



Project-Based Inquiry Science Correlation to the Minnesota Academic Standards, Grades 6-8

Grade 6

Standard/Benchmark	Location/Page where Standard is found
1. The Nature of Science and Engineering	
2. The Practice of Engineering	
1. Engineers create, develop and manufacture machines, structures, processes and systems that impact society and may make humans more productive	
6.1.2.1.1 Identify a common engineered system and evaluate its impact on the daily life of humans.	AQ: 282-291
6.1.2.1.2 Recognize that there is no perfect design and that new technologies have consequences that may increase some risks and decrease others.	VIM: 47-49
6.1.2.1.3 Describe the trade-offs in using manufactured products in terms of features, performance, durability and cost.	DIV: 21, 90 MBT: 54-57, 58-59, 62, 102-103, 113 VIM: 197-199
6.1.2.1.4 Explain the importance of learning from past failures, in order to inform future designs of similar products or systems.	DIV: 8-10, 20-22, 52, 91-92. 95 DIG: 6-7, 9, 22 MBT: 110-111 VIM: 197-202
2. Engineering design is the process of devising products, processes and systems that address a need, capitalize on an opportunity, or solve a specific problem.	
6.1.2.2.1 Apply and document an engineering design process that includes identifying criteria and constraints, making representations, testing and evaluation, and refining the design as needed to construct a product or system that solves a problem.	DIV: 5-6, 8-12, 20-22, 35, 43-52, 73, 76-80, 91-92, 95-98 DIG: 6-7, 9-15, 47, 90-94, 96-101, 106-109, 111-115

	<p>MBT: 10, 63-65, 98-99, 107-114 VIM: 10, 14-16, 23-24, 27-28, 50-53, 88-89, 101, 132-142, 159, 192-194, 197-201 AIA: 7, 93-95, 142-150 GEN: 10, 35-36, 88-92, 160-163, 220-224, 226-229 EN: 16-17, 36-37, 83, 140-141, 203-204, 254-256, 305-315</p>
3. Interactions Among Science, Technology, Engineering, Mathematics and Society	
1. Designed and natural systems exist in the world. These systems consist of components that act within the system and interact with other systems	
6.1.3.1.1 Describe a system in terms of its subsystems and parts, as well as its inputs, processes and outputs.	VIM: 43 GF: 78-79
6.1.3.1.2 Distinguish between open and closed systems.	
4. Current and emerging technologies have enabled humans to develop and use models to understand and communicate how natural and designed systems work and interact.	
6.1.3.4.1 Determine and use appropriate safe procedures, tools, measurements, graphs and mathematical analyses to describe and investigate natural and designed systems in a physical science context.	<p>DIV: 43-52 MBT: 78-83, 98-99 VIM: 23-24, 27-28, 50-53, 67-73, 104-110, 128-129, 167-175 EN: 48-50, 64-69, 92-97, 123-127, 130-132, 178-181, 231-232, 265-268 AQ: 23-28, 34-35, 51-54, 103-105, 162-168, 211-214, 242-246, 247-249</p>
6.1.3.4.2 Demonstrate the conversion of units within the International System of Units (SI, or metric) and estimate the magnitude of common objects and quantities using metric units.	
2. Physical Science	
1. Matter	

1. Pure substances can be identified by properties which are independent of the sample of the substance and the properties can be explained by a model of matter that is composed of small particles.	
6.2.1.1.1 Explain density, dissolving, compression, diffusion and thermal expansion using the particle model of matter.	DIG: 18-21 ECE: 80-82 PF: 140-143, 151
2. Substances can undergo physical changes which do not change the composition or the total mass of the substance in a closed system	
6.2.1.2.1 Identify evidence of physical changes, including changing phase or shape, and dissolving in other materials.	AQ: 98
6.2.1.2.2 Describe how mass is conserved during a physical change in a closed system.	AQ: 136-138
6.2.1.2.3 Use the relationship between heat and the motion and arrangement of particles in solids, liquids and gases to explain melting, freezing, condensation and evaporation.	EN: 104-107 AQ: 43-46, 51-54, 106-108 PF: 190-191, 192-193
2. Motion	
1. The motion of an object can be described in terms of speed, direction and change of position.	
6.2.2.1.1 Measure and calculate the speed of an object that is traveling in a straight line.	VIM: 60-62, 67-70, 139-140
6.2.2.1.2 For an object traveling in a straight line, graph the object's position as a function of time, and its speed as a function of time. Explain how these graphs describe the object's motion.	VIM: 67-70, 110-111
2. Forces have magnitude and direction and govern the motion of objects.	

