



**KENOSHA UNIFIED SCHOOL DISTRICT NO. 1  
CURRICULUM AND INSTRUCTIONAL SERVICES  
STANDARDS AND BENCHMARKS  
SCIENCE**

<b>GRADE 5</b>
<b>STANDARD A: SCIENCE CONNECTIONS—STUDENTS WILL UNDERSTAND AND DESCRIBE THE UNIFYING CONCEPTS AND PROCESSES AMONG SCIENCE TOPICS WHICH LEAD TO CONNECTIONS BETWEEN PHYSICAL SCIENCE, EARTH/SPACE SCIENCE, AND LIFE SCIENCE.</b>
<b>A-1: Systems</b> In something that consists of many parts, the parts usually influence one another. Something may not work as well (or at all) if a part of it is missing, broken, worn out, mismatched, or misconnected.
<b>A-2: Models</b> <i>Seeing how a model works after changes are made to it may suggest how the real thing would work if the same were done to it.</i>  <i>Geometric figures, sketches, number lines, maps, and stories can be used to represent objects, events, and processes in the real world, although such representations can never be exact in every detail.</i>
<b>A-3: Change and Constancy</b> <i>Some features of things may stay the same even when other features change.</i>  <i>Things change in steady, repetitive, or irregular ways—or sometimes in more than one way at the same time. Often the best way to tell which kinds of change are happening is to make a table or graph of measurements.</i>
<b>A-4: Scale</b> Almost anything has limits on how big or small it can be.  Finding out what the biggest and the smallest possible values of something are often as revealing as knowing what the usual value is.
<b>A-5: Connections</b> The study of earth and space science, life and environmental science, and physical science are interconnected by unifying themes.

<b>STANDARD B: NATURE OF SCIENCE—STUDENTS WILL UNDERSTAND THAT THE STUDY OF SCIENCE IS ONGOING, AND THEORIES AND CONCEPTS IN SCIENCE CHANGE OVER TIME AS NEW EVIDENCE IS FOUND. SCIENTIFIC EXPLANATIONS MUST ADHERE TO CRITERIA SUCH AS: A PROPOSED EXPLANATION MUST BE LOGICALLY CONSISTENT, IT MUST ABIDE BY THE RULES OF EVIDENCE, IT MUST BE OPEN TO QUESTIONS AND POSSIBLE MODIFICATION, AND IT MUST BE BASED ON HISTORICAL AND CURRENT SCIENTIFIC KNOWLEDGE.</b>
<b>B-1: Science is a Human Endeavor, and There are Many Commonly Known Careers in Science.</b> <i>Men and women from many cultures have contributed to science and technology throughout history, but much more remains to be understood. Science will never be finished.</i>  <i>Many people choose science as a career and devote their lives to studying it.</i>  In science it is helpful to work with a team and share findings with others.
<b>B-2: Nature of Scientific Process and Knowledge</b> <i>Science is based on questions.</i>  <i>The job of a scientist is to construct ideas and explanations.</i>

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*Scientific knowledge may change when new things are learned.*

*Science experiments will usually work the same way when repeated under similar conditions.*

*Scientists make the results of their investigations public; they describe the investigations in ways that enable others to repeat the investigations.*

*Scientists use different kinds of investigations depending on the questions they are trying to answer.*

**B-3: History of Science**

(No Fifth Grade Benchmarks)

**STANDARD C: SCIENCE INQUIRY—STUDENTS WILL INVESTIGATE QUESTIONS USING SCIENTIFIC METHODS AND TOOLS, REVISE THEIR PERSONAL UNDERSTANDING TO ACCOMMODATE KNOWLEDGE, AND COMMUNICATE THOSE UNDERSTANDINGS TO OTHERS.**

**C-1: Ask Questions about Objects, Organisms, and Events in the Everyday World.**

*Identify, formulate and clarify questions that can be answered through scientific investigations using appropriate equipment and resources.*

**C-2: Make Connections to Prior Knowledge.**

*Use prior knowledge and investigations to make predictions and help answer the question being investigated.*

**C-3: Gather Background Knowledge Related to the Questions Being Investigated.**

*Locate and access data and scientific knowledge in age-appropriate information sources and reference materials. (See English/ Language Arts and Information and Technology Literacy Standards.)*

**C-4: Design and Conduct Responsible and Safe Investigations to Help Answer Questions.**

*Demonstrate knowledge of age-appropriate safe laboratory procedures.*

*Design, plan, and conduct investigations that involve logical data collection, accurate measurements, and identifying, controlling, and changing variables.*

**C-5: Safely Use Appropriate Senses, Equipment and Tools to Make Observations and Gather Data.**

*Determine which metric measuring tool is the most appropriate to use for data gathering when answering a question or planning an investigation, and use the measuring tool appropriately.*

*Identify when to use an appropriate standard metric unit of length, liquid capacity, mass, time, and temperature. (See Math D-3.)*

**C-6: Collecting and Representing Qualitative and Quantitative Data**

(See Math Standard E.)

