>EAW-V.3.E.1: Describe weather conditions.</p> <p>EAW-V.3.E.2: Describe seasonal changes in Michigan's weather.</p>		<p>Thermometer Wind sock Rain gauge Daily calendar activities</p>
All students will analyze the relationships between human activities and the atmosphere:				
SEASONS AND WEATHER	<p>KC: Safety precautions—safe locations, sirens, radio broadcasts, severe weather watch and warning.</p> <p>RWC: Examples of local severe weather, including thunderstorms, tornadoes and blizzards, examples of local community safety precautions, including weather bulletins and tornado sirens.</p>	<p>EAW-V.3.E.3: Explain appropriate safety precautions during severe weather.</p>		
All students will ask questions that help them learn about the world:				
SENSES	<p>KC: Questions lead to action, including careful observation and testing; questions often begin with <i>“What happens if...?”</i> or <i>“How do these two things differ?”</i></p> <p>RWC: Any in the sections on Using Scientific Knowledge.</p>	<p>C-I.1.E.1: Generate questions about the world based on observation.</p>		

Science

Kindergarten

UNIT TITLE	CORE TOPICS (Key Concepts & Real World Contexts)	UNIT BENCHMARKS	SUGGESTED ASSESSMENT	POSSIBLE RESOURCES
All students will design and conduct investigations using appropriate methodology and technology:				
SENSES	<p>KC: (K-2) gather information, ask questions, think RWC: Any in the sections on Using Scientific Knowledge.</p> <p>KC: Manipulate simple devices that aid observations and data collection. RWC: Any suggested in Using Scientific Knowledge benchmarks for which students would design and/or conduct investigations.</p> <p>KC: Measurement units—milliliters, liters, teaspoon, tablespoon, ounce, cup, millimeter, centimeter, meter, gram. RWC: Making simple mixtures, such as food, play dough, papier maché; measuring height of a person, weight of a ball.</p>	<p>C-I.1.E.2: Develop solutions to problems through reasoning, observation, and investigations.</p> <p>C-I.1.E.3: Manipulate simple devices that aid observation and data collection.</p> <p>C-I.1.E.4: Use simple measurement devices to make measurements in scientific investigations.</p>		<p>Measuring cups and spoons Measuring tape Balance or scale</p> <p>Various data collection tools suitable for this level, such as hand lenses, wind direction indicators, grids for sampling areas of the sky or landscape.</p>
All students will learn from books and other sources of information:				
SENSES	<p>KC: Develop strategies and skills for information gathering and problem solving. RWC: Seeking help from or interviewing peers, adults, experts; using libraries, World Wide Web, CD's and other computer software, other sources.</p>	<p>C-I.1.E.5: Develop strategies and skills for information gathering and problem solving.</p>		<p>Sources of information, such as reference books, trade books, magazines, web sites, other peoples' knowledge.</p>
All students will communicate findings of investigations, using appropriate technology:				
SENSES	<p>KC: Increase, decrease, no change, bar graph, data table. RWC: Examples of bar charts like those found in a newspaper.</p>	<p>C-I.1.E.6: Construct charts and graphs and prepare summaries of observations.</p>		<p>Graph paper Rulers Crayons</p>
All students will analyze claims for their scientific merit and explain how scientists decide what constitutes scientific knowledge:				
SENSES	<p>KC: (K-2) observations RWC: Deciding whether an explanation is supported by evidence in simple experiments, or relies on personal opinion.</p>	<p>R-II.1.E.1: Develop an awareness of the need for evidence in making decisions scientifically.</p>		

