

MAYWOOD PUBLIC SCHOOL

Science Curriculum

Science Philosophy

Science is essential for helping students understand, evaluate, and apply scientific inquiry and principles at increasingly higher levels of sophistication. The study of science improves students' competencies across all areas of the school's curriculum.

Science Exit Outcomes

By the end of the twelfth grade, students at Maywood Public School will be able to...

1. Develop and apply an understanding of science through the use of scientific inquiry and technology.
2. Develop and apply an understanding of physical science through the study of matter, force, motion, and energy.
3. Develop and apply an understanding of life science through an evaluation of living systems and their major influence, heredity.
4. Develop and apply an understanding of ecosystems and biodiversity.
5. Develop an understanding of space, its major components and Earth's role within the Universe.
6. Develop and apply an understanding of Earth's structures, processes, and history.

Science Strands

1. Inquiry, The Nature of Science, and Technology
 - A. Abilities to do Scientific Inquiry
 - B. Nature of Science
 - C. Technology
2. Physical Science
 - A. Matter
 - B. Force and Motion
 - C. Energy
3. Life Science
 - A. Structure and Function of Living Systems
 - B. Heredity
 - C. Flow of Matter and Energy in Ecosystems
 - D. Biodiversity

4. Earth and Space Sciences
 - A. Earth in Space
 - B. Earth Structures and Processes
 - C. Energy in Earth's System
 - D. Earth's History

Nebraska State Science Standards

Kindergarten-2nd Grade

Inquiry, The Nature of Science, and Technology

- 2.1.1.a Ask questions that relate to a science topic
- 2.1.1.b Conduct simple investigations.
- 2.1.1.c Select and use simple tools appropriately.
- 2.1.1.d Describe objects, organisms, or events using pictures, words, and numbers.
- 2.1.1.e Collect and record observations.
- 2.1.1.f Use drawings and words to describe and share observations with others.
- 2.1.1.g Use appropriate mathematics in all aspects of scientific inquiry.

Physical Science

- 2.2.1.a Observe physical properties of objects (e.g., freezing and melting, sinking and floating, color, size, texture, shape, weight).
- 2.2.1.b Separate and sort objects by physical attributes.
- 2.2.1.c Measure objects using standard and non-standard units.
- 2.2.1.d Identify solids and liquids and recognize that liquids take the shape of their container.
- 2.2.2.a State location and/or motion relative to another object or its surroundings (e.g., in front of, behind, between, over, under, faster, slower, forward and backward, up and down).
- 2.2.2.b Describe how objects move in many different ways (straight, zigzag, round and round, back and forth, fast and slow).

Life Science

- 2.3.1.a Differentiate between living and non-living things.
- 2.3.1.b Identify the basic needs of living things (e.g., food, water, air, space, shelter).
- 2.3.1.c Identify external parts of plants and animals.
- 2.3.1.d Observe and match plants and animals to their distinct habitats.
- 2.3.2.a Describe how offspring resemble their parents.
- 2.3.2.b Describe how living things change as they grow.

2.3.4.a Recognize seasonal changes in animals and plants.

Earth and Space Sciences

2.4.1.a Identify objects in the sky (e.g., sun., moon, stars).

2.4.1.b Identify objects that appear to move in the sky (e.g., sun, moon, stars).

2.4.2.a Describe Earth materials (e.g., sand, soil, rocks, water).

2.4.2.b Recognize ways in which individuals and families can conserve Earth's resources by reducing, reusing, and recycling.

2.4.3.a Observe that the sun provides heat and light.

2.4.3.b Observe and describe simple daily changes in weather.

2.4.3.c Describe simple seasonal weather indicators and how they impact student choices (e.g., activities, clothing).

3rd-5th Grades

Inquiry, The Nature of Science, and Technology

5.1.1.a Ask testable scientific questions.

5.1.1.b Plan and conduct investigations and identify factors that have the potential to impact an investigation.

5.1.1.c Select and use equipment correctly and accurately.

5.1.1.d Make relevant observations and measurements.

5.1.1.e Collect and organize data.

5.1.1.f Develop a reasonable explanation based on collected data.

5.1.1.g Share information, procedures, and results, with peers and/or adults.

5.1.1.h Provide feedback on scientific investigations.

5.1.1.i Use appropriate mathematics in all aspects of scientific inquiry.

5.1.2.a Recognize that scientific explanations are based on evidence and scientific knowledge.

5.1.2.b Recognize that new discoveries are always being made which impact scientific knowledge.

5.1.2.c Recognize many different people study science.

5.1.3.a Identify a simple problem.

5.1.3.b Propose a solution to a simple problem.

5.1.3.c Implement the proposed solution.

5.1.3.d Evaluate the implementation.

5.1.3.e Communicate the problem, design, and solution.

Physical Science

5.2.1.a Identify mixtures and pure substances.

5.2.1.b Identify physical properties of matter (e.g., color, odor, elasticity, weight, volume).

5.2.1.c Use appropriate metric measurements to describe physical properties.

- 5.2.1.d Identify state changes caused by heating and cooling solids, liquids, and gases.
- 5.2.2.a Describe motion by tracing and measuring an object's position over a period of time (e.g., speed).
- 5.2.2.b Describe changes in motion due to outside forces (e.g., push, pull, gravity).
- 5.2.2.c Describe magnetic behavior in terms of attraction and repulsion.
- 5.2.3.a Recognize that sound is produced from vibrating objects; the sound can be changed by changing the vibration.
- 5.2.3.b Recognize that light travels in a straight line and can be reflected by an object (e.g., mirror).
- 5.2.3.c Recognize that light can travel through certain materials and not others (e.g., transparent, translucent, opaque).
- 5.2.3.d Identify ways to generate heat (e.g., friction, burning, incandescent light bulb).
- 5.2.3.e Identify materials that act as thermal conductors or insulators.
- 5.2.3.f Recognize that the transfer of electricity in an electrical circuit requires a closed loop.

Life Science

- 5.3.1.a Compare and contrast characteristics of living and non-living things.
- 5.3.1.b Identify how parts of plants and animals function to meet basic needs (e.g., leg of an insect helps an insect move, root of a plant helps the plant obtain water).
- 5.3.2.a Identify inherited characteristics of plants and animals.
- 5.3.2.b Identify the life cycle of an organism.
- 5.3.3.a Diagram and explain a simple food chain beginning with the sun.
- 5.3.3.b Identify the role of producers, consumers, and decomposers in an ecosystem.
- 5.3.3.c Recognize the living and non-living factors that impact the survival of organisms in an ecosystem.
- 5.3.3.d Recognize all organisms cause changes, some beneficial and some detrimental, in the environment where they live.
- 5.3.4.a Describe adaptations made by plants or animals to survive environmental changes.

Earth and Space Science

- 5.4.1.a Recognize that the observed shape of the moon changes from day to day during a one month period.
- 5.4.1.b Recognize the motion of objects in the sky (e.g., sun, moon, stars) change over time in recognizable patterns.
- 5.4.2.a Describe the characteristics of rocks, minerals, soil, water, and the atmosphere.
- 5.4.2.b Identify weathering, erosion, and deposition as processes that build up or break down Earth's surface.
- 5.4.2.c Identify how Earth materials are used (e.g., fuels, building materials, sustaining plant life).
- 5.4.3.a Describe the sun's warming effect on the land and water.
- 5.4.3.b Observe, measure, and record changes in weather (e.g., temperature, wind direction and speed, precipitation).
- 5.4.3.c Recognize the differences between weather, climate, and seasons.
- 5.4.4.a Describe how slow processes (e.g., erosion, weathering, deposition) and rapid processes (e.g., landslides, volcanic eruptions, earthquakes) change Earth's surface.

