8th Grade Science Scope and Sequence Revised August 2018

1st Nine Weeks				
Time	**Cluster**	**Standards**	**Learning Targets**	**Lesson Topics/Resources**
Quarter1 Week1	Force and Motion	PS2.3: Create a demonstration of an object in motion and describe the position, force, and direction of the object.	I can plan and conduct experiments to collect data on the position, force, and direction of movement for an object in motion. I can create and use motion maps and simple graphs (position vs time, velocity vs time) to describe the motion of an object.	Chapter 1
Quarter 1 Week 2	Force and Motion	PS2.4: Plan and conduct an investigation to provide evidence that the change in an object's motion depends on the sum of the forces on the object and the mass of the object.	I can plan and conduct experiments to determine how different amounts of force affect the motion of objects with different masses. I can develop and use models to explain how the motion of an object depends on the mass of the object and the sum of forces acting on the object. I can predict how an object will move based on the mass of the object and forces acting upon it.	Chapter 1
Quarter 1 Week 3	Force and Motion	PS2.5 Evaluate and interpret that for every force exerted on an	I can develop and use models to explain how every force on an object has an opposite force in equal amount. I can research and communicate real world examples of opposite and equal forces.	Chapter 1

Quarter 1 Week 4	Magnetism	PS2.1 Design and conduct investigations depicting the relationship between magnetism and electricity in electromagnets, generators, and electrical motors, emphasizing the factors that increase or diminish the electric current and the magnetic field strength.	I can design and conduct experiments to identify the relationship between electricity and magnetism.	Chapter 2
Quarter1 Week5	Magnetism	PS2.2 Design and conduct investigations depicting the relationship between magnetism and electricity in electromagnets, generators, and electrical motors, emphasizing the factors that increase or diminish the electric current and the magnetic field strength.	I can and conduct experiments to determine how electromagnetic force from one object can affect other objects even when not in contact. I can develop and use models to show how forces can cause objects in the same field to attract and repel even when not in contact.	Chapter 2
Quarter 1 Week 6	Magnetism	ETS1.1 Develop a model to generate data for ongoing testing and modification of an electromagnet, a generator, and a motor such that an optimal design can be achieved.	I can develop and use models to explain how the relationship between electricity and magnetism is used in electromagnets, generators, and electric motors. I can design and conduct experiments to identify factors that change the strength of the magnetic field from an electromagnet and the electric current from the generator. I can develop an optimal design for an electromagnet, a generator, and a motor by building, testing, and modifying prototypes.	Chapter 2
Quarter 1 Week 7	Waves	PS2.1 Develop and use models to represent the basic properties of	I can analyze data to determine the frequency, amplitude, wavelength, and speed of different waves.	Chapters 3 &4

		waves including frequency, amplitude, wavelength, and speed.	I can develop and use mathematical models to explain the relationships between frequency, amplitude, wavelength, and wave speed.	
Quarter 1 Week 8	Waves	PS4.2 Compare and contrast mechanical waves and electromagnetic waves based on refraction, reflection, transmission, absorption, and their behavior through a vacuum and/or various media.	I can develop and use models to explain how energy is transferred by waves. I can plan and conduct experiments to describe how mechanical and electromagnetic waves move through vacuums and different types of media. I can design and conduct experiments to test for refraction, reflection, transmission, and absorption of different waves through different media.	Chapters 3 &4
Quarter 1 Week 9	Waves	PS4.3 Evaluate the role that waves play in different communication systems.	I can research and communicate how various technologies use different frequencies of the electromagnet spectrum. I can develop and use models to explain the role wavs play in communication systems. (Examples: radio, television, fiber optics, Wi-Fi devices.)	Chapters 3 &4

2nd Nine Weeks				
Time	**Cluster**	**Standards**	**Learning Targets**	**Lesson Topics/Resources**
Quarter 2 Week 1	Universe	ESS1.1 Research, analyze, and communicate that the universe began with a period of rapid expansion using evidence from the motion of galaxies and composition of stars.	I can use data on the motion of galaxies and the composition of stars to develop models that can explain how the universe began with a period of rapid expansion.	Chapter 5, 6, & 7
Quarter 2 Week 2	Universe	ESS1.2 Explain the role of gravity in the formation of our sun and planets. Extend this explanation to address gravity's effect on the motion of celestial objects in our solar system and Earth's ocean tides.	I can explain how the sun and planets in our solar system formed under the force of gravity. I can develop and use models to explain how gravity effects the motion of objects in our solar system. I can develop and use models to explain how gravity affects Earth's ocean tides.	Chapter 5, 6, & 7
Quarter 2 Week 3	Universe	ETS1.2 Research and communicate information to describe how data from technologies (telescopes, spectroscopes, satellites, and space probes) provide information about objects in the solar system and universe.	I can research and communicate how technologies are used to obtain data about our solar system, galaxies, and universe. I can explain how data are analyzed to develop conclusions about the objects in our solar system, galaxies and universe.	Chapter 5, 6, & 7
Quarter 2 Week4	Rocks and Plate Tectonics	ESS2.1 Analyze and interpret data to support the assertion that rapid or gradual geographic changes lead to drastic population changes and extinction events.	I can analyze data to develop an explanation of rapid and gradual geographic changes have affected	Chapters 8, 9, 10, &11