Science

Kindergarten

UNIT TITLE	CORE TOPICS (Key Concepts & Real World Contexts)	UNIT BENCHMARKS	SUGGESTED ASSESSMENT	POSSIBLE RESOURCES
All students will show how science is related to other ways of knowing:				
SENSES	<p>KC: Poetry, expository work, painting, drawing, music, diagrams, graphs, charts.</p> <p>RWC: Explaining simple experiments using paintings and drawings; describing natural phenomena scientifically and poetically.</p>	<p>R-II.1.E.2: Show how science concepts can be illustrated through creative expression such as language arts and fine arts.</p>		
All students will show how science and technology affect our society:				
SENSES	<p>KC: Provide faster and farther transportation and communication, organize information and solve problems, save time.</p> <p>RWC: Cars, other machines, radios, telephones, computer games, calculators, appliances, e-mail, the World Wide Web.</p> <p>KC: Appreciation of the balance of nature and the effects organisms have on each other, including the effects humans have on the natural world.</p> <p>RWC: Any in the sections on Using Scientific Knowledge appropriate to elementary school</p>	<p>R-II.1.E.3: Describe ways in which technology is used in everyday life.</p> <p>R-II.1.E.4: Develop an awareness of and sensitivity to the natural world.</p>		
All students will show how people of diverse cultures have contributed to and influenced developments in science:				
SENSES	<p>KC: Scientific contributions made by people of diverse cultures and backgrounds.</p> <p>RWC: Any in the sections on Using Scientific Knowledge appropriate to this benchmark.</p>	<p>R-II.1.E.5: Develop an awareness of contributions made to science by people of diverse backgrounds and cultures.</p>		

UNIT TITLE	CORE TOPICS (Key Concepts & Real World Contexts)	UNIT BENCHMARKS	SUGGESTED ASSESSMENT	POSSIBLE RESOURCES
All students will measure and describe the things around us:				
SENSES	<p>KC: Texture— rough, smooth. Flexibility— rigid, stiff, firm, flexible, strong. Hardness. Smell— pleasant, unpleasant. States of matter— solid, liquid, gas. Magnetic properties— attract, repel, push, pull. Size— larger, smaller (K-2); length, width, height (3-5). Sink, float. Color— common color words. Shape— circle, square, triangle, rectangle, oval. Weight— heavy, light, heavier, lighter. See PWV e-4 (shadows: objects that let light pass through or block light); PME e-2 (materials that conduct electricity); C e-4 (use measuring devices).</p> <p>RWC: Common objects, such as desks, coins, pencils, buildings, snowflakes; common substances, including— solids, such as copper, iron, wood, plastic, styrofoam; liquids, such as water, alcohol, milk, juice; gases such as air, helium, water vapor.</p>	<p>PME-IV.1.E.1: Classify common objects and substances according to observable attributes/properties</p>		
All students will ask questions that help them learn about the world:				
PLANTS AND ANIMALS	<p>KC: Questions lead to action, including careful observation and testing; questions often begin with <i>“What happens if...?”</i> or <i>“How do these two things differ?”</i></p> <p>RWC: Any in the sections on Using Scientific Knowledge.</p>	<p>C-I.1.E.1: Generate questions about the world based on observation.</p>		

Science

Kindergarten

UNIT TITLE	CORE TOPICS (Key Concepts & Real World Contexts)	UNIT BENCHMARKS	SUGGESTED ASSESSMENT	POSSIBLE RESOURCES
All students will design and conduct investigations using appropriate methodology and technology:				
PLANTS AND ANIMALS	<p>KC: (K-2) gather information, ask questions, think</p> <p>RWC: Any in the sections on Using Scientific Knowledge.</p> <p>KC: Manipulate simple devices that aid observations and data collection.</p> <p>RWC: Any suggested in Using Scientific Knowledge benchmarks for which students would design and/or conduct investigations.</p> <p>KC: Measurement units—milliliters, liters, teaspoon, tablespoon, ounce, cup, millimeter, centimeter, meter, gram.</p> <p>RWC: Making simple mixtures, such as food, play dough, papier maché; measuring height of a person, weight of a ball.</p>	<p>C-I.1.E.2: Develop solutions to problems through reasoning, observation, and investigations.</p> <p>C-I.1.E.3: Manipulate simple devices that aid observation and data collection.</p> <p>C-I.1.E.4: Use simple measurement devices to make measurements in scientific investigations.</p>		<p>Measuring cups and spoons Measuring tape Balance or scale</p> <p>Various data collection tools suitable for this level, such as hand lenses, wind direction indicators, grids for sampling areas of the sky or landscape.</p>
All students will learn from books and other sources of information:				
PLANTS AND ANIMALS	<p>KC: Develop strategies and skills for information gathering and problem solving.</p> <p>RWC: Seeking help from or interviewing peers, adults, experts; using libraries, World Wide Web, CD's and other computer software, other sources.</p>	<p>C-I.1.E.5: Develop strategies and skills for information gathering and problem solving.</p>		<p>Sources of information, such as reference books, trade books, magazines, web sites, other peoples' knowledge.</p>
All students will communicate findings of investigations, using appropriate technology:				
PLANTS AND ANIMALS	<p>KC: Increase, decrease, no change, bar graph, data table.</p> <p>RWC: Examples of bar charts like those found in a newspaper.</p>	<p>C-I.1.E.6: Construct charts and graphs and prepare summaries of observations.</p>		<p>Graph paper Rulers Crayons</p>
All students will analyze claims for their scientific merit and explain how scientists decide what constitutes scientific knowledge:				
PLANTS AND ANIMALS	<p>KC: (K-2) observations</p> <p>RWC: Deciding whether an explanation is supported by evidence in simple experiments, or relies on personal opinion.</p>	<p>R-II.1.E.1: Develop an awareness of the need for evidence in making decisions scientifically.</p>		