6th-8th Grades

Inquiry, The Nature of Science, and Technology

- 8.1.1.a Formulate testable questions that lead to predictions and scientific investigations.
- 8.1.1.b Design and conduct logical and sequential investigations including repeated trials.
- 8.1.1.c Determine controls and use dependent (responding) and independent (manipulated) variables.
- 8.1.1.d Select and use equipment appropriate to the investigation, and demonstrate correct techniques.
- 8.1.1.e Make qualitative and quantitative observations.
- 8.1.1.f Record and represent data appropriately and review for quality, accuracy, and relevancy.
- 8.1.1.g Evaluate predictions, draw logical inferences based on observed patterns/relationships, and account for non-relevant information.
- 8.1.1.h Share information, procedures, results and conclusions with appropriate audiences.
- 8.1.1.i Analyze and provide appropriate critique of scientific investigations.
- 8.1.1.j Use appropriate mathematics in all aspects of scientific inquiry.
- 8.1.2.a Recognize science is an ongoing process and the scientific community accepts and uses explanations until they encounter new experimental evidence not matching existing explanations.
- 8.1.2.b Describe how scientific discoveries influence and change society.
- 8.1.2.c Recognize scientists from various cultures have made many contributions to explain the natural world.
- 8.1.3.a Identify problems for technical design.
- 8.1.3.b Design a solution or product.
- 8.1.3.c Implement the proposed design.
- 8.1.3.d Evaluate completed technological design or products.
- 8.1.3.e Communicate the process of technical design.
- 8.1.3.f Distinguish between scientific inquiry (e.g., asking questions about the natural world) and technological design (e.g., using science to solve practical problems).
- 8.1.3.g Describe how science and technology are reciprocal.
- 8.1.3.h Recognize that solutions have intended and unintended consequences.
- 8.1.3.i Compare and contrast the reporting of scientific knowledge and the reporting of technological knowledge.

Physical Science

- 8.2.1.a Compare and contrast elements, compounds, and mixtures.
- 8.2.1.b Describe physical and chemical properties of matter.
- 8.2.1.c Recognize most substances can exist as a solid, liquid, or gas depending on temperature.
- 8.2.1.d Compare and contrast solids, liquids, and gases based on properties of these states of matter.
- 8.2.1.e Distinguish between physical and chemical changes (e.g., phase changes, dissolving, burning, rusting).
- 8.2.1.f Recognize conservation of matter in physical and chemical changes.
- 8.2.1.g Classify substances into similar groups based on physical properties.
- 8.2.2.a Describe motion of an object by its position and velocity.

- 8.2.2.b Recognize an object that is not being subjected to a force will continue to move at a constant speed in a straight line or stay at rest (Newton's 1st Law).
- 8.2.2.c Compare the motion of objects related to the effects of balanced and unbalanced forces.
- 8.2.2.d Recognize that everything on or around Earth is pulled toward Earth's center by gravitational force.
- 8.2.3.a Recognize that vibrations set up wave-like disturbances that spread away from the source (e.g., sound, seismic, water waves).
- 8.2.3.b Identify that waves move at different speeds in different materials.
- 8.2.3.c Recognize that light interacts with material by transmission (including refraction), absorption, or scattering (including reflection).
- 8.2.3.d Recognize that to see an object, light from the surface of the object must enter the eye; the color seen depends on the properties of the surface and the color of the available light sources.
- 8.2.3.e Recognize that heat moves from warmer objects to cooler objects until both reach the same temperature.
- 8.2.3.f Describe transfer of energy from electrical and magnetic sources to different energy forms (e.g., heat, light, sound, chemical).
- 8.2.3.g Recognize all energy is neither created nor destroyed.

Life Science

- 8.3.1.a Recognize the levels of organization in living organisms (e.g., cells, tissues, organs, organ systems, organisms).
- 8.3.1.b Recognize that all organisms are composed of one or many cells; that these cells must grow, divide, and use energy; and that all cells function similarly.
- 8.3.1.c Recognize specialized cells perform specialized functions in multicellular organisms.
- 8.3.1.d Identify the organs and functions of the major systems of the human body and describe ways that these systems interact with each other.
- 8.3.1.e Describe how plants and animals respond to environmental stimuli.
- 8.3.2.a Recognize that hereditary information is contained in genes within the chromosomes of each cell.
- 8.3.2.b Compare and contrast sexual and asexual reproduction.
- 8.3.3.a Diagram and explain the flow of energy through a simple food web.
- 8.3.3.b Compare the roles of producers, consumers, and decomposers in the ecosystem.
- 8.3.3.c Recognize that producers transform sunlight into chemical energy through photosynthesis.
- 8.3.3.d Determine the biotic and abiotic factors that impact the number of organisms an ecosystem can support.
- 8.3.3.e Recognize a population is all the individuals of a species as a given place and time.
- 8.3.3.f Identify symbiotic relationships among organisms.
- 8.3.3.g Identify positive and negative effects of natural and human activity on an ecosystem.
- 8.3.4.a Describe how an inherited characteristic enables an organism to improve its survival rate.
- 8.3.4.b Recognize the extinction of a species is caused by the inability to adapt to an environmental change.
- 8.3.4.c Use anatomical features of an organism to infer similarities among other organisms.

Earth and Space Science

- 8.4.1.a Describe the components of the solar system, (e.g., sun, planets, moons, asteroids, comets).
- 8.4.1.b Describe the relationship between motion of objects in the solar system and the phenomena of day, year, eclipse, phases of the moon and seasons.
- 8.4.1.c Describe the effects of gravity on Earth (e.g., tides) and the effect of gravity on objects in the solar system.
- 8.4.2.a Describe the layers of Earth (e.g., core, mantle, crust, atmosphere).
- 8.4.2.b Describe the physical composition of soil.

- 8.4.2.c Describe the mixture of gases on Earth's atmosphere and how the atmosphere's properties change at different elevations.
- 8.4.2.d Describe evidence of Earth's magnetic field.
- 8.4.2.e Compare and contrast constructive and destructive forces (e.g., deposition, erosion, weathering, plate motion causing uplift, volcanoes, earthquakes) that impact Earth's surface.
- 8.4.2.f Describe the rock cycle.
- 8.4.2.g Describe the water cycle (e.g., evaporation, condensation, precipitation).
- 8.4.2.h Classify Earth materials as renewable or non-renewable.
- 8.4.3.a Describe how energy from the sun influences the atmosphere and provides energy for plant growth.
- 8.4.3.b Identify factors that influence daily and seasonal changes on Earth (e.g., tilt of the Earth, humidity, air pressure, air masses).
- 8.4.3.c Describe atmospheric movements that influence weather and climate (e.g., air masses, jet stream).
- 8.4.4.a Recognize that Earth processes we see today are similar to those that occurred in the past (uniformity of processes).
- 8.4.4.b Describe how environmental conditions have changed through the use of fossil record.

9th-12th Grades

Inquiry, The Nature of Science, and Technology

- 12.1.1.a Formulate a testable hypothesis supported by prior knowledge to guide an investigation.
- 12.1.1.b Design and conduct logical and sequential scientific investigations with repeated trials and apply findings to new investigations.
- 12.1.1.c Identify and manage variables and constraints.
- 12.1.1.d Select and use lab equipment and technology appropriately and accurately.
- 12.1.1.e Use tools and technology to make detailed qualitative and quantitative observations.
- 12.1.1.f Represent and review collected data in a systemic, accurate, and objective manner.
- 12.1.1.g Analyze and interpret data, synthesize ideas, formulate and evaluate models, and clarify concepts and explanations.
- 12.1.1.h Use results to verify or refute a hypothesis.
- 12.1.1.i Propose and/or evaluate possible revisions and alternate explanations.
- 12.1.1.j Share information, procedures, results, conclusions, and defend findings to a scientific community (e.g., peers, scientific fair audience, policy makers).
- 12.1.1.k Evaluate scientific investigations and offer revisions and new ideas as appropriate.
 - 12.1.1.l Use appropriate mathematics in all aspects of scientific inquiry.
- 12.1.2.a Recognize that scientific explanations must be open to questions, possible modifications, and must be based upon historical and current scientific knowledge.
- 12.1.2.b Describe how society influences the work of scientists and how science, technology, and current scientific discoveries influence and change society.
- 12.1.2.c Recognize that the work of science results in incremental advances, almost always building on prior knowledge, in our understanding of the world.
- 12.1.2.d Research and describe the difficulties experienced by scientific innovators who had to overcome commonly held beliefs of their times to reach conclusions that we now take for granted.
- 12.1.3.a Propose designs and choose between alternative solutions of a problem.
- 12.1.3.b Assess the limits of a technical design.
- 12.1.3.c Implement the selected solution.
- 12.1.3.d Evaluate the solution can its consequences.