6.2.2.2.1 Recognize that when the forces acting on an object are balanced, the object remains at rest or continues to move at a constant speed in a straight line, and that unbalanced forces cause a change in the speed or direction of the motion of an object.	MBT: 16-18, 21-27, 28-33 VIM: 36, 78-82, 100-102, 181-190
6.2.2.2.2 Identify the forces acting on an object and describe how the sum of the forces affects the motion of the object.	MBT: 19, 21-27, 28-33 VIM: 38-39, 75-84, 100-101, 122-123, 127-128, 141-142, 153, 185, 187, 189, 190, 201
6.2.2.2.3 Recognize that some forces between objects act when the objects are in direct contact and others, such as magnetic, electrical and gravitational forces can act from a distance.	DIV: 53-54, 16-18 VIM: 117 EN: 59
6.2.2.2.4 Distinguish between mass and weight.	VIM: 125
3. Energy	
1. Waves involve the transfer of energy without the transfer of matter	
6.2.3.1.1 Describe properties of waves, including speed, wavelength, frequency and amplitude.	AIA: 72, 124-128 ECE: 100-102 EN: 161-169, 171-174
6.2.3.1.2 Explain how the vibration of particles in air and other materials results in the transfer of energy through sound waves	AIA: 124-125 EN: 30, 145, 161, 171-174
6.2.3.1.3 Use wave properties of light to explain reflection, refraction and the color spectrum.	AIA: 72 ECE: 185-187 EN: 194-198
2. Energy can be transformed within a system or transferred to other systems or the environment.	
6.2.3.2.1 Differentiate between kinetic and potential energy and analyze situations where kinetic energy is converted to potential energy and vice versa.	MBT: 106 VIM: 94-95 EN: 24, 43-44, 56, 57, 233, 259, 264-268
6.2.3.2.2 Trace the changes of energy forms, including thermal, electrical, chemical, mechanical or others as energy is used in devices.	MBT: 106 VIM: 94-95 EN: 8-15, 24-26, 28-32, 35-36, 38, 51-52, 57-58, 59-61, 72, 75-79, 86-87, 88-89, 182, 184, 216-

	217, 241, 250, 257-258, 260-262, 269-270, 274-275, 295-303
6.2.3.2.3 Describe how heat energy is transferred in conduction, convection and radiation.	ECE: 159-162 AQ: 155-159 PF: 12-13

Grade 7

Standard/Benchmark	Location/Page where Standard is found
1. The Nature of Science and Engineering	
1. The Practice of Science	
1. Science is a way of knowing about the natural world and is characterized by empirical criteria, logical argument and skeptical review.	
7.1.1.1.1 Understand that prior expectations can create bias when conducting scientific investigations.	AST: 180 (discussed biased sampling)
7.1.1.1.2 Understand that when similar investigations give different results, the challenge is to judge whether the differences are significant, and if further studies are required.	DIV: 28, 78 VIM: 19-20
2. Scientific inquiry uses multiple interrelated processes to investigate questions and propose explanations about the natural world.	
7.1.1.2.1 Generate and refine a variety of scientific questions and match them with appropriate methods of investigation, such as field studies, controlled experiments, reviews of existing work and development of models.	DIV: 39, 43-45, 76-78 VIM: 23-24, 103-105, 167-174 AIA: 47-51 GF: 47-49, 51-53 LT: 58-59
7.1.1.2.2 Plan and conduct a controlled experiment to test a hypothesis about a relationship between two variables, ensuring that one variable is systematically manipulated, the other is measured and recorded, and any other variables are kept the same (controlled).	DIV: 43-52, 76-78 DIG: 68-70 MBT: 45-48, 69-73, 78-83 VIM: 50-53, 103-110, 167-174 GF: 47-49, 51-53 LT: 56-60 GEN: 130-133 AST: 21-25 EN: 64-69