Science

Kindergarten

UNIT TITLE	CORE TOPICS (Key Concepts & Real World Contexts)	UNIT BENCHMARKS	SUGGESTED ASSESSMENT	POSSIBLE RESOURCES
All students will show how science is related to other ways of knowing:				
PLANTS AND ANIMALS	<p>KC: Poetry, expository work, painting, drawing, music, diagrams, graphs, charts.</p> <p>RWC: Explaining simple experiments using paintings and drawings; describing natural phenomena scientifically and poetically.</p>	<p>R-II.1.E.2: Show how science concepts can be illustrated through creative expression such as language arts and fine arts.</p>		
All students will show how science and technology affect our society:				
PLANTS AND ANIMALS	<p>KC: Provide faster and farther transportation and communication, organize information and solve problems, save time.</p> <p>RWC: Cars, other machines, radios, telephones, computer games, calculators, appliances, e-mail, the World Wide Web.</p> <p>KC: Appreciation of the balance of nature and the effects organisms have on each other, including the effects humans have on the natural world.</p> <p>RWC: Any in the sections on Using Scientific Knowledge appropriate to elementary school</p>	<p>R-II.1.E.3: Describe ways in which technology is used in everyday life.</p> <p>R-II.1.E.4: Develop an awareness of and sensitivity to the natural world.</p>		
All students will show how people of diverse cultures have contributed to and influenced developments in science:				
PLANTS AND ANIMALS	<p>KC: Scientific contributions made by people of diverse cultures and backgrounds.</p> <p>RWC: Any in the sections on Using Scientific Knowledge appropriate to this benchmark.</p>	<p>R-II.1.E.5: Develop an awareness of contributions made to science by people of diverse backgrounds and cultures.</p>		

UNIT TITLE	CORE TOPICS (Key Concepts & Real World Contexts)	UNIT BENCHMARKS	SUGGESTED ASSESSMENT	POSSIBLE RESOURCES
All students will use classification systems to describe groups of living things:				
PLANTS AND ANIMALS	<p>KC: Observable characteristics—fur, scales, feathers, horns, claws, eyes, quills, beaks, teeth, skeleton, muscles, exoskeleton; functions—insulation, support, movement, food-getting, protection.</p> <p>RWC: Vertebrate and invertebrate animals, such as humans, cows, sparrows, goldfish, spiders, crayfish, insects.</p> <p>KC: Plant and animal parts—backbone, skin, shell, limbs, roots, leaves, stems, flowers, feathers, scales.</p> <p>RWC: Animals that look similar—snakes, worms, millipedes; flowering and non-flowering plants; pine tree, oak tree, rose, algae.</p>	<p>LO-III.2.E.1: Explain characteristics and functions of observable body parts in a variety of animals.</p> <p>LO-III.2.E.2: Compare and contrast (K-2) or classify</p>		
All students will compare and contrast differences in the life cycles of living things:				
PLANTS AND ANIMALS	<p>KC: Life cycle stages—egg, young, adult; seed, plant, flower, fruit; larva, pupa.</p> <p>RWC: Common plants and animals such as bean plants, apple trees, butterflies, grasshoppers, frogs, birds.</p>	<p>LO-III.2.E.3: Describe life cycles of familiar organisms.</p>		
All students will investigate and explain how living things obtain and use energy:				
PLANTS AND ANIMALS	<p>KC: Life requirements—food, air, water, minerals, sunlight, space, habitat. See LEC e-2.</p> <p>RWC: Germinating seeds, such as beans, corn; aquarium or terrarium life, such as guppy, goldfish, snail.</p>	<p>LO.III.2.E.4: Compare and contrast food, energy, and environmental needs of selected organisms.</p>		
All students will analyze how parts of living things are adapted to carry out specific functions:				
PLANTS AND ANIMALS	<p>KC: Plant parts—roots, stems, leaves, flowers, fruits, seeds.</p> <p>RWC: Common edible plant parts, such as bean, cauliflower, carrot, apple, tomato, spinach. (See LE e-2 about functions of selected animal body parts).</p>	<p>LO-III.2.E.5: Explain functions of selected seed plant parts.</p>		

