

8th Grade Science Scope & Sequence

1 st Six Weeks	2 nd Six Weeks
<p>Unit 0: SEL/ The First Five Days (5 days) Aug. 14- Aug. 20 https://casel.org/wp-content/uploads/2017/01/Competencies.pdf</p> <ul style="list-style-type: none"> ➤ Big Ideas: Develop classroom culture, building community, and establish rules and procedures <ul style="list-style-type: none"> ▪ Self-Awareness ▪ Self-Management ▪ Social Awareness ▪ Relationship Skills ▪ Responsible Decision-Making <p>Unit 1: Atomic Structure and Element Identity, Intro to Arrangement of the Periodic Table (19 Days) Aug. 21- Sept. 19</p> <ul style="list-style-type: none"> ➤ Big Ideas: <ul style="list-style-type: none"> ▪ The nucleus contains protons and neutrons ▪ Electrons are found in the electron cloud which includes the area around an atomic nucleus ▪ Use different models to show and describe the structure of atoms (Bohr, etc.) atom, but the protons will not vary ▪ Protons are located in the nucleus and identify the element ▪ Valence electrons are found in the outermost portion of the electron cloud ▪ Reactivity is directly related to the octet rule; i.e., eight valence electrons in the outer shell Hydrogen and Helium are the exceptions as they have two valence electrons ▪ Atomic number of an element provides the number of protons and electrons in one atom if the atom is neutral ▪ Valence electrons are directly related to representative groups ➤ Important Concepts: <ul style="list-style-type: none"> ▪ Students will explore various atomic models to understand atomic structure ▪ Students will differentiate mass number and atomic mass ▪ Students will calculate atomic mass 	<p>Unit 2: Arrangement of the Periodic Table and Chemical Formulas and Reactions, Balanced and Unbalanced Forces (24 days) Sept. 24- Nov. 1</p> <ul style="list-style-type: none"> ➤ Big Ideas: <ul style="list-style-type: none"> ▪ Chemical formulas identify substances ▪ The number of atoms of each element is determined from chemical formulas ▪ Evidence of chemical reactions ▪ Law of conservation of mass ▪ Understanding how unbalanced forces cause acceleration is foundational for understanding Newton’s laws of motion. ➤ Important Concepts: <ul style="list-style-type: none"> ▪ The nucleus contains protons and neutrons ▪ Electrons are found in the electron cloud which includes the area around an atomic nucleus ▪ Protons are located in the nucleus and identify the element ▪ Valence electrons are found in the outermost portion of the electron cloud ▪ Reactivity is directly related to the octet rule; i.e., eight valence electrons in the outer shell Hydrogen and Helium are the exceptions as they have two valence electrons ▪ Atomic number of an element provides the number of protons and electrons in one atom if the atom is neutral ▪ Location of metals, metalloids, and nonmetals ▪ Reactivity is directly related to the number of valence electrons ▪ A chemical formula shows the relative proportions of atoms that make up a substance. ▪ Evidence of chemical reactions includes the production of gas, change in temperature, production of a precipitate, or permanent color change

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<ul style="list-style-type: none"> ▪ Students will describe the structure of atoms ▪ Students will identify elements given subatomic particle information ▪ Students will predict reactivity and chemical properties ➤ Readiness TEKS: 8.5A 8.5B ➤ Supporting TEKS: 	<ul style="list-style-type: none"> ▪ The law of conservation of mass is evident in chemical reactions. The number of atoms of each element on both side of the yield symbol is equal even though the arrangement has changed ▪ Acceleration is a change in speed and/or direction of an object's motion which is caused by unbalanced forces ▪ Calculate force, mass, or acceleration using the appropriate mathematical formula and using correct units <ul style="list-style-type: none"> ➤ Readiness TEKS: 8.5A, 8.5B, 8.5C 8.5D 8.5E 8.6A ➤ Supporting TEKS: 6.6A 7.6A 6.6B 8.6B 6.8C
3rd Six Weeks	4th Six Weeks
<p>Unit 3: Newton's Laws, Seasons Day & Night, (24 Days) Nov. 6- Dec. 19</p> <ul style="list-style-type: none"> ➤ Big Ideas: <ul style="list-style-type: none"> ▪ Friction is a force that acts against motion ▪ Acceleration is a change in speed and/or direction of an object's motion which is caused by unbalanced forces ▪ Calculate force, mass, or acceleration using the appropriate mathematical formula and using correct units ▪ The rotation of the Earth on its axis causes day and night ▪ The tilt of the Earth as it spins on its axis affects the amount of sunlight that reaches a particular hemisphere of the Earth at different times of the year ▪ The revolution of the Earth around the Sun causes changes in seasons ➤ Important Concepts: <ul style="list-style-type: none"> ▪ Balanced and unbalanced forces ▪ Speed ▪ Acceleration ▪ Friction ▪ Rotation of the Earth on its axis ▪ Revolution of Earth around the Sun ▪ Day and night 	<p>Unit 4: Earth Sun and Moon Relationships, Understanding the Universe, Sun' Energy Effect on Earth, Plate Tectonics/Topographic Maps (24 days) Jan. 14- Feb. 21</p> <ul style="list-style-type: none"> ➤ Big Ideas: <ul style="list-style-type: none"> ▪ The orbiting of the Moon around the Earth and the Earth orbiting the Sun creates the sequence of events known as the lunar cycle ▪ The lunar cycle is a predictable pattern of how the illuminated part of the Moon is seen by someone on Earth ▪ The lunar cycle includes the new moon, waxing crescent moon, first quarter moon, waxing gibbous moon, full moon, waning gibbous moon, third quarter moon, and waning crescent moon ▪ The Hertzsprung-Russell diagram (H-R diagram) is used to classify stars by their luminosity, temperature, and spectral class ▪ There are three types of galaxies (spiral, elliptical, and irregular) ▪ Stars are spheres of matter with enough density and heat to create nuclear reactions ➤ Important Concepts: <ul style="list-style-type: none"> ▪ Demonstrate the sequence of events in the lunar cycle ▪ Predict the sequence of events in the lunar cycle ➤ Readiness TEKS 8.7B 7.8A 8.9B 8.9C 8.8A