<p>7.1.1.2.3 Generate a scientific conclusion from an investigation, clearly distinguishing between results (evidence) and conclusions (explanation).</p>	<p>DIV: 57-61, 64, 81 DIG: 70-74, 76-80 MBT: 26-27,52-53,58-59, 76-77, 85, 92 VIM: 54-55, 85-86, 112-113, 175 AIA: 28-30, 36-37, 58, 70, 86, 92, 118-119, 122-123, 135, 140 GF: 17, 73-74, 121-123, 143 LT: 40-41, 52, 105, 143-147 GEN: 90-91, 101, 136, 139, 161, 197, 220, 232 ECE: 89-90, 146-147, 169-170, 209, 246, 249-250, 258 AST: 26, 44, 62-63, 77-78, 93, 113-114, 161, 213, 216-218 EN: 68-69, 96-97, 140, 154-155, 174, 183, 197, 202, 254 AQ: 36, 57, 111, 160, 195, 218, 222, 224, 227, 232, 236-237, 304-305 PF: 49, 58, 75-76, 87, 108, 116, 169, 199, 208</p>
<p>7.1.1.2.4 Evaluate explanations proposed by others by examining and comparing evidence, identifying faulty reasoning, and suggesting alternative explanations.</p>	<p>DIV: 78 DIG: 71-72 MBT: 85 VIM: 55, 112-113 GEN: 101, 136, 140, 197 ECE: 141-143, 170, 211, 247, 250 AST: 45, 79 EN: 69, 97, 199 AQ: 36, 160, 195, 232, 237</p>
<p>3. Interactions Among Science, Technology, Engineering, Mathematics and Society</p>	
<p>4. Current and emerging technologies have enabled humans to develop and use models to understand and communicate how natural and designed systems work and interact.</p>	
<p>7.1.3.4.1 Use maps, satellite images and other data sets to describe patterns and make predictions about natural systems in a life science context</p>	<p>GF: 41-43 LT: 23-24 GEN: 18-21, 73-74, 76-79</p>
<p>7.1.3.4.2 Determine and use appropriate safety procedures, tools, measurements, graphs and mathematical analyses to describe and investigate natural and designed systems in a life science context.</p>	<p>AIA: 80-81 GF: 11-13, 31-33, 47-49, 51-53, 82-83 LT: 17-20, 33-37, 99-101, 113-119 GEN: 61-64, 105-112, 146-156</p>
<p>2. Physical Science</p>	

1. Matter	
1. The idea that matter is made up of atoms and molecules provides the basis for understanding the properties of matter.	
7.2.1.1.1 Recognize that all substances are composed of one or more of approximately one hundred elements and that the periodic table organizes the elements into groups with similar properties.	AQ: 93-95, 228-229, 231
7.2.1.1.2 Describe the differences between elements and compounds in terms of atoms and molecules.	AQ: 42, 71
7.2.1.1.3 Recognize that a chemical equation describes a reaction where pure substances change to produce one or more pure substances whose properties are different from the original substance(s).	AQ: 61, 136-137
4. Life Science	
1. Structure and Function in Living Systems	
1. Tissues, organs and organ systems are composed of cells and function to serve the needs of all cells for food, air and waste removal.	
7.4.1.1.1 Recognize that all cells do not look alike and that specialized cells in multicellular organisms are organized into tissues and organs that perform specialized functions.	GF: 28, 80-81
7.4.1.1.2 Describe how the organs in the respiratory, circulatory, digestive, nervous, skin and urinary systems interact to serve the needs of vertebrate organisms.	GF: 86-89, 93-94, 97-102, 105-111, 124-130
2. All living organisms are composed of one or more cells which carry on the many functions needed to sustain life.	
7.4.1.2.1 Recognize that cells carry out life functions, and that these functions are carried out in a similar way in all organisms, including animals, plants, fungi, bacteria and protists.	GF: 27-29, 80, 167
7.4.1.2.2 Recognize that cells repeatedly divide to make more cells for growth and repair.	GF: 38 GEN: 168-169, 171-175, 179-182, 190-196