- 12.1.3.e Communicate the problem, process, and solution.
- 12.1.3.f Compare and contrast the reasons for the pursuit of science and the pursuit of technology.
- 12.1.3.g Explain how science advances with the introduction of new technology.
- 12.1.3.h Recognize creativity, imagination, and a good knowledge base are all needed to advance the work of science and engineering.

Physical Science

- 12.2.1.a Recognize bonding occurs when outer electrons are transferred (ionic) or shared (covalent).
- 12.2.1.b Describe the energy transfer associated with phase changes between solids, liquids, and gases.
- 12.2.1.c Describe the three normal states of matter (solid, liquid, gas) in terms of energy, particle arrangement, particle motion, and strength of bond between molecules.
- 12.2.1.d Recognize a large number of chemical reactions involve the transfer of either electrons (oxidation/reduction) or hydrogen ions (acid/base) between reacting ions, molecules, or atoms.
- 12.2.1.e Identify factors affecting rates of chemical reactions (e.g., temperature, particle size, surface area).
- 12.2.1.f Recognize the charges and relative locations of subatomic particles (e.g., neutrons, protons, electrons).
- 12.2.1.g Describe properties of atoms, ions, and isotopes.
- 12.2.1.h Describe the organization of the periodic table of elements with respect to patterns of physical and chemical properties.
- 12.2.2.a Describe motion with respect to displacement and acceleration.
- 12.2.2.b Describe how the law of inertia (Newton's 1st Law) is evident in a real-world event.
- 12.2.2.c Make predictions based on relationships among net force, mass, and acceleration (Newton's 2nd Law).
- 12.2.2.d Recognize that all forces occur in equal and opposite pairs (Newton's 3rd Law).
- 12.2.2.e Describe how Newton's 3rd Law of motion is evident in a real-world event.
- 12.2.2.f Describe gravity as a force that each mass exerts on another mass, which is proportional to the masses and the distance between them.
- 12.2.2.g Recognize that an attractive or repulsive electric force exists between two charged particles and that this force is proportional to the magnitude of the charges and the distance between them.
- 12.2.3.a Describe mechanical wave properties (e.g., speed, wavelength, frequency, amplitude) and how waves travel through a medium.
- 12.2.3.b Recognize that the energy in waves can be changed into other forms of energy.
- 12.2.3.c Recognize that light can behave as a wave (diffraction and interference).
- 12.2.3.d Distinguish between temperature (a measure of the average kinetic energy of atomic or molecular motion) and heat (the quantity of thermal energy that transfers due to a change in temperature).
- 12.2.3.e Compare and contrast methods of heat transfer and the interaction of heat with matter via conduction, convection, and radiation.
- 12.2.3.f Recognize that the production of electromagnetic waves is a result of changes in the motion of charges or by a changing magnetic field.
- 12.2.3.g Compare and contrast segments of the electromagnetic spectrum (e.g., radio, micro, infrared, visible, ultraviolet, x-rays, gamma) based on frequency and wavelength.
- 12.2.3.h Recognize that nuclear reactions (e.g., fission, fusion, radioactive decay) convert a fraction of the mass of interacting particles into energy, and this amount of energy is much greater than the energy in chemical interactions.
- 12.2.3.i Interpret the law of conservation of energy to make predictions for the outcome of an event.
- 12.2.3.j Identify that all energy can be considered to be either kinetic, potential, or energy contained by a field (e.g., electromagnetic waves).
- 12.2.3.k Identify endothermic and exothermic reactions.

Life Science

- 12.3.1.a Identify the complex molecules (e.g., carbohydrates, lipids, proteins, nucleic acids) that make up a living organism.
- 12.3.1.b Identify the form and function of sub-cellular structures that regulate cellular activities.
- 12.3.1.c Describe the cellular functions of photosynthesis, respiration, cell division, protein synthesis, transport of materials, and energy capture/release.
- 12.3.1.d Describe how an organism senses changes in its internal or external environment and responds to ensure survival.
- 12.3.2.a Identify that information passed from parents to offspring is coded in DNA molecules.
- 12.3.2.b Describe the basic structure of DNA and its function in genetic inheritance.
- 12.3.2.c Recognize how mutations could help, harm, or have no effect on individual organisms.
- 12.3.2.d Describe that sexual reproduction results in largely predictable, variety of possible gene combinations in the offspring of any two parents.
- 12.3.3.a Explain how the stability of an ecosystem is increased by biological diversity.
- 12.3.3.b Recognize that atoms and molecules cycle among living and non-living components of the biosphere.
- 12.3.3.c Explain how distribution and abundance of different organisms in ecosystems are limited by the availability of matter and energy and the ability of the ecosystem to recycle materials.
- 12.3.3.d Analyze factors which may influence environmental quality.
- 12.3.4.a Identify different types of adaptations necessary for survival (e.g., morphological, physiological, behavioral).
- 12.3.4.b Recognize that the concept of biological evolution is a theory which explains the consequences of the interactions of: (1) the potential for a species to increase its members, (2) the genetic variability of offspring due to mutation and recombination of genes, (3) a finite supply of the resources required for life, and (4) the ensuing selection by the environment of those offspring better able to survive and leave offspring.
- 12.3.4.c Explain how natural selection provides a scientific explanation of the fossil record and the molecular similarities among the diverse species of living organisms.
- 12.3.4.d Apply the theory of biological evolution to explain diversity of life over time.

Earth and Space Science

- 12.4.1.a Describe the formation of the universe using the Big Bang Theory.
- 12.4.1.b Recognize that stars, like the sun, transform matter into energy by nuclear reactions which leads to the formation other elements.
- 12.4.1.c Describe stellar evolution.
- 12.4.2.a Recognize how Earth materials move through geochemical cycles (e.g., carbon, nitrogen, oxygen) resulting in chemical and physical changes in matter.
- 12.4.2.b Describe how heat convection in the mantle propels the plates comprising Earth's surface across the face of the globe (e.g., plate tectonics).
- 12.4.2.c Evaluate the impact of human activity and natural causes on Earth's resources (e.g., groundwater, rivers, land, fossil fuels).
- 12.4.3.a Describe how radiation, conduction, and convection transfer heat in Earth's systems.
- 12.4.3.b Identify internal and external sources of heat energy in Earth's systems.
- 12.4.3.c Compare and contrast benefits of renewable and non-renewable energy sources.
- 12.4.3.d Describe natural influences (e.g., Earth's rotation, mountain ranges, oceans, differential heating) on global climate.
- 12.4.4.a Recognize that in any sequence of sediments or rocks that has not been overturned, the youngest sediments or rocks are at the top of the sequence and the oldest are at the bottom (Law of Superposition)
- 12.4.4.b Interpret Earth's history by observing rock sequences, using fossils to correlate the sequences at various locations, and using data from radioactive dating methods.

12.4.4.c Compare and contrast the physical and biological differences in the early Earth with the planet we live on today.

Science Curriculum Matrix

By the end of the twelfth grade, students at Maywood Public School will be able to....