UNIT TITLE	CORE TOPICS (Key Concepts & Real World Contexts)	UNIT BENCHMARKS	SUGGESTED ASSESSMENT	POSSIBLE RESOURCES
All students will investigate and explain how characteristics of living things are passed on through generations:				
PLANTS AND ANIMALS	<p>KC: Characteristics—hair and feather color, eye color, leaf shape, flower structure.</p> <p>RWC: Example of mature and immature organisms, such as dogs/puppies, cats/kittens, maple trees/saplings, beans/seedlings.</p>	<p>LH-III.3.E.1: Give evidence that characteristics are passed from parents to young.</p>		
All students will explain how parts of an ecosystem are related and how they interact:				
PLANTS AND ANIMALS	<p>KC: Producer, consumer, predator, prey, decomposer, habitat, community.</p> <p>RWC: Food chains and food webs involving organisms, such as rabbits, birds, snakes, grasshoppers, plants.</p>	<p>LEC-III.5.E.1: Identify familiar organisms as part of a food chain or food web and describe their feeding relationships within the web.</p>		
All students will explain how energy is distributed to living things in an ecosystem:				
PLANTS AND ANIMALS	<p>KC: Needs of life—food, habitat, water, shelter, air, light, minerals. See LO e-4.</p> <p>RWC: Selected ecosystems, such as an aquarium, rotting log, terrarium, backyard, local pond or wetland, wood lot.</p>	<p>LEC-III.5.E.2: Describe the basic requirements for all living things to maintain their existence.</p>		
All students will investigate and explain how communities of living things change over a period of time:				
PLANTS AND ANIMALS	<p>KC: Needs of life—food, habitat, water, shelter, air, light, minerals.</p> <p>RWC: Ecosystems managed by humans, including farms, ranches, gardens, lawns, potted plants.</p>	<p>LEC-III.5.E.3: Design systems that encourage growing of particular plants or animals.</p>		
All students will explain how scientists construct and scientifically test theories concerning the origin of life an evolution of species.				
PLANTS AND ANIMALS	<p>KC: types of evidence—fossil, extinct, ancient, modern life forms. See EG-V.1.E.4 (rocks and fossils provide evidence of history of the earth).</p> <p>RWC: Common contexts—plant and animal fossils, museum dioramas and paintings/drawings of ancient life and/or habitats.</p>	<p>LE-III.4.E.1: Explain how fossils provide evidence about the nature of ancient life.</p>		

UNIT TITLE	CORE TOPICS (Key Concepts & Real World Contexts)	UNIT BENCHMARKS	SUGGESTED ASSESSMENT	POSSIBLE RESOURCES
All students will compare ways that living organisms are adapted (suited) to survive and reproduce in their environments and explain how species change through time:				
PLANTS AND ANIMALS	<p>KC: Characteristics – adaptation, instinct, learning, habit. Traits and their adaptive values – sharp teeth or claws for catching and killing prey, color for camouflage, behaviors.</p> <p>RWC: Common vertebrate adaptations, such as white polar bears, sharp claw and sharp canines for predators, changing and killing prey, color for camouflage, behaviors.</p>	LE-III.4.E.2: Explain how physical and behavioral characteristics of animals help them to survive in their environments.		
All students will describe and explain how the earth’s features change over time:				
PLANTS AND ANIMALS	<p>KC: Fossils, extinct plants and animals, ages of fossils, rock layers. See LE-III.4.E.1 (ancient life)</p> <p>RWC: Fossils found in gravel, mines, quarries, beaches, (Petosky stones), museum displays, Michigan examples of layered rocks; specific examples of extinct plants and animals, such as dinosaurs.</p>	EG-V.1.E.4: Explain how rocks and fossils are used to understand the history of the earth.		
All students will ask questions that help them learn about the world:				
ENVIRONMENTAL SCIENCE	<p>KC: Questions lead to action, including careful observation and testing; questions often begin with <i>“What happens if...?”</i> or <i>“How do these two things differ?”</i></p> <p>RWC: Any in the sections on Using Scientific Knowledge.</p>	C-I.1.E.1: Generate questions about the world based on observation.		