7.4.1.2.3 Use the presence of the cell wall and chloroplasts to distinguish between plant and animal cells.	GF: 28-33
2. Interdependence Among Living Systems	
1. Natural systems include a variety of organisms that interact with one another in several ways.	
7.4.2.1.1 Identify a variety of populations and communities in an ecosystem and describe the relationships among the populations and communities in a stable ecosystem.	LT: 84, 97, 113-125
7.4.2.1.2 Compare and contrast predator/prey, parasite/host and producer/consumer/decomposer relationships.	LT: 109-111, 129-131
7.4.2.1.3 Explain how the number of populations an ecosystem can support depends on the biotic resources available as well as abiotic factors such as amount of light and water, temperature range and soil composition.	LT: 84, 97, 120-125
2. The flow of energy and the recycling of matter are essential to a stable ecosystem.	
7.4.2.2.1 Recognize that producers use the energy from sunlight to make sugars from carbon dioxide and water through a process called photosynthesis. This food can be used immediately, stored for later use, or used by other organisms.	GF: 29 LT: 101-103, 111, 129 GEN: 32 EN: 136-137 EN: 136-137 AQ: 71-72, 98
7.4.2.2.2 Describe the roles and relationships among producers, consumers and decomposers in changing energy from one form to another in a food web within an ecosystem.	LT: 109-111, 129-131
7.4.2.2.3 Explain that the total amount of matter in an ecosystem remains the same as it is transferred between organisms and their physical environment, even though its form and location change.	
3. Evolution in Living Systems	
1. Reproduction is a characteristic of all organisms and is essential for the continuation of a species. Hereditary information is contained in genes which are inherited through asexual or sexual reproduction	

7.4.3.1.1 Recognize that cells contain genes and that each gene carries a single unit of information that either alone, or with other genes, determines the inherited traits of an organism.	GF: 28 GEN: 54-56, 201
7.4.3.1.2 Recognize that in asexually reproducing organisms all the genes come from a single parent, and that in sexually reproducing organisms about half of the genes come from each parent.	GEN: 45, 184-188
7.4.3.1.3 Distinguish between characteristics of organisms that are inherited and those acquired through environmental influences.	GEN: 95, 103
2. Individual organisms with certain traits in particular environments are more likely than others to survive and have offspring.	
7.4.3.2.1 Explain how the fossil record documents the appearance, diversification and extinction of many life forms.	GEN: 120-123, 208
7.4.3.2.2 Use internal and external anatomical structures to compare and infer relationships between living organisms as well as those in the fossil record.	GEN: 120-123
7.4.3.2.3 Recognize that variation exists in every population and describe how a variation can help or hinder an organism's ability to survive.	GEN: 95-101, 103-104, 114-118, 124-128, 189
7.4.3.2.4 Recognize that extinction is a common event and it can occur when the environment changes and a population's ability to adapt is insufficient to allow its survival.	GEN: 100, 116
4. Human Interactions with Living Systems	
1. Human activity can change living organisms and ecosystems.	
7.4.4.1.1 Describe examples where selective breeding has resulted in new varieties of cultivated plants and particular traits in domesticated animals.	GEN: 141-143, 145 (artificial selection is used)