1. Inquiry, The Nature of Science, and Technology

Identifier	Objective														Science 7	Science 8	Physical Science	Biology	General Science	Anatomy	Chemistry	Physics
		K	1st	2nd	3rd	4th	5th	6th	Science 7	Science 8	Physical Science	Biology	General Science	Anatomy	Chemistry	Physics						
1.1	Ask questions that relate to a science topic. (2.1.1.a)	<i>I</i>	<i>D</i>	<i>M</i>																		
1.2	Conduct simple investigations. (2.1.1.b)	<i>I</i>	<i>D</i>	<i>M</i>																		
1.3	Select and use simple tools appropriately. (2.1.1.c)	<i>I</i>	<i>D</i>	<i>M</i>																		
1.4	Describe objects, organisms, or events using pictures, words, and numbers. (2.1.1.d)	<i>I</i>	<i>D</i>	<i>M</i>																		
1.5	Collect and record observations. (2.1.1.e)	<i>I</i>	<i>D</i>	<i>M</i>																		
1.6	Use drawings and words to describe and share observations with others. (2.1.1.f)	<i>I</i>	<i>D</i>	<i>M</i>																		
1.7	Use appropriate mathematics in all aspects of scientific inquiry. (2.1.1.g; 5.1.1.i; 8.1.1.j; 12.1.1.l)		<i>I</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>M</i>	<i>M</i>	<i>M</i>	<i>M</i>						
1.8	Ask testable scientific questions. (5.1.1.a)				<i>I</i>	<i>D</i>	<i>M</i>															
1.9	Plan and conduct investigations and identify factors that have the potential to impact an investigation. (5.1.1.b)				<i>I</i>	<i>D</i>	<i>M</i>															
1.10	Select and use equipment correctly and accurately. (5.1.1.c)	<i>I</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>M</i>															
1.11	Make relevant observations and measurements. (5.1.1.d)	<i>I</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>M</i>															
1.12	Collect and organize data. (5.1.1.e)			<i>I</i>	<i>D</i>	<i>M</i>																
1.13	Develop a reasonable explanation based on collected data. (5.1.1.f)			<i>I</i>	<i>D</i>	<i>D</i>	<i>M</i>															

Identifier	Objective																
		K	1st	2nd	3rd	4th	5th	6th	Science 7	Science 8	Physical Science	Biology	General Science	Anatomy	Chemistry	Physics	
1.14	Provide feedback on scientific investigations. (5.1.1.h)				<i>I</i>	<i>D</i>	<i>M</i>										
1.15	Recognize that scientific explanations are based on evidence and scientific knowledge. (5.1.2.a)				<i>I</i>	<i>D</i>	<i>M</i>										
1.16	Recognize that new discoveries are always being made which impact scientific knowledge. (5.1.2.b)				<i>I</i>	<i>D</i>	<i>M</i>										
1.17	Recognize many different people study science. (5.1.2.c)	<i>I</i>	<i>D</i>	<i>D</i>	<i>M</i>												
1.18	Identify a simple problem. (5.1.3.a)	<i>I</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>M</i>										
1.19	Propose a solution to a simple problem. (5.1.3.b)	<i>I</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>M</i>										
1.20	Implement the proposed solution. (5.1.3.c)	<i>I</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>M</i>										
1.21	Evaluate the implementation. (5.1.3.d)	<i>I</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>M</i>										
1.22	Communicate the problem, design, and solution. (5.1.3.e)				<i>I</i>	<i>D</i>	<i>M</i>										
1.23	Formulate testable questions that lead to predictions and scientific investigations. (8.1.1.a)						<i>I</i>	<i>D</i>	<i>D</i>	<i>M</i>							
1.24	Design and conduct logical and sequential investigations including repeated trials. (8.1.1.b)						<i>I</i>	<i>D</i>	<i>D</i>	<i>M</i>							
1.25	Determine controls and use dependent (responding) and independent (manipulated) variables. (8.1.1.c)							<i>I</i>	<i>D</i>	<i>M</i>							
1.26	Make qualitative and quantitative observations. (8.1.1.e)							<i>I</i>	<i>D</i>	<i>M</i>							
1.27	Record and represent data appropriately and review for quality, accuracy, and relevancy. (8.1.1.f)		<i>I</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>M</i>							

Identifier	Objective																
		K	1st	2nd	3rd	4th	5th	6th	Science 7	Science 8	Physical Science	Biology	General Science	Anatomy	Chemistry	Physics	
1.28	Evaluate predictions, draw logical inferences based on observed patterns/relationships, and account for non-relevant information. (8.1.1.g)			<i>I</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>M</i>							
1.29	Share information, procedures, results and conclusions with appropriate audiences. (5.1.1.g; 8.1.1.h)	<i>I</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>M</i>							
1.30	Analyze and provide appropriate critique of scientific investigations. (8.1.1.i)							<i>I</i>	<i>D</i>	<i>M</i>							
1.31	Recognize science is an ongoing process and the scientific community accepts and uses explanations until they encounter new experimental evidence not matching existing explanations. (8.1.2.a)							<i>I</i>	<i>D</i>	<i>M</i>							
1.32	Describe how scientific discoveries influence and change society. (8.1.2.b)			<i>I</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>M</i>							
1.33	Recognize scientists from various cultures have made many contributions to explain the natural world. (8.1.2.c)				<i>I</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>M</i>							
1.34	Identify problems for technical design. (8.1.3.a)							<i>I</i>	<i>D</i>	<i>M</i>							
1.35	Design a solution or product. (8.1.3.b)							<i>I</i>	<i>D</i>	<i>M</i>							
1.36	Implement the proposed design. (8.1.3.c)							<i>I</i>	<i>D</i>	<i>M</i>							
1.37	Evaluate completed technological design or products. (8.1.3.d)							<i>I</i>	<i>D</i>	<i>M</i>							
1.38	Communicate the process of technical design. (8.1.3.e)							<i>I</i>	<i>D</i>	<i>M</i>							
1.39	Distinguish between scientific inquiry (e.g., asking questions about the natural world) and technological design (e.g., using science to solve practical problems). (8.1.3.f)							<i>I</i>	<i>D</i>	<i>M</i>							
1.40	Describe how science and technology are reciprocal. (8.1.3.g)							<i>I</i>	<i>D</i>	<i>M</i>							

Identifier	Objective	K	1st	2nd	3rd	4th	5th	6th	Science 7	Science 8	Physical Science	Biology	General Science	Anatomy	Chemistry	Physics
1.41	Recognize that solutions have intended and unintended consequences. (8.1.3.h)					<i>I</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>M</i>						
1.42	Compare and contrast the reporting of scientific knowledge and the reporting of technological knowledge. (8.1.3.i)							<i>I</i>	<i>D</i>	<i>M</i>						
1.43	Formulate a testable hypothesis supported by prior knowledge to guide an investigation. (12.1.1.a)								<i>I</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>M</i>	<i>M</i>	<i>M</i>	<i>M</i>
1.44	Design and conduct logical and sequential scientific investigations with repeated trials and apply findings to new investigations. (12.1.1.b)										<i>I</i>	<i>D</i>	<i>M</i>	<i>M</i>	<i>M</i>	<i>M</i>
1.45	Identify and manage variables and constraints. (12.1.1.c)							<i>I</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>M</i>	<i>M</i>	<i>M</i>	<i>M</i>
1.46	Select and use lab equipment and technology appropriately and accurately. (12.1.1.d)							<i>I</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>M</i>				
1.47	Use tools and technology to make detailed qualitative and quantitative observations. (12.1.1.e)										<i>I</i>	<i>D</i>	<i>M</i>	<i>M</i>	<i>M</i>	<i>M</i>
1.48	Represent and review collected data in a systemic, accurate, and objective manner. (12.1.1.f)								<i>I</i>	<i>D</i>	<i>D</i>	<i>M</i>	<i>M</i>	<i>M</i>	<i>M</i>	<i>M</i>
1.49	Analyze and interpret data, synthesize ideas, formulate and evaluate models, and clarify concepts and explanations. (12.1.1.g)										<i>I</i>	<i>M</i>	<i>M</i>	<i>M</i>	<i>M</i>	<i>M</i>
1.50	Use results to verify or refute a hypothesis. (12.1.1.h)							<i>I</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>M</i>	<i>M</i>	<i>M</i>	<i>M</i>	<i>M</i>
1.51	Propose and/or evaluate possible revisions and alternate explanations. (12.1.1.i)								<i>I</i>	<i>D</i>	<i>D</i>	<i>M</i>	<i>M</i>	<i>M</i>	<i>M</i>	<i>M</i>
1.52	Share information, procedures, results, conclusions, and defend findings to a scientific community (e.g., peers, scientific fair audience, policy makers). (12.1.1.j)										<i>I</i>	<i>M</i>	<i>M</i>	<i>M</i>	<i>M</i>	<i>M</i>