Science

Kindergarten

UNIT TITLE	CORE TOPICS (Key Concepts & Real World Contexts)	UNIT BENCHMARKS	SUGGESTED ASSESSMENT	POSSIBLE RESOURCES
All students will design and conduct investigations using appropriate methodology and technology:				
ENVIRONMENTAL SCIENCE	<p>KC: (K-2) gather information, ask questions, think</p> <p>RWC: Any in the sections on Using Scientific Knowledge.</p> <p>KC: Manipulate simple devices that aid observations and data collection.</p> <p>RWC: Any suggested in Using Scientific Knowledge benchmarks for which students would design and/or conduct investigations.</p> <p>KC: Measurement units—milliliters, liters, teaspoon, tablespoon, ounce, cup, millimeter, centimeter, meter, gram.</p> <p>RWC: Making simple mixtures, such as food, play dough, papier maché; measuring height of a person, weight of a ball.</p>	<p>C-I.1.E.2: Develop solutions to problems through reasoning, observation, and investigations.</p> <p>C-I.1.E.3: Manipulate simple devices that aid observation and data collection.</p> <p>C-I.1.E.4: Use simple measurement devices to make measurements in scientific investigations.</p>		<p>Measuring cups and spoons Measuring tape Balance or scale</p> <p>Various data collection tools suitable for this level, such as hand lenses, wind direction indicators, grids for sampling areas of the sky or landscape.</p>
All students will learn from books and other sources of information:				
ENVIRONMENTAL SCIENCE	<p>KC: Develop strategies and skills for information gathering and problem solving.</p> <p>RWC: Seeking help from or interviewing peers, adults, experts; using libraries, World Wide Web, CD's and other computer software, other sources.</p>	<p>C-I.1.E.5: Develop strategies and skills for information gathering and problem solving.</p>		<p>Sources of information, such as reference books, trade books, magazines, web sites, other peoples' knowledge.</p>
All students will communicate findings of investigations, using appropriate technology:				
ENVIRONMENTAL SCIENCE	<p>KC: Increase, decrease, no change, bar graph, data table.</p> <p>RWC: Examples of bar charts like those found in a newspaper.</p>	<p>C-I.1.E.6: Construct charts and graphs and prepare summaries of observations.</p>		<p>Graph paper Rulers Crayons</p>
All students will analyze claims for their scientific merit and explain how scientists decide what constitutes scientific knowledge:				
ENVIRONMENTAL SCIENCE	<p>KC: (K-2) observations</p> <p>RWC: Deciding whether an explanation is supported by evidence in simple experiments, or relies on personal opinion.</p>	<p>R-II.1.E.1: Develop an awareness of the need for evidence in making decisions scientifically.</p>		