			populations and caused extinctions.	
Quarter 2 Week 5	Rocks and Plate Tectonics	ESS2.2 Evaluate data collected from seismographs to create a model of Earth's structure.	I can analyze seismograph data to develop models of the compositions of Earth's structural layers. (crust, mantel, and core) I can compare methods of classifying Earth's layers based on composition and mechanical characteristics of the layers. (crust/mantel/core vs. asthenosphere/litosphere)	Chapters 8, 9, 10, &11
Quarter 2 Weeks 6 & 7	Rocks and Plate Tectonics	ESS2.3 Describe the relationship between the processes and forces that create igneous, sedimentary, and metamorphic rocks.	I can develop and use models to explain how plate movements and processes in the Earth cause metamorphic rock formation. (process examples: metamorphism, deformation) I can develop and use models to explain how plate movements and processes in the Earth cause igneous rock formation. (process examples: melting, cooling, extrusion, intrusion, and solidification) I can develop and use models to explain how plate movements and processes in the Earth cause sedimentary rock formation. (process examples: weathering,	Chapters 8, 9, 10, 11, & 13

			erosion, deposition, compaction/sedimentation)	
Quarter 2 Week 8	Rocks and Plate Tectonics	ESS2.4 Gather and evaluate evidence that energy from the earth's interior drives convection cycles within the asthenosphere which creates changes within the lithosphere including plate movements, plate boundaries, and sea-floor spreading.	I can develop and use models to explain how energies from earth's interior drives convection cycles in the asthenosphere. I can develop and use models that explain how convection cycles in the asthenosphere cause changes in the lithosphere. (examples: plate movements, formation of plate boundaries, and seafloor spreading)	Chapters 8, 9, 10, &11
Quarter 2 Week 9	Rocks and Plate	ESS2.5 Construct a scientific explanation using data that explains the gradual process of plate tectonics accounting for A) the distribution of fossils on different continents, B) the occurrence of earthquakes, and C) continental and ocean floor features (including mountains, volcanoes, faults, and trenches).	I can develop and use models to explain how plate tectonics result in the formation of mountains, faults, and trenches. I can analyze data to develop maps that show patterns in the locations of earthquakes, volcanoes, and tectonic plate movement.	Chapters 8, 9, 10, &11

3rd Nine Weeks				
Time	**Cluster**	**Standards**	**Learning Targets**	**Lesson Topics/Resources**
Quarter 3 Week 1	Natural Resources & Hazards	ESS3.1 Interpret data to explain that earth's mineral, fossil fuel, and groundwater resources are unevenly distributed as a result of geologic processes.	I can analyze data to develop an argument that geological processes have caused uneven distribution of Earth's fossils, fossil fuels, minerals, and ground water.	Chapters 11 &12
Quarter 3 Week 2	Natural Resources & Hazards	ESS3.2 Collect data, map, and describe patterns in the locations of volcanoes and earthquakes related to tectonic plate boundaries, interactions, and hotspots.	I can develop and use model to explain how the location and movement of tectonic plates cause earthquakes and volcanic hotspots. I can analyze data to develop an argument of how the major geological formations of Earth have formed, changed, and continue to change over time.	Chapters 11&12
Quarter 3 Week 3	Earth's History	LS4.1 Analyze and interpret data for patterns in the fossil record that document the existence, diversity, extinction, and change in life forms throughout Earth's history.	I can analyze charts, graphs, and images of Earth's fossil record to identify patterns in Earth's living history. (examples: existence, diversity, extinction, and changes in living organisms) I can develop and use models to explain relationships between major geological events and major changes in the fossil record.	Chapters 14 &15
Quarter 3 Week 4	Earth's History	LS.4.2 Construct an explanation addressing similarities and differences of the anatomical structures and genetic information between extinct and extant organisms using evidence of	I can compare and contrast anatomical structures and genetic makeups of extinct and extant organisms. I can analyze cladograms to identify patterns between taxa in terms of	Chapters 14 &15

		common ancestry and patterns between taxa.	anatomical structures and genetic makeups. I can analyze data of anatomical structures and genetic makeups to identify common ancestries.	
Quarter 3 Week 5 &6	Earth's History	LS4.3 Analyze evidence from geology, paleontology, and comparative anatomy to support that specific phenotypes within a population can increase the probability of survival of that species and lead to adaptation.	I can analyze data to determine which phenotypes within a population will increase the chances of survival in a given environment. I can develop and use models to explain to explain how survival of certain phenotypes can lead to adaptations and survival of the species. I can analyze data from geology, paleontology, and comparative anatomy to communicate examples of phenotypes that have led to adaptations and survival of a species.	Chapters 14 &15
Quarter 3 Week 7	Earth's History	LS4.4 Develop a scientific explanation of how natural selection plays a role in determining the survival of a species in a changing environment.	I can develop an argument for how natural selection determines the survival of a species in a given environment. I can analyze data to predict the fate of a population in a changing environment.	Chapters 14 &15
Quarter 3 Week 8 & 9	Artificial Selection	LS4.5 Obtain, evaluate, and communicate information about the technologies that have changed the way humans use artificial selection to influence the inheritance of desired traits in other organisms.	I can compare and contrast artificial selection with natural selection. I can research and communicate scientifically how humans use technology in artificial selection to obtain desired traits in other organisms.	Chapter 15

- We will be introducing information that was moved to 7th grade due to changes in the standards.

4th Nine Weeks			
Time	**Cluster**	**Standards**	**Learning Targets**
Quarter 4 Weeks 1&2	Atoms, Molecules, and Mixtures	PS1.1, PS1.2, PS1.3	
Quarter 4 Week 3	States of Matter	PS1.6	
Quarter 4 Week 4	Physical and Chemical Properties	PS1.5	
Quarter 4 Week 5	Law of Conservation of Mass	PS1.4	
Quarter 4 Weeks 6-9		**REVIEW PREVIOUSLY TAUGHT STANDARDS AND LEARNING TARGETS**	