Identifier	Objective	K	1st	2nd	3rd	4th	5th	6th	Science 7	Science 8	Physical Science	Biology	General Science	Anatomy	Chemistry	Physics
1.53	Evaluate scientific investigations and offer revisions and new ideas as appropriate. (12.1.1.k)								<i>I</i>	<i>D</i>	<i>D</i>	<i>M</i>	<i>M</i>	<i>M</i>	<i>M</i>	<i>M</i>
1.54	Recognize that scientific explanations must be open to questions, possible modifications, and must be based upon historical and current scientific knowledge. (12.1.2.a)							<i>I</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>M</i>	<i>M</i>	<i>M</i>	<i>M</i>	<i>M</i>
1.55	Describe how society influences the work of scientists and how science, technology, and current scientific discoveries influence and change society. (12.1.2.b)			<i>I</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>M</i>	<i>M</i>	<i>M</i>	<i>M</i>	<i>M</i>
1.56	Recognize that the work of science results in incremental advances, almost always building on prior knowledge, in our understanding of the world. (12.1.2.c)							<i>I</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>M</i>	<i>M</i>	<i>M</i>	<i>M</i>	<i>M</i>
1.57	Research and describe the difficulties experienced by scientific innovators who had to overcome commonly held beliefs of their times to reach conclusions that we now take for granted. (12.1.2.d)							<i>I</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>M</i>	<i>M</i>	<i>M</i>	<i>M</i>	<i>M</i>
1.58	Propose designs and choose between alternative solutions of a problem. (12.1.3.a)										<i>I</i>	<i>D</i>	<i>M</i>	<i>M</i>	<i>M</i>	<i>M</i>
1.59	Assess the limits of a technical design. (12.1.3.b)										<i>I</i>	<i>D</i>	<i>M</i>	<i>M</i>	<i>M</i>	<i>M</i>
1.60	Implement the selected solution. (12.1.3.c)										<i>I</i>	<i>D</i>	<i>M</i>	<i>M</i>	<i>M</i>	<i>M</i>
1.61	Evaluate the solution can its consequences. (12.1.3.d)										<i>I</i>	<i>D</i>	<i>M</i>	<i>M</i>	<i>M</i>	<i>M</i>
1.62	Communicate the problem, process, and solution. (12.1.3.e)										<i>I</i>	<i>M</i>	<i>M</i>	<i>M</i>	<i>M</i>	<i>M</i>
1.63	Compare and contrast the reasons for the pursuit of science and the pursuit of technology. (12.1.3.f)									<i>I</i>	<i>D</i>	<i>M</i>	<i>M</i>	<i>M</i>	<i>M</i>	<i>M</i>

Identifier	Objective																	
		K	1st	2nd	3rd	4th	5th	6th	Science 7	Science 8	Physical Science	Biology	General Science	Anatomy	Chemistry	Physics		
1.64	Explain how science advances with the introduction of new technology. (12.1.3.g)								<i>I</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>M</i>	<i>M</i>	<i>M</i>	<i>M</i>	<i>M</i>	
1.65	Recognize creativity, imagination, and a good knowledge base are all needed to advance the work of science and engineering. (12.1.3.h)								<i>I</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>M</i>	<i>M</i>	<i>M</i>	<i>M</i>	<i>M</i>	

2. Physical Science

2.1	Observe physical properties of objects (e.g., freezing and melting, sinking and floating, color, size, texture, shape, weight). (2.2.1.a)	<i>I</i>	<i>D</i>	<i>M</i>													
2.2	Separate and sort objects by physical attributes. (2.2.1.b)	<i>I</i>	<i>D</i>	<i>M</i>													
2.3	Measure objects using standard and non-standard units. (2.2.1.c)	<i>I</i>	<i>D</i>	<i>M</i>													
2.4	Identify solids and liquids and recognize that liquids take the shape of their container. (2.2.1.d)			<i>I, M</i>													
2.5	State location and/or motion relative to another object or its surroundings (e.g., in front of, behind, between, over, under, faster, slower, forward and backward, up and down). (2.2.2.a)	<i>I</i>	<i>M</i>														
2.6	Describe how objects move in many different ways (straight, zigzag, round and round, back and forth, fast and slow). (2.2.2.b)	<i>I</i>	<i>D</i>	<i>M</i>													
2.7	Identify mixtures and pure substances. (5.2.1.a)				<i>I</i>	<i>D</i>	<i>M</i>										
2.8	Identify physical properties of matter (e.g., color, odor, elasticity, weight, volume). (5.2.1.b)			<i>I</i>	<i>D</i>	<i>D</i>	<i>M</i>										
2.9	Use appropriate metric measurements to describe physical properties. (5.2.1.c)				<i>I</i>	<i>D</i>	<i>M</i>										

Identifier	Objective																
		K	1st	2nd	3rd	4th	5th	6th	Science 7	Science 8	Physical Science	Biology	General Science	Anatomy	Chemistry	Physics	
2.10	Identify state changes caused by heating and cooling solids, liquids, and gases. (5.2.1.d)		<i>I</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>M</i>										
2.11	Describe motion by tracing and measuring an object's position over a period of time (e.g., speed). (5.2.2.a)			<i>I</i>	<i>D</i>	<i>D</i>	<i>M</i>										
2.12	Describe changes in motion due to outside forces (e.g., push, pull, gravity). (5.2.2.b)			<i>I</i>	<i>D</i>	<i>D</i>	<i>M</i>										
2.13	Describe magnetic behavior in terms of attraction and repulsion. (5.2.2.c)			<i>I</i>		<i>M</i>											
2.14	Recognize that sound is produced from vibrating objects; the sound can be changed by changing the vibration. (5.2.3.a)			<i>I</i>		<i>M</i>											
2.15	Recognize that light travels in a straight line and can be reflected by an object (e.g., mirror). (5.2.3.b)			<i>I</i>		<i>M</i>											
2.16	Recognize that light can travel through certain materials and not others (e.g., transparent, translucent, opaque). (5.2.3.c)			<i>I</i>	<i>D</i>	<i>M</i>											
2.17	Identify ways to generate heat (e.g., friction, burning, incandescent light bulb). (5.2.3.d)		<i>I</i>			<i>D</i>	<i>M</i>										
2.18	Identify materials that act as thermal conductors or insulators. (5.2.3.e)					<i>I</i>	<i>M</i>										
2.19	Recognize that the transfer of electricity in an electrical circuit requires a closed loop. (5.2.3.f)					<i>I</i>	<i>M</i>										
2.20	Compare and contrast elements, compounds, and mixtures. (8.2.1.a)				<i>I</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>M</i>								
2.21	Describe physical and chemical properties of matter. (8.2.1.b)			<i>I</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>M</i>								
2.22	Recognize most substances can exist as a solid, liquid, or gas depending on temperature. (8.2.1.c)				<i>I</i>	<i>D</i>	<i>D</i>	<i>M</i>									