*Collect, compare, and organize observations and results in a journal, record sheet, response sheet, calendar, or by using media and technology appropriate to purpose and content.*

*Create and interpret bar graphs, line graphs, tables, and charts to organize and analyze data.*

**C-7: Summarizing, Synthesizing, Inferring, and Building Explanations**

*Analyze, interpret, and summarize data to determine patterns and representative values, cause and effect, and the data's usefulness for building explanations and asking new questions.*

*Compare results and explanations to known science concepts, models, or theories.*

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*Interpret bar graphs, line graphs, tables, and charts to look for errors and make predictions.*

**C-8: Communicating Results**

*Report the results of scientific investigations by using precise vocabulary to complete an appropriate lab report, journal, or response sheet or by using media and technology appropriate to purpose and content.*

*Receive critical response from peers, defend the validity of the experimental design and results, and revise methods and explanations.*

**STANDARD D: PHYSICAL SCIENCE —STUDENTS WILL DEMONSTRATE AN UNDERSTANDING OF THE PHYSICAL AND CHEMICAL PROPERTIES OF MATTER, THE FORMS AND PROPERTIES OF ENERGY, AND THE WAYS IN WHICH MATTER AND ENERGY INTERACT.**

**D-1: Properties of Matter**

*Objects and materials have many observable and measurable properties such as color, size, shape, mass, weight, texture, hardness, flexibility, reactivity with other materials, etc.*

*Objects and materials can be sorted and ordered in terms of their properties.*

*Solids, liquids, and gases have different properties.*

**D-2: Structure of Matter**

*All things are made of matter, which can exist as solids, liquids, or gases and some materials are mixtures of different types of matter.*

Air is a gas that surrounds us and takes up space.

*Living things are made of matter and have properties.*

*Materials may be composed of parts that are too small to be seen without magnification.*

**D-3: Physical, Chemical and Nuclear Changes in Matter**

*Heating and cooling cause changes in the properties of materials and may cause the material to change state.*

*When a solid dissolves in a liquid, a physical change has occurred.*

*Many kinds of changes occur faster under hotter conditions.*

When a new material is made by combining two or more materials, it has properties that are different from the original materials.

Chemical reactions occur all around us.

**D-4: Position and Motion of Objects**

*The motion of an object can be described by its position, direction of motion, and speed. That motion can be measured and represented on a graph.*

**D-5: Forces of Nature**

The earth's gravity pulls any object toward it without touching it.

**D-6: Interactions of Energy and Matter**

Heat can be produced in many ways, such as burning, rubbing, or mixing one substance with another.

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**D-7: Conservation of Energy**  
(No Fifth Grade Benchmarks)

**STANDARD E: EARTH SCIENCE—STUDENTS WILL DEMONSTRATE AN UNDERSTANDING OF THE STRUCTURE AND SYSTEMS OF EARTH AND THE UNIVERSE AND OF THEIR INTERACTIONS.**

**E-1: Properties and Structures of the Earth and its Materials**

*Water is a very important earth material that can be liquid, solid, or gas and can be made to change from one form to another.*

Air surrounds us and can move and cause changes.

*A landform is a shape of the earth's surface.*

**E-2: History and Changes of the Earth**

*The surface of the earth changes. Some changes are due to slow processes, such as erosions and weathering, and some changes are due to rapid processes, such as landslides, volcanic eruptions, and earthquakes.*

*Waves, wind, water, and ice shape and re-shape the earth's land surface by eroding rock and soil in some areas and de-positing them in other areas.*

Fossils provide evidence about the plants and animals that lived long ago and the nature of the environment at that time.

**E-3: Cycles in the Earth System**

(No Fifth Grade Benchmarks)

**E-4: The Earth, Our Solar System, and Space**

Things on or near the earth are pulled toward it by the earth's gravity.