7.4.4.1.2 Describe ways that human activities can change the populations and communities in an ecosystem.	LT: 83, 92 AQ: 203, 221-222, 234-236
2. Human beings are constantly interacting with other organisms that cause disease.	
7.4.4.2.1 Explain how viruses, bacteria, fungi and parasites may infect the human body and interfere with normal body functions.	GF: 24-25, 40, 55-57, 58-60, 62-72, 90-91, 109-111, 125, 126, 128, 129, 130, 132, 145-148
7.4.4.2.2 Recognize that a microorganism can cause specific diseases and that there are a variety of medicines available that can be used to combat a given microorganism.	GF: 37-40, 55-57, 58-60, 62-72, 90-91, 109-111, 128, 129, 145-148
7.4.4.2.3 Recognize that vaccines induce the body to build immunity to a disease without actually causing the disease itself.	GF: 59-61, 64, 71, 120, 125
7.4.4.2.4 Recognize that the human immune system protects against microscopic organisms and foreign substances that enter from outside the body and against some cancer cells that arise from within.	GF: 113-118

Grade 8

Standard/Benchmark	Location/Page where Standard is found
1. The Nature of Science and Engineering	
1. The Practice of Science	
1. Science is a way of knowing about the natural world and is characterized by empirical criteria, logical argument and skeptical review.	
8.1.1.1.1 Evaluate the reasoning in arguments in which fact and opinion are intermingled or when conclusions do not follow logically from the evidence given.	DIV: 78 DIG: 71-72 MBT: 85 VIM: 55, 112-113 GEN: 101, 136, 140, 197 ECE: 141-143, 170, 211, 247, 250 AST: 45, 79

	EN: 69, 97, 199 AQ: 36, 160, 195, 232, 237
2. Scientific inquiry uses multiple interrelated processes to investigate questions and propose explanations about the natural world.	
8.1.1.2.1 Use logical reasoning and imagination to develop descriptions, explanations, predictions and models based on evidence.	DIV: 52, 57-61, 81, 91-92 DIG: 23-25, 90-94 MBT: 26-27, 52-53, 58-59, 76-77, 85, 92 VIM: 55, 112-113 AIA: 28-30, 36-37, 58, 70, 86, 92, 118-119, 122-123, 135, 140 GF: 17, 73-74, 121-123 LT: 40-41, 52, 105, 143-147 GEN: 90-91, 136 ECE: 89-90, 146-147, 169-170, 209, 246, 249-250, 258 AST: 26, 44, 62-63, 77-78, 93, 113-114, 262, 213, 216-218 EN: 68-69, 96-97, 140, 154-155, 174, 183, 197, 202, 254 AQ: 36, 57, 111, 160, 195, 218, 222, 224, 227, 232, 236-237, 304-305 PF: 49, 58, 75-76, 87, 108, 116, 169, 199, 208
3. Interactions Among Science, Technology, Engineering, Mathematics and Society	
2. Men and women throughout the history of all cultures, including Minnesota American Indian tribes and communities, have been involved in engineering design and scientific inquiry.	
8.1.3.2.1 Describe examples of important contributions to the advancement of science, engineering and technology made by individuals representing different groups and cultures at different times in history.	MBT: 43-44, 62-64, 93-94 VIM: 91, 152 AIA: 53-55 GF: 59-60 GEN: 49-56, 86, 114-118, 203-206 ECE: 114, 254-257 AST: 14, 25-26, 37, 53, 66, 142-143, 148-150, 191-194, 197, 199-200, 203 EN: 70, 211-212, 279, 293 AQ: 69-70, 85-87, 93-95, 137
3. Science and engineering operate in the context of society and both influence and are influenced by this context.	