Identifier	Objective																
		K	1st	2nd	3rd	4th	5th	6th	Science 7	Science 8	Physical Science	Biology	General Science	Anatomy	Chemistry	Physics	
2.23	Compare and contrast solids, liquids, and gases based on properties of these states of matter. (8.2.1.d)			<i>I</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>M</i>									
2.24	Distinguish between physical and chemical changes (e.g., phase changes, dissolving, burning, rusting). (8.2.1.e)				<i>I</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>M</i>								
2.25	Recognize conservation of matter in physical and chemical changes. (8.2.1.f)				<i>I</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>M</i>								
2.26	Classify substances into similar groups based on physical properties. (8.2.1.g)			<i>I</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>M</i>									
2.27	Describe motion of an object by its position and velocity. (8.2.2.a)					<i>I</i>	<i>D</i>	<i>M</i>									
2.28	Recognize an object that is not being subjected to a force will continue to move at a constant speed in a straight line or stay at rest (Newton's 1st Law). (8.2.2.b)					<i>I</i>	<i>D</i>	<i>M</i>									
2.29	Compare the motion of objects related to the effects of balanced and unbalanced forces. (8.2.2.c)					<i>I</i>	<i>D</i>	<i>M</i>									
2.30	Recognize that everything on or around Earth is pulled toward Earth's center by gravitational force. (8.2.2.d)					<i>I</i>	<i>D</i>	<i>D</i>	<i>M</i>								
2.31	Recognize that vibrations set up wave-like disturbances that spread away from the source (e.g., sound, seismic, water waves). (8.2.3.a)			<i>I</i>		<i>D</i>	<i>D</i>	<i>D</i>	<i>M</i>								
2.32	Identify that waves move at different speeds in different materials. (8.2.3.b)					<i>I</i>	<i>D</i>	<i>D</i>	<i>M</i>								
2.33	Recognize that light interacts with material by transmission (including refraction), absorption, or scattering (including reflection). (8.2.3.c)			<i>I</i>		<i>D</i>	<i>D</i>	<i>D</i>	<i>M</i>								

Identifier	Objective																
		K	1st	2nd	3rd	4th	5th	6th	Science 7	Science 8	Physical Science	Biology	General Science	Anatomy	Chemistry	Physics	
2.34	Recognize that to see an object, light from the surface of the object must enter the eye; the color seen depends on the properties of the surface and the color of the available light sources. (8.2.3.d)			<i>I</i>		<i>D</i>	<i>D</i>	<i>D</i>		<i>M</i>							
2.35	Recognize that heat moves from warmer objects to cooler objects until both reach the same temperature. (8.2.3.e)				<i>I</i>		<i>D</i>	<i>M</i>									
2.36	Describe transfer of energy from electrical and magnetic sources to different energy forms (e.g., heat, light, sound, chemical). (8.2.3.f)					<i>I</i>	<i>D</i>	<i>M</i>									
2.37	Recognize all energy is neither created nor destroyed. (8.2.3.g)					<i>I</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>M</i>							
2.38	Recognize bonding occurs when outer electrons are transferred (ionic) or shared (covalent). (12.2.1.a)								<i>I</i>	<i>D</i>		<i>M</i>				<i>M</i>	
2.39	Describe the energy transfer associated with phase changes between solids, liquids, and gases. (12.2.1.b)								<i>I</i>	<i>D</i>		<i>M</i>				<i>M</i>	
2.40	Describe the three normal states of matter (solid, liquid, gas) in terms of energy, particle arrangement, particle motion, and strength of bond between molecules. (12.2.1.c)								<i>I</i>			<i>M</i>		<i>M</i>		<i>M</i>	<i>M</i>
2.41	Recognize a large number of chemical reactions involve the transfer of either electrons (oxidation/reduction) or hydrogen ions (acid/base) between reacting ions, molecules, or atoms. (12.2.1.d)											<i>I, M</i>					<i>M</i>
2.42	Identify factors affecting rates of chemical reactions (e.g., temperature, particle size, surface area). (12.2.1.e)									<i>I</i>		<i>M</i>					<i>M</i>

Identifier	Objective																
		K	1st	2nd	3rd	4th	5th	6th	Science 7	Science 8	Physical Science	Biology	General Science	Anatomy	Chemistry	Physics	
2.43	Recognize the charges and relative locations of subatomic particles (e.g., neutrons, protons, electrons). (12.2.1.f)							<i>I</i>	<i>D</i>			<i>M</i>		<i>M</i>		<i>M</i>	
2.44	Describe properties of atoms, ions, and isotopes. (12.2.1.g)							<i>I</i>	<i>D</i>			<i>M</i>		<i>M</i>		<i>M</i>	
2.45	Describe the organization of the periodic table of elements with respect to patterns of physical and chemical properties. (12.2.1.h)							<i>I</i>	<i>D</i>			<i>M</i>		<i>M</i>		<i>M</i>	
2.46	Describe motion with respect to displacement and acceleration. (12.2.2.a)								<i>I</i>			<i>M</i>					<i>M</i>
2.47	Describe how the law of inertia (Newton's 1st Law) is evident in a real-world event. (12.2.2.b)								<i>I</i>	<i>D</i>		<i>M</i>					<i>M</i>
2.48	Make predictions based on relationships among net force, mass, and acceleration (Newton's 2nd Law). (12.2.2.c)								<i>I</i>			<i>M</i>					<i>M</i>
2.49	Recognize that all forces occur in equal and opposite pairs (Newton's 3rd Law). (12.2.2.d)								<i>I</i>			<i>M</i>					<i>M</i>
2.50	Describe how Newton's 3rd Law of motion is evident in a real-world event. (12.2.2.e)								<i>I</i>			<i>M</i>					<i>M</i>
2.51	Describe gravity as a force that each mass exerts on another mass, which is proportional to the masses and the distance between them. (12.2.2.f)								<i>I</i>	<i>D</i>		<i>D</i>		<i>M</i>		<i>M</i>	<i>M</i>
2.52	Recognize that an attractive or repulsive electric force exists between two charged particles and that this force is proportional to the magnitude of the charges and the distance between them. (12.2.2.g)								<i>I</i>			<i>M</i>				<i>M</i>	<i>M</i>
2.53	Describe mechanical wave properties (e.g., speed, wavelength, frequency, amplitude) and how waves travel through a medium. (12.2.3.a)										<i>I</i>		<i>M</i>			<i>M</i>	<i>M</i>

Identifier	Objective	K	1st	2nd	3rd	4th	5th	6th	Science 7	Science 8	Physical Science	Biology	General Science	Anatomy	Chemistry	Physics
2.54	Recognize that the energy in waves can be changed into other forms of energy. (12.2.3.b)							<i>I</i>	<i>D</i>		<i>M</i>				<i>M</i>	<i>M</i>
2.55	Recognize that light can behave as a wave (diffraction and interference). (12.2.3.c)					<i>I</i>	<i>D</i>	<i>D</i>			<i>M</i>				<i>M</i>	<i>M</i>
2.56	Distinguish between temperature (a measure of the average kinetic energy of atomic or molecular motion) and heat (the quantity of thermal energy that transfers due to a change in temperature). (12.2.3.d)							<i>I</i>			<i>M</i>				<i>M</i>	
2.57	Compare and contrast methods of heat transfer and the interaction of heat with matter via conduction, convection, and radiation. (12.2.3.e)							<i>I</i>	<i>D</i>		<i>M</i>				<i>M</i>	
2.58	Recognize that the production of electromagnetic waves is a result of changes in the motion of charges or by a changing magnetic field. (12.2.3.f)										<i>I, M</i>				<i>M</i>	<i>M</i>
2.59	Compare and contrast segments of the electromagnetic spectrum (e.g., radio, micro, infrared, visible, ultraviolet, x-rays, gamma) based on frequency and wavelength. (12.2.3.g)										<i>I, M</i>				<i>M</i>	<i>M</i>
2.60	Recognize that nuclear reactions (e.g., fission, fusion, radioactive decay) convert a fraction of the mass of interacting particles into energy, and this amount of energy is much greater than the energy in chemical interactions. (12.2.3.h)										<i>I, M</i>				<i>M</i>	<i>M</i>
2.61	Interpret the law of conservation of energy to make predictions for the outcome of an event. (12.2.3.i)							<i>I</i>			<i>M</i>				<i>M</i>	<i>M</i>