The earth is approximately spherical in shape. The rotation of the earth on its axis every 24 hours produces the night and day cycle.

The number of stars that can be seen through telescopes is dramatically greater than can be seen by the unaided eye.

The earth is one of several planets that orbit the sun, and the moon orbits around the earth.

Stars are like the sun, some being smaller and some larger, but so far away that they look like points of light.

The sun appears to move across the sky in the same way every day, but its path changes slowly over the seasons.

**STANDARD F: LIFE AND ENVIRONMENTAL SCIENCE —STUDENTS WILL DEMONSTRATE AN UNDERSTANDING OF THE CHARACTERISTICS AND STRUCTURES OF LIVING THINGS, THE PROCESSES OF LIFE, AND HOW LIVING THINGS INTERACT WITH ONE ANOTHER AND THEIR ENVIRONMENT.**

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**F-1: Characteristics, Structure, and Function in Living Things**

*Each kind of living thing has unique structures and behaviors, but different kinds of living things can have similar structures and behaviors.*

*Living things have structures and behaviors that help them live in different environments.*

*Living things have basic needs: food, water, air, light, and an appropriate environment in which to live.*

*The behaviors of living things are influenced by internal and external cues.*

Living things can be sorted into groups using a variety of characteristics.

**F-2: Life Cycles and Heredity of Living Things**

(No Fifth Grade Benchmarks)

**F-3: Organisms, Populations, and Ecosystems**

*Living things are found almost everywhere in the world, and different environments support the life of different types of organisms.*

*The behavior of living things is influenced by conditions in the environment.*

*An organism's behavior can help it survive in a changing environment.*

*Organisms interact with one another in various ways.*

*When the environment changes, some living things survive and others die or move to new locations.*

All organisms (including humans) cause changes in the environment.

**F-4: Matter and Energy in Living Systems**

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 and decaying and new organisms are being produced.

Some source of energy is needed for organisms to live and grow.

**STANDARD G: SCIENCE APPLICATIONS—STUDENTS WILL DEMONSTRATE AN UNDERSTANDING OF THE RELATIONSHIP BETWEEN SCIENCE AND TECHNOLOGY AND THE WAYS IN WHICH THAT RELATIONSHIP INFLUENCES HUMAN ACTIVITIES.**

**G-1: The Process of Technological Design**

*Explain a simple problem; propose a product or design to solve the problem; implement the proposed solution; evaluate the product or design; and communicate the problem, design, and solution.*

**G-2: Abilities to Distinguish Between Natural Objects and Objects Made by Humans**

*Some objects occur in nature; others have been designed and made by people to solve human problems and enhance the quality of life.*

**G-3: Understanding About Science and Technology**

*People have always invented tools and ways of doing things to solve problems, but most tools of today are modifications of tools from the past.*

*Tools are used to do things better or more easily and to do some things that could not otherwise be done at all. Tools are used to observe, measure, and make things.*

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*Scientists and engineers often work together in teams to solve problems and develop new technology.*

**STANDARD H: SCIENCE IN SOCIAL AND PERSONAL PERSPECTIVES—STUDENTS WILL USE SCIENCE INFORMATION AND SKILLS TO MAKE INFORMED DECISIONS ABOUT THEMSELVES, THEIR COMMUNITY, AND THE WORLD IN WHICH THEY LIVE.**

**H-1: Personal and Community Health**

(No Fifth Grade Benchmarks)

**H-2: Human Population Growth**

Human populations are groups of people living in a particular location.

The size of a population can increase or decrease.

**H-3: Types of Resources**

*Resources are things we get from the living and nonliving environment to meet the needs and wants of a population.*

*Some resources are basic materials, such as air, water, and soil; some are produced from basic resources, such as food, fuel and building materials.*

*The supply of many resources is limited, but their availability can be extended through recycling and decreased use.*

**H-4: Quality of and Changes in Environments**

*Environments are the space, conditions, and factors that affect an individual's and a population's ability to survive and their quality of life.*

*Changes in environments can be natural or influenced by humans. Some changes are good; and some, like pollution, can influence the health, survival, or activities of living things, including humans.*

*Some environmental changes occur slowly, and others occur rapidly.*

**H-5: Science and Technology in Society**

*Science and technology have improved our food quality and quantity, transportation, health, sanitation, and communication; but these benefits are not equally available to all people in the world.*