<p>8.1.3.3.1 Explain how scientific laws and engineering principles, as well as economic, political, social, and ethical expectations, must be taken into account in designing engineering solutions or conducting scientific investigations.</p>	<p>DIV: 19, 57-61, 88-89 DIG: 23-25 MB T: 52-53 VIM: 41-46, 142-143, 153-154, 192-195 ECE: 114 AQ: 254-257, 302-304</p>
<p>8.1.3.3.2 Understand that scientific knowledge is always changing as new technologies and information enhance observations and analysis of data.</p>	<p>AIA: 111-112, 138-139 GF: 57 GEN: 49-56, 117, 123, 204 ECE: 47, 72-73, 106-112, 254-258 AST: 14, 148-150, 163-164, 194, 206-211</p>
<p>8.1.3.3.3 Provide examples of how advances in technology have impacted the ways in which people live, work and interact</p>	<p>AIA: 138-139 GF: 57, 204 ECE: 106-114 AST: 14, 163-164, 206-211 AQ: 254-257, 302-304</p>
<p>4. Current and emerging technologies have enabled humans to develop and use models to understand and communicate how natural and designed systems work and interact.</p>	
<p>8.1.3.4.1 Use maps, satellite images and other data sets to describe patterns and make predictions about local and global systems in Earth science contexts.</p>	<p>ECE: 36-39, 42-46, 47-51, 118-122, 126-129, 132-139, 173-178, 242-244 AST: 33-38, 68-71, 144-146 PF: 15-22, 24-26, 31-34, 52-54, 60-64, 77-81, 90-94, 109-114, 117-127, 134-137, 144-147, 156-165, 173-177, 208-209</p>
<p>8.1.3.4.2 Determine and use appropriate safety procedures, tools, measurements, graphs and mathematical analyses to describe and investigate natural and designed systems in Earth and physical science contexts.</p>	<p>DIG: 31-33, 34-36, 37-38 DIV: 67-70 LT: 33-39 ECE: 132-139, 154-158 AST: 7-9, 15-16, 73-77, 122-131, 144-146, 173-175 PF: 44-47, 99-102, 148-150</p>
<p>2. Physical Science</p>	
<p>1. Matter</p>	
<p>1. Pure substances can be identified by properties which are independent of the sample of the substance and the properties can be explained by a model of matter that is composed of small particles.</p>	

8.2.1.1.1 Distinguish between a mixture and a pure substance and use physical properties including color, solubility, density, melting point and boiling point to separate mixtures and identify pure substances.	AQ: 61, 267-269
8.2.1.1.2 Use physical properties to distinguish between metals and non-metals.	AQ: 231
2. Substances can undergo physical and/or chemical changes which may change the properties of the substance but do not change the total mass in a closed system.	
8.2.1.2.1 Identify evidence of chemical changes, including color change, generation of a gas, solid formation and temperature change.	EN: 127 AQ: 89-90, 122, 128, 129-131
8.2.1.2.2 Distinguish between chemical and physical changes in matter.	AQ: 98
8.2.1.2.3 Use the particle model of matter to explain how mass is conserved during physical and chemical changes in a closed system.	AQ: 136-137 (conservation of matter is used)
8.2.1.2.4 Recognize that acids are compounds whose properties include a sour taste, characteristic color changes with litmus and other acid/base indicators, and the tendency to react with bases to produce a salt and water.	AQ: 194, 204-206. 208-214, 220
3. Energy	
1. Waves involve the transfer of energy without the transfer of matter.	
8.2.3.1.1 Explain how seismic waves transfer energy through the layers of the Earth and across its surface.	ECE: 72, 99-102 EN: 170
3. Earth and Space Science	
1. Earth Structure and Processes	
1. The movement of tectonic plates results from interactions among the lithosphere, mantle and core	