Identifier	Objective																
		K	1st	2nd	3rd	4th	5th	6th	Science 7	Science 8	Physical Science	Biology	General Science	Anatomy	Chemistry	Physics	
3.11	Recognize the living and non-living factors that impact the survival of organisms in an ecosystem. (5.3.3.c)					<i>I</i>	<i>M</i>										
3.12	Recognize all organisms cause changes, some beneficial and some detrimental, in the environment where they live. (5.3.3.d)					<i>I</i>	<i>M</i>										
3.13	Describe adaptations made by plants or animals to survive environmental changes. (5.3.4.a)					<i>I</i>	<i>M</i>										
3.14	Recognize the levels of organization in living organisms (e.g., cells, tissues, organs, organ systems, organisms). (8.3.1.a)						<i>I</i>	<i>D</i>		<i>M</i>							
3.15	Recognize that all organisms are composed of one or many cells; that these cells must grow, divide, and use energy; and that all cells function similarly. (8.3.1.b)						<i>I</i>	<i>D</i>		<i>M</i>							
3.16	Recognize specialized cells perform specialized functions in multicellular organisms. (8.3.1.c)							<i>I</i>		<i>M</i>							
3.17	Identify the organs and functions of the major systems of the human body and describe ways that these systems interact with each other. (8.3.1.d)		<i>I</i>			<i>D</i>	<i>D</i>	<i>D</i>		<i>M</i>							
3.18	Describe how plants and animals respond to environmental stimuli. (8.3.1.e)					<i>I</i>	<i>D</i>	<i>D</i>		<i>M</i>							
3.19	Recognize that hereditary information is contained in genes within the chromosomes of each cell. (8.3.2.a)							<i>I</i>		<i>M</i>							
3.20	Compare and contrast sexual and asexual reproduction. (8.3.2.b)							<i>I</i>		<i>M</i>							
3.21	Diagram and explain the flow of energy through a simple food web. (8.3.3.a)					<i>I</i>	<i>D</i>	<i>D</i>		<i>M</i>							

Identifier	Objective															
		K	1st	2nd	3rd	4th	5th	6th	Science 7	Science 8	Physical Science	Biology	General Science	Anatomy	Chemistry	Physics
3.22	Compare the roles of producers, consumers, and decomposers in the ecosystem. (5.3.3.b; 8.3.3.b)					<i>I</i>	<i>D</i>	<i>D</i>		<i>M</i>						
3.23	Recognize that producers transform sunlight into chemical energy through photosynthesis. (8.3.3.c)				<i>I</i>	<i>D</i>	<i>D</i>	<i>D</i>		<i>M</i>						
3.24	Determine the biotic and abiotic factors that impact the number of organisms an ecosystem can support. (8.3.3.d)							<i>I</i>		<i>M</i>						
3.25	Recognize a population is all the individuals of a species at a given place and time. (8.3.3.e)						<i>I</i>	<i>D</i>		<i>M</i>						
3.26	Identify symbiotic relationships among organisms. (8.3.3.f)					<i>I</i>	<i>D</i>	<i>D</i>		<i>M</i>						
3.27	Identify positive and negative effects of natural and human activity on an ecosystem. (8.3.3.g)					<i>I</i>	<i>D</i>	<i>D</i>		<i>M</i>						
3.28	Describe how an inherited characteristic enables an organism to improve its survival rate. (8.3.4.a)					<i>I</i>	<i>D</i>	<i>D</i>		<i>M</i>						
3.29	Recognize the extinction of a species is caused by the inability to adapt to an environmental change. (8.3.4.b)					<i>I</i>	<i>D</i>	<i>D</i>		<i>M</i>						
3.30	Use anatomical features of an organism to infer similarities among other organisms. (8.3.4.c)							<i>I</i>		<i>M</i>						
3.31	Identify the complex molecules (e.g., carbohydrates, lipids, proteins, nucleic acids) that make up a living organism. (12.3.1.a)									<i>I</i>		<i>M</i>		<i>M</i>		
3.32	Identify the form and function of sub-cellular structures that regulate cellular activities. (12.3.1.b)						<i>I</i>	<i>D</i>		<i>D</i>		<i>M</i>	<i>M</i>	<i>M</i>		

Identifier	Objective	K	1st	2nd	3rd	4th	5th	6th	Science 7	Science 8	Physical Science	Biology	General Science	Anatomy	Chemistry	Physics
3.33	Describe the cellular functions of photosynthesis, respiration, cell division, protein synthesis, transport of materials, and energy capture/release. (12.3.1.c)						<i>I</i>	<i>D</i>		<i>D</i>		<i>M</i>	<i>M</i>	<i>M</i>		
3.34	Describe how an organism senses changes in its internal or external environment and responds to ensure survival. (12.3.1.d)							<i>I</i>		<i>D</i>		<i>M</i>				
3.35	Identify that information passed from parents to offspring is coded in DNA molecules. (12.3.2.a)							<i>I</i>		<i>D</i>		<i>M</i>	<i>M</i>	<i>M</i>		
3.36	Describe the basic structure of DNA and its function in genetic inheritance. (12.3.2.b)							<i>I</i>		<i>D</i>		<i>M</i>				
3.37	Recognize how mutations could help, harm, or have no effect on individual organisms. (12.3.2.c)							<i>I</i>		<i>D</i>		<i>M</i>				
3.38	Describe that sexual reproduction results in largely predictable, variety of possible gene combinations in the offspring of any two parents. (12.3.2.d)							<i>I</i>		<i>D</i>		<i>M</i>				
3.39	Explain how the stability of an ecosystem is increased by biological diversity. (12.3.3.a)									<i>I</i>		<i>M</i>				
3.40	Recognize that atoms and molecules cycle among living and non-living components of the biosphere. (12.3.3.b)							<i>I</i>		<i>D</i>		<i>M</i>				
3.41	Explain how distribution and abundance of different organisms in ecosystems are limited by the availability of matter and energy and the ability of the ecosystem to recycle materials. (12.3.3.c)									<i>I</i>		<i>M</i>				
3.42	Analyze factors which may influence environmental quality. (12.3.3.d)							<i>I</i>		<i>D</i>		<i>M</i>		<i>M</i>		

Identifier	Objective	K	1st	2nd	3rd	4th	5th	6th	Science 7	Science 8	Physical Science	Biology	General Science	Anatomy	Chemistry	Physics
3.43	Identify different types of adaptations necessary for survival (e.g., morphological, physiological, behavioral). (12.3.4.a)									<i>I</i>		<i>M</i>				
3.44	Recognize that the concept of biological evolution is a theory which explains the consequences of the interactions of: (1) the potential for a species to increase its members, (2) the genetic variability of offspring due to mutation and recombination of genes, (3) a finite supply of the resources required for life, and (4) the ensuing selection by the environment of those offspring better able to survive and leave offspring. (12.3.4.b)									<i>I</i>		<i>M</i>				
3.45	Explain how natural selection provides a scientific explanation of the fossil record and the molecular similarities among the diverse species of living organisms. (12.3.4.c)									<i>I</i>		<i>M</i>				
3.46	Apply the theory of biological evolution to explain diversity of life over time. (12.3.4.d)									<i>I</i>		<i>M</i>				

4. Earth and Space Science

4.1	Identify objects in the sky (e.g., sun., moon, stars). (2.4.1.a)		<i>I, M</i>													
4.2	Identify objects that appear to move in the sky (e.g., sun, moon, stars). (12.4.1.b)		<i>I, M</i>													
4.3	Describe Earth materials (e.g., sand, soil, rocks, water). (2.4.2.a)	<i>I</i>	<i>D</i>	<i>D</i>	<i>M</i>											
4.4	Recognize ways in which individuals and families can conserve Earth's resources by reducing, reusing, and recycling. (2.4.2.b)	<i>I</i>	<i>D</i>	<i>M</i>												