Science

Kindergarten

UNIT TITLE	CORE TOPICS (Key Concepts & Real World Contexts)	UNIT BENCHMARKS	SUGGESTED ASSESSMENT	POSSIBLE RESOURCES
All students will show how science is related to other ways of knowing:				
ENVIRONMENTAL SCIENCE	<p>KC: Poetry, expository work, painting, drawing, music, diagrams, graphs, charts.</p> <p>RWC: Explaining simple experiments using paintings and drawings; describing natural phenomena scientifically and poetically.</p>	<p>R-II.1.E.2: Show how science concepts can be illustrated through creative expression such as language arts and fine arts.</p>		
All students will show how science and technology affect our society:				
ENVIRONMENTAL SCIENCE	<p>KC: Provide faster and farther transportation and communication, organize information and solve problems, save time.</p> <p>RWC: Cars, other machines, radios, telephones, computer games, calculators, appliances, e-mail, the World Wide Web.</p> <p>KC: Appreciation of the balance of nature and the effects organisms have on each other, including the effects humans have on the natural world.</p> <p>RWC: Any in the sections on Using Scientific Knowledge appropriate to elementary school</p>	<p>R-II.1.E.3: Describe ways in which technology is used in everyday life.</p> <p>R-II.1.E.4: Develop an awareness of and sensitivity to the natural world.</p>		
All students will show how people of diverse cultures have contributed to and influenced developments in science:				
ENVIRONMENTAL SCIENCE	<p>KC: Scientific contributions made by people of diverse cultures and backgrounds.</p> <p>RWC: Any in the sections on Using Scientific Knowledge appropriate to this benchmark.</p>	<p>R-II.1.E.5: Develop an awareness of contributions made to science by people of diverse backgrounds and cultures.</p>		
All students will analyze how humans and the environment interact:				
ENVIRONMENTAL SCIENCE	<p>KC: Human effects on the environment—garbage, habitat destruction, land management, renewable and non-renewable resources.</p> <p>RWC: Household wastes, school wastes, waste water treatment, habitat destruction due to community growth, reforestation projects, establishing parks or other green spaces, recycling.</p>	<p>LEC-III.5.E.4: Describe positive and negative effects of humans on the environment.</p>		

Science

Kindergarten

UNIT TITLE	CORE TOPICS (Key Concepts & Real World Contexts)	UNIT BENCHMARKS	SUGGESTED ASSESSMENT	POSSIBLE RESOURCES
All students will describe the earth's surface.				
ENVIRONMENTAL SCIENCE	<p>KC: Types of landforms— mountains, plains, valleys; bodies of water—rivers, oceans, lakes (see EH e-2); deserts.</p> <p>RWC: Examples of Michigan surface features, such as hills, valleys, rivers, waterfalls, Great Lakes; pictures of global land features, including mountains, deserts.</p>	EG-V.1.E.1: Describe major features of the earth's surface.		
All students will analyze effects of technology on the earth's surface and resources:				
ENVIRONMENTAL SCIENCE	<p>KC: Materials that can be recycled – paper, metal, glass, plastic. Conservation and anti-pollution activities – reduce, reuse, and recycle.</p> <p>RWC: Collections of recyclable materials, plans for recycling at home and school, composting, ways of reusing or reducing the use of paper.</p>	EG-V.1.E.6: Demonstrate ways to conserve natural resources and reduce pollution through reduction, reuse, and recycling of manufactured materials.		
All students will explain how electricity (and Magnetism) interacts with matter.				
HEALTH	<p>KC: Shock, wall outlet, hazards; see PME-IV.1.E.3 (electrical energy).</p> <p>RWC: Electric outlets, power lines, frayed electric cords, electric appliances, lightning, hair dryers in sinks and tubs.</p>	PME-IV.1.E.5: Describe possible electrical hazards to be avoided at home and at school.		
All students will analyze the relationships between human activities and the atmosphere.				
HEALTH	<p>KC: Safety precautions - safe locations, sirens, radio broadcasts, severe weather watch and warning.</p> <p>RWC: Examples of local severe weather, including thunderstorms, tornadoes, and blizzards, examples of local community safety precautions, including weather bulletins and tornado sirens.</p>	EAW-V.3.E.3: Explain appropriate safety precautions during severe weather.		

UNIT TITLE	CORE TOPICS (Key Concepts & Real World Contexts)	UNIT BENCHMARKS	SUGGESTED ASSESSMENT	POSSIBLE RESOURCES
All students will describe sound and sound waves.				
MUSIC	<p>KC: Properties: pitch – high, low. Loudness – loud, soft. RWC: Sound from common sources, such as musical instruments, radio, television, animal sounds, thunder, and human voices.</p> <p>KC: Vibration – fast, slow, large, small. RWC: Sound from common sources, such as musical instruments, radio, television, animal sounds, thunder, and human voices.</p>	<p>PWV.4.E.1: Describe sounds in terms of their properties.</p> <p>PWV.4.E.2: Explain how sounds are made.</p>		