8.3.1.1.1 Recognize that the Earth is composed of layers, and describe the properties of the layers, including the lithosphere, mantle and core.	ECE: 65, 71-78, 83-85, 153
8.3.1.1.2 Correlate the distribution of ocean trenches, mid-ocean ridges and mountain ranges to volcanic and seismic activity.	ECE: 164-166, 190-192
8.3.1.1.3 Recognize that major geological events, such as earthquakes, volcanic eruptions and mountain building, result from the slow movement of tectonic plates.	ECE: 74-78, 92-95, 194-196, 203-206, 215, 222-234
2. Landforms are the result of the combination of constructive and destructive processes.	
8.3.1.2.1 Explain how landforms result from the processes of crustal deformation, volcanic eruptions, weathering, erosion and deposition of sediment.	DIG: 55-58, 64 ECE: 3, 15, 21, 61-63, 74-75, 190, 195, 202, 218-220 AST: 42-43
8.3.1.2.2 Explain the role of weathering, erosion and glacial activity in shaping Minnesota's current landscape.	
3. Rocks and rock formations indicate evidence of the materials and conditions that produced them.	
8.3.1.3.1 Interpret successive layers of sedimentary rocks and their fossils to infer relative ages of rock sequences, past geologic events, changes in environmental conditions, and the appearance and extinction of life forms.	GEN: 120-123 ECE: 251-253
8.3.1.3.2 Classify and identify rocks and minerals using characteristics including, but not limited to, density, hardness and streak for minerals; and texture and composition for rocks.	DIG: 43-44
8.3.1.3.3 Relate rock composition and texture to physical conditions at the time of formation of igneous, sedimentary and metamorphic rock.	ECE: 212-214, 251-252
2. Interdependence Within the Earth System	
1. The sun is the principal external energy source for the Earth.	

8.3.2.1.1 Explain how the combination of the Earth's tilted axis and revolution around the sun causes the progression of seasons.	PF: 82-85
8.3.2.1.2 Recognize that oceans have a major effect on global climate because water in the oceans holds a large amount of heat.	PF: 104-107
8.3.2.1.3 Explain how heating of the Earth's surface and atmosphere by the sun drives convection within the atmosphere and hydrosphere producing winds, ocean currents and the water cycle, as well as influencing global climate	PF: 152-152, 200-203, 205
2. Patterns of atmospheric movement influence global climate and local weather.	
8.3.2.2.1 Describe how the composition and structure of the Earth's atmosphere affects energy absorption, climate, and the distribution of particulates and gases.	AQ: 147-148 PF: 140-143
8.3.2.2.2 Analyze changes in wind direction, temperature, humidity and air pressure and relate them to fronts and pressure systems.	PF: 206-207
8.3.2.2.3 Relate global weather patterns to patterns in regional and local weather.	This is done throughout PF but not in one particular place
3. Water, which covers the majority of the Earth's surface, circulates through the crust, oceans and atmosphere in what is known as the water cycle.	
8.3.2.3.1 Describe the location, composition and use of major water reservoirs on the Earth, and the transfer of water among them.	
8.3.2.3.2 Describe how the water cycle distributes materials and purifies water.	PF: 190-191
3. The Universe	
1. The Earth is the third planet from the sun in a system that includes the moon, the sun, seven other planets and their moons, and smaller objects.	

8.3.3.1.1 Recognize that the sun is a medium-sized star, one of billions of stars in the Milky Way galaxy, and the closest star to Earth.	AST: 100, 165, 179, 182
8.3.3.1.2 Describe how gravity and inertia keep most objects in the solar system in regular and predictable motion.	AST: 47, 53, 136-137, 151, 165
8.3.3.1.3 Recognize that gravitational force exists between any two objects and describe how the masses of the objects and distance between them affect the force.	DIV: 19-21 VIM: 125 AST: 136-137
8.3.3.1.4 Compare and contrast the sizes, locations, and compositions of the planets and moons in our solar system.	AST: 50-51, 54, 84, 95-98, 102, 118-121, 122-131, 133-136, 144-147
8.3.3.1.5 Use the predictable motions of the Earth around its own axis and around the sun, and of the moon around the Earth, to explain day length, the phases of the moon, and eclipses.	AST: 73-77, 80-92, 103-108
4. Human Interactions with Earth Systems	
1. In order to maintain and improve their existence, humans interact with and influence Earth systems.	
8.3.4.1.1 Describe how mineral and fossil fuel resources have formed over millions of years, and explain why these resources are finite and non-renewable over human time frames.	EN: 38-39, 119 AQ: 190, 281
8.3.4.1.2 Recognize that land and water use practices can affect natural processes and that natural processes interfere and interact with human systems.	LT: 30-31, 42-44, 46-49, 83 AQ: 203, 234-235