Identifier	Objective																
		K	1st	2nd	3rd	4th	5th	6th	Science 7	Science 8	Physical Science	Biology	General Science	Anatomy	Chemistry	Physics	
4.5	Observe that the sun provides heat and light. (2.4.3.a)	<i>I</i>	<i>M</i>														
4.6	Observe and describe simple daily changes in weather. (2.4.3.b)	<i>I</i>	<i>D</i>	<i>M</i>													
4.7	Describe simple seasonal weather indicators and how they impact student choices (e.g., activities, clothing). (2.4.3.c)	<i>I</i>	<i>D</i>	<i>M</i>													
4.8	Recognize that the observed shape of the moon changes from day to day during a one month period. (5.4.1.a)				<i>I</i>	<i>M</i>											
4.9	Recognize the motion of objects in the sky (e.g., sun, moon, stars) change over time in recognizable patterns. (5.4.1.b)				<i>I</i>	<i>M</i>											
4.10	Describe the characteristics of rocks, minerals, soil, water, and the atmosphere. (5.4.2.a)			<i>I</i>	<i>D</i>	<i>D</i>	<i>M</i>										
4.11	Identify weathering, erosion, and deposition as processes that build up or break down Earth's surface. (5.4.2.b)				<i>I</i>	<i>D</i>	<i>M</i>										
4.12	Identify how Earth materials are used (e.g., fuels, building materials, sustaining plant life). (5.4.2.c)			<i>I</i>	<i>D</i>	<i>M</i>											
4.13	Describe the sun's warming effect on the land and water. (5.4.3.a)				<i>I</i>	<i>D</i>	<i>M</i>										
4.14	Observe, measure, and record changes in weather (e.g., temperature, wind direction and speed, precipitation). (5.4.3.b)	<i>I</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>M</i>										
4.15	Recognize the differences between weather, climate, and seasons. (5.4.3.c)			<i>I</i>	<i>D</i>	<i>M</i>											

Identifier	Objective															
		K	1st	2nd	3rd	4th	5th	6th	Science 7	Science 8	Physical Science	Biology	General Science	Anatomy	Chemistry	Physics
4.16	Describe how slow processes (e.g., erosion, weathering, deposition) and rapid processes (e.g., landslides, volcanic eruptions, earthquakes) change Earth's surface. (5.4.4.a)				<i>I</i>	<i>D</i>	<i>M</i>									
4.17	Describe the components of the solar system, (e.g., sun, planets, moons, asteroids, comets). (8.4.1.a)				<i>I</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>M</i>							
4.18	Describe the relationship between motion of objects in the solar system and the phenomena of day, year, eclipse, phases of the moon and seasons. (8.4.1.b)				<i>I</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>M</i>							
4.19	Describe the effects of gravity on Earth (e.g., tides) and the effect of gravity on objects in the solar system. (8.4.1.c)				<i>I</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>M</i>							
4.20	Describe the layers of Earth (e.g., core, mantle, crust, atmosphere). (8.4.2.a)				<i>I</i>		<i>D</i>	<i>D</i>	<i>M</i>							
4.21	Describe the physical composition of soil. (8.4.2.b)				<i>I</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>M</i>							
4.22	Describe the mixture of gases on Earth's atmosphere and how the atmosphere's properties change at different elevations. (8.4.2.c)				<i>I</i>		<i>D</i>	<i>D</i>	<i>M</i>							
4.23	Describe evidence of Earth's magnetic field. (8.4.2.d)					<i>I</i>	<i>D</i>	<i>D</i>	<i>M</i>							
4.24	Compare and contrast constructive and destructive forces (e.g., deposition, erosion, weathering, plate motion causing uplift, volcanoes, earthquakes) that impact Earth's surface. (8.4.2.e)				<i>I</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>M</i>							
4.25	Describe the rock cycle. (8.4.2.f)				<i>I</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>M</i>							
4.26	Describe the water cycle (e.g., evaporation, condensation, precipitation). (8.4.2.g)				<i>I</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>M</i>							

Identifier	Objective																
		K	1st	2nd	3rd	4th	5th	6th	Science 7	Science 8	Physical Science	Biology	General Science	Anatomy	Chemistry	Physics	
4.27	Classify Earth materials as renewable or non-renewable. (8.4.2.h)				<i>I</i>	<i>D</i>	<i>D</i>	<i>M</i>									
4.28	Describe how energy from the sun influences the atmosphere and provides energy for plant growth. (8.4.3.a)				<i>I</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>M</i>	<i>M</i>							
4.29	Identify factors that influence daily and seasonal changes on Earth (e.g., tilt of the Earth, humidity, air pressure, air masses). (8.4.3.b)				<i>I</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>M</i>								
4.30	Describe atmospheric movements that influence weather and climate (e.g., air masses, jet stream). (8.4.3.c)					<i>I</i>	<i>D</i>	<i>D</i>	<i>M</i>								
4.31	Recognize that Earth processes we see today are similar to those that occurred in the past (uniformity of processes). (8.4.4.a)									<i>I, M</i>							
4.32	Describe how environmental conditions have changed through the use of fossil record. (8.4.4.b)							<i>I</i>	<i>D</i>	<i>M</i>							
4.33	Describe the formation of the universe using the Big Bang Theory. (12.4.1.a)									<i>I</i>		<i>M</i>		<i>M</i>		<i>M</i>	
4.34	Recognize that stars, like the sun, transform matter into energy by nuclear reactions which leads to the formation other elements. (12.4.1.b)									<i>I</i>		<i>M</i>		<i>M</i>		<i>M</i>	
4.35	Describe stellar evolution. (12.4.1.c)								<i>I</i>	<i>D</i>		<i>M</i>		<i>M</i>			
4.36	Recognize how Earth materials move through geochemical cycles (e.g., carbon, nitrogen, oxygen) resulting in chemical and physical changes in matter. (12.4.2.a)								<i>I</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>M</i>	<i>M</i>			
4.37	Describe how heat convection in the mantle propels the plates comprising Earth's surface across the face of the globe (e.g., plate tectonics). (12.4.2.b)								<i>I</i>	<i>D</i>	<i>D</i>		<i>M</i>		<i>M</i>		

Identifier	Objective	K	1st	2nd	3rd	4th	5th	6th	Science 7	Science 8	Physical Science	Biology	General Science	Anatomy	Chemistry	Physics
4.38	Evaluate the impact of human activity and natural causes on Earth's resources (e.g., groundwater, rivers, land, fossil fuels). (12.4.2.c)							<i>I</i>	<i>D</i>		<i>M</i>	<i>M</i>	<i>M</i>		<i>M</i>	
4.39	Describe how radiation, conduction, and convection transfer heat in Earth's systems. (12.4.3.a)								<i>I</i>		<i>M</i>		<i>M</i>			
4.40	Identify internal and external sources of heat energy in Earth's systems. (12.4.3.b)								<i>I</i>		<i>M</i>		<i>M</i>		<i>M</i>	
4.41	Compare and contrast benefits of renewable and non-renewable energy sources. (12.4.3.c)										<i>I</i>	<i>M</i>	<i>M</i>			
4.42	Describe natural influences (e.g., Earth's rotation, mountain ranges, oceans, differential heating) on global climate. (12.4.3.d)								<i>I</i>		<i>M</i>		<i>M</i>			
4.43	Recognize that in any sequence of sediments or rocks that has not been overturned, the youngest sediments or rocks are at the top of the sequence and the oldest are at the bottom (Law of Superposition). (12.4.4.a)							<i>I</i>	<i>D</i>				<i>M</i>	<i>M</i>		
4.44	Interpret Earth's history by observing rock sequences, using fossils to correlate the sequences at various locations, and using data from radioactive dating methods. (12.4.4.b)											<i>I, M</i>				
4.45	Compare and contrast the physical and biological differences in the early Earth with the planet we live on today. (12.4.4.c)								<i>I</i>	<i>D</i>		<i>M</i>				

Approved: November 2012