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<ul style="list-style-type: none"> ▪ Changes in seasons ➤ Readiness TEKS: 8.6A, 8.7A ➤ Supporting TEKS: 8.6B, 6.8C, 6.8D, 6.9C 	<ul style="list-style-type: none"> ➤ Supporting TEKS: 8.7C 8.8B 8.8C 8.8D 8.10A 8.10B 8.10C 8.9A 7.8C 6.11B
5th Six Weeks	6th Six Weeks
<p>Unit 5: Plate Tectonics/Topographic Maps, Interactions and Relationships, Impact on the Environment (24 days) Feb. 24- Apr. 17</p> <ul style="list-style-type: none"> ➤ Big Ideas: <ul style="list-style-type: none"> ▪ Relate plate tectonics to the formation of crustal features ▪ Plate tectonics ▪ Formation of crustal features ▪ Organisms possess adaptations that enable them to survive and successfully reproduce ▪ Environmental changes can affect the ability of an organism or a species to survive ➤ Important Concepts: <ul style="list-style-type: none"> ▪ Alfred Wegner pioneered the continental drift theory which states that where Earth’s crust consists of tectonic plates that move on the asthenosphere ▪ Movement of tectonic plates forms features on Earth’s crust ▪ The crustal features formed depend on the type of boundary between the tectonic plates ▪ Convergent boundaries, where tectonic plates move towards one another, can result in the formation of volcanoes, where there is subduction, and mountains ▪ Topographic maps and satellite views are used to identify land features ▪ Weathering is a process that breaks down rock on the surface of the Earth and may reshape the land and erosional features, including canyons, deltas, valleys, rivers, islands, and coastlines ▪ Biotic and abiotic factors 	<p>Unit 6: Organisms, Environment and Matter, STAAR Review, STEM Challenges (24 days) Apr. 20- Jun. 2</p> <ul style="list-style-type: none"> ➤ Big Ideas: <ul style="list-style-type: none"> ▪ Short-and long-term environmental changes affect organisms and traits in subsequent populations ▪ Inherited traits are governed by genetic material found in genes within chromosomes found in the nucleus of eukaryotic cells. ▪ Punnett squares demonstrate how genotypes determine phenotypes. ▪ Human body systems interrelate and depend on each other ➤ Important Concepts: <ul style="list-style-type: none"> ➤ Organisms respond to change in the environment. ➤ Human activities may have an impact on living systems. — What are examples of ways that humans have impacted the ocean environment? ➤ Human activities may have an impact on living systems. ➤ Readiness TEKS: 8.11A 8.11B 8.11C ➤ Supporting TEKS: 7.11A, 7.11C, 7.12B, 7.12D, 7.12F, 7.14B, 7.14C, 6.12D, 7.5B

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- Changes in populations can occur due to limited resources and the competition for these resources
- Organisms and populations depend on biotic and abiotic resources, which often results in competition for them

- Readiness TEKS: 8.9B 8.9C 8.11A 8.11B
- Supporting TEKS: 8.9A 7.8C 6.11B 8.11C 7.10C 7.10B

Processing Standards: _____ Taught Throughout