Revised: 5/30/2024
Board Approved:

6th Grade Science Yearly Standards

Units	Priority Standards
Unit 1 **Light and Matter**	**6-8.PS4.A.2** **DEVELOP and USE** a model to **DESCRIBE** that waves are reflected, absorbed, or transmitted through various materials. {Clarification Statement: Emphasis is on both light and mechanical waves. Examples of models could include drawings, simulations, and written descriptions}
Unit 2 **Thermal Energy**	**6-8. PS1.A.4** **DEVELOP** a model that **DESCRIBES** changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed. {Clarification Statement: Emphasis is on qualitative molecular-level models of solids, liquids, and gases to show that adding or removing thermal energy increases or decreases kinetic energy of the particles until a change of state occurs. Examples of models could include drawings and diagrams. Examples of particles could include molecules or inert atoms. Examples of pure substances could include water, carbon dioxide, and helium.} **6-8.PS3.A.3** **APPLY** scientific principles to **DESIGN, CONSTRUCT,** and **TEST** a device that either minimizes or maximizes thermal energy transfer. {Clarification Statement: Examples of devices could include an insulated box, a solar cooker, and a Styrofoam cup.} **6-8.PS3.A.4** **PLAN and CONDUCT** an investigation to **DETERMINE** the relationships among the energy transferred, the type of matter, the mass, and the change in the temperature of the sample. {Clarification Statement: Examples of experiments could include comparing final water temperatures after different masses of ice melted in the same volume of water with the same initial temperature, the temperature change of samples of different materials with the same mass as they cool or heat in the environment, or the same material with different masses when a specific amount of energy is added.}

	6-8.PS3.B **CONSTRUCT, USE, and PRESENT** arguments to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object. {Clarification Statement: Examples of empirical evidence used in arguments could include an inventory or other representation of the energy before and after the transfer in the form of temperature changes or motion of an object.} **6-8.PS4.A.2** **DEVELOP and USE** a model **to DESCRIBE** that waves are reflected, absorbed, or transmitted through various materials. {Clarification Statement: Emphasis is on both light and mechanical waves. Examples of models could include drawings, simulations, and written descriptions.} **6-8.ETS1.B.3** **DEVELOP** a model to **GENERATE** data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved
Unit 3 **Weather, Climate and Water Cycling**	**6-8.ESS2.C.1** **DESIGN and DEVELOP** a model to describe the cycling of water through Earth's systems driven by energy from the sun and the force of gravity.{Clarification Statement: Emphasis is on the ways water changes its state as it moves through the multiple pathways of the hydrologic cycle. Example of models can be conceptual or physical.} **6-8. ESS2.C.2** **RESEARCH, COLLECT, and ANALYZE** data to provide evidence for how the motions and complex interactions of air masses result in changes in weather conditions. {Clarification Statement: Emphasis is on how air masses flow from regions of high pressure to low pressure, causing weather (defined by temperature, pressure, humidity, precipitation, and wind) at a fixed location to change over time, and how sudden changes in weather can result when different air masses collide. Emphasis is on how weather can be predicted within possible ranges. Examples of data can be provided to students (such as weather maps, diagrams, and visualizations) or obtained through laboratory experiments (such as with condensation)} **6-8.ESS2.C.3** **DEVELOP and USE** a model to **DESCRIBE** how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates. {Clarification Statement: Emphasis is on how patterns vary by latitude, altitude, and geographic land distribution. Emphasis on atmospheric circulation is on the sunlight-driven latitudinal banding, the Coriolis effect, and resulting prevailing winds; emphasis of ocean circulation is on the transfer of heat by the global ocean convection cycle, which is constrained by the Coriolis effect and the outlines of continents. Examples of models can be diagrams, maps, and globes, or digital representations.} **6-8.PS1.A4**

	DEVELOP a model that describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed. {Clarification Statement: Emphasis is on qualitative molecular-level models of solids, liquids, and gases to show that adding or removing thermal energy increases or decreases kinetic energy of the particles until a change of state occurs. Examples of models could include drawings and diagrams. Examples of particles could include molecules or inert atoms. Examples of pure substances could include water, carbon dioxide, and helium}
Unit 4 **Plate Tectonics and Rock Cycling**	**6-8. ESS1.C** **CONSTRUCT** a scientific explanation based on evidence from rock strata for how the geologic time scale is used to organize Earth's history. {Clarification Statement: Emphasis is on how analyses of rock formations and the fossils they contain are used to establish relative ages of major events in Earth's history, **6-8. ESS2.A.1** **DEVELOP and USE** a model to **ILLUSTRATE** that energy from the Earth's interior drives convection which cycles Earth's crust leading to melting, crystallization, weathering, and deformation of large rock formations, including generation of the ocean sea floor at ridges, submergence of the ocean sea floor at trenches, mountain building, and active volcanic chains. {Clarification Statement: The emphasis is on large-scale cycling resulting from plate tectonics that includes changes in rock types through erosion, heat, and pressure.} **6-8.ESS2.A.2** **CONSTRUCT** an explanation based on evidence for how geoscience processes have changed Earth's surface at carrying time and spatial scales. {Clarification Statement: Emphasis is on how processes change Earth's surface at a time and spatial scales that can be large (such as slow plate motions or the uplift of large mountain ranges) or small (such as rapid landslide microscopic geochemical reactions), and how many geoscience processes (such as earthquakes, volcanoes, and meteor impacts) usually behave gradually but are punctuated by catastrophic events. Examples of geoscience processes include surface weathering and deposition by the movements of water, ice, and wind. Emphasis is on geoscience processes that shape local geographic features, where appropriate. **6-8.ESS2.B** **ANALYZE and INTERPRET** data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of past plate motions. {Clarification Statement: Examples of data include similarities of rock and fossil types on different continents, the shapes of the continents (including continental shelves), and the locations of ocean structures (such as ridges, fracture zones, and trenches)}
Unit 5 **Natural Hazards**	**6-8.ESS3.B.1** **ANALYZE** and **INTERPRET** data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects *[Clarification Statement: Emphasis is on how some natural hazards, such as volcanic eruptions and severe weather, are preceded by phenomena that allow for reliable predictions, but others, such as earthquakes, occur suddenly and without notice, and thus are not yet predictable.*

	Examples of natural hazards can be taken from interior processes (such as earthquakes and volcanic eruptions), surface processes (such as mass wasting and tsunamis), or severe weather events (such as hurricanes, tornadoes, and floods). Examples of data can include the locations, magnitudes, and frequencies of natural hazards. Examples of technologies can be global (such as satellite systems to monitor hurricanes or forest fires) or local (such as building basements in tornado-prone regions or reservoirs to mitigate droughts)
Unit 6 **Cells and Systems**	**6-8.LS1.A.1** **PROVIDE** evidence that organisms (unicellular and multicellular) are made of cells and that a single cell must carry out all of the basic functions of life. {Clarification Statement: Emphasis is on developing evidence that living things are made of cells, distinguishing between living and nonliving things, and understanding that living things may be made of one cell or many and varied cells.} **6-8.LS1.A.2** **DEVELOP and USE** a model to **DESCRIBE** the function of a cell as a whole and the ways parts of the cells contribute to that function. {Clarification Statement: Emphasis is on the cell functioning as a whole system and the primary role of identified parts of the cell, specifically the nucleus, chloroplasts, mitochondria, cell membrane, and cell wall} **6-8.LS1.A.3** **DEVELOP** an argument based on evidence for how multicellular organisms are organized by varying levels of complexity; cells, tissue, organs, and organ systems