

Grade: 8

Course: Science

Year: 2019-2020



Mission Statement

In partnership with our families and community, Lakewood City Schools will develop responsible citizens, who are critical and creative thinkers, committed to life-long learning, invested in a diverse society, and prepared for technological and global opportunities.

Thinking Skills - The student demonstrates:

1. Critical Thinking Skills include the ability to analyze, criticize, advocate ideas, reason inductively and deductively, and to reach factual and judgemental conclusions.
2. Creative Problem Solving by identifying and analyzing a problem, thinking divergently and evaluating the implementation of possible solutions.
3. Research skills by compiling, evaluating and presenting data.
4. Communication Skills

Suggested Pacing	Content Standards	Learning and Performance Expectations	Suggested Vocabulary	Assessment of Learning Options	Learning Resources Options
Physical Science					
The Physical Science Unit should take approx. nine weeks to complete	<p>PS.8.1: Objects can experience a force due to an external field such as magnetic, electrostatic, or gravitational fields.</p> <ul style="list-style-type: none"> ● Magnetic, electrical, and gravitational forces can act at a distance. 	<p>“I Can...”</p> <ul style="list-style-type: none"> ● Identify forces that act at a distance, such as gravity, magnetism and electrical. ● Describe some of the properties of magnets and some of the basic behaviors of magnetic forces ● Use a field model to explain the effects of forces that act at a distance ● Identify the type of field that would exist in a given scenario. ● Demonstrate that the Earth has a magnetic field. ● Explain that a field originates at a source and radiates away from that source decreasing rapidly in strength. ● Explain the relationship between mass, weight, and gravity. 	<ul style="list-style-type: none"> ● Attraction ● Electromagnetism ● Field ● Field model ● Gravity ● Magnetic field (lines) ● Magnetic poles ● Mass ● Negative charge ● Negative pole ● Positive charge ● Positive pole ● Repulsion ● Weight 	<ul style="list-style-type: none"> ● Labs ● Short-cycle assessments ● Summative assessments ● Gizmo labs ● Homework ● Projects ● Models & Diagrams ● Graphic organizers 	

Grade: 8

Course: Science

Year: 2019-2020



Mission Statement

In partnership with our families and community, Lakewood City Schools will develop responsible citizens, who are critical and creative thinkers, committed to life-long learning, invested in a diverse society, and prepared for technological and global opportunities.

		<ul style="list-style-type: none">● Explain the relationship between electricity and magnetism.			
The Physical Science Unit should take approx. nine weeks to complete	<p>PS.8.2 Forces can act to change the motion of objects.</p> <ul style="list-style-type: none">● The motion of an object is always measured with respect to a reference point.● Forces can be added. The net force on an object is the sum of all of the forces acting on the object.● If there is a nonzero net force acting on an object, its speed and/or direction will change.● Kinetic friction and drag are forces that act in a direction opposite the relative motion of objects.	<p>‘I Can...’</p> <ul style="list-style-type: none">● Demonstrate how forces can oppose the motion of an object● Describe a force by its magnitude and direction● Construct a (free-body) diagram● Describe motion as compared to a reference point● Describe how net force affects an object’s direction and /or speed● Demonstrate how net force is related to Newton’s 1st Law of Motion● Explain the effect of centripetal force on an object’s motion.	<ul style="list-style-type: none">● Air resistance● Balanced forces● Centripetal force● Compression● Drag● Force diagram● Free-body diagram● Friction● Gravity● Inertia● Kinetic (sliding) friction● Magnitude (strength)● Mass● Motion● Net force● Newton’s 1st law of motion● Normal force● Position● Reference point● Speed● Stationary● Tension● Unbalanced forces● Weight● Isaac Newton	<ul style="list-style-type: none">● Labs● Short-cycle assessments● Summative assessments● Gizmo labs● Homework● Projects● Models & Diagrams● Graphic organizers	

Grade: 8

Course: Science

Year: 2019-2020



Mission Statement

In partnership with our families and community, Lakewood City Schools will develop responsible citizens, who are critical and creative thinkers, committed to life-long learning, invested in a diverse society, and prepared for technological and global opportunities.

Earth and Space Science

<p>The Earth and Space Science Unit should take approx. nine weeks to complete</p>	<p>ESS.8.1: The composition and properties of Earth's interior are identified by the behavior of seismic waves</p> <ul style="list-style-type: none">• The refraction and reflection of seismic waves as they move through one type of material to another is used to differentiate the layers of Earth's interior. Earth has a core, a mantle, and a crust• Impacts during planetary formation generated heat. These impacts converted gravitational potential energy to heat. Earth's core is also able to generate its own thermal energy because of decaying atoms. This continuously released thermal energy. Thermal energy generated from Earth's core drives convection	<p><u>"I Can..."</u></p> <ul style="list-style-type: none">• Demonstrate how a planet's interior became organized into layers from cosmic debris.• Explain the effect of gravity on newly forming planets.• Describe how radioactive decay of minerals and the conversion of gravitational potential energy into heat is responsible for the Earth's internal heat.• Demonstrate a method to determine the relative density of a material.• Compare and contrast the speed and movement of different seismic waves.• Evaluate seismic data and relate it to how scientists have determined the layers of Earth's interior.• Model and describe the behavior of convection currents in the mantle	<ul style="list-style-type: none">• Crust• Displacement• Inner Core• Mantle• Outer Core• Mantle• Planetary Differentiation• Reflection• S Wave• Seismograph• Sink• Density• Float• Lithosphere• Asthenosphere• Mesosphere• Mass• P Wave• Refraction• Seismic Waves• Seismologist• Volume	<ul style="list-style-type: none">• Labs• Short-cycle assessments• Summative assessments• Gizmo labs• Homework• Projects• Models & Diagrams• Graphic organizers	
--	---	---	---	--	--

Grade: 8

Course: Science

Year: 2019-2020



Mission Statement

In partnership with our families and community, Lakewood City Schools will develop responsible citizens, who are critical and creative thinkers, committed to life-long learning, invested in a diverse society, and prepared for technological and global opportunities.

	currents in the asthenosphere.				
The Earth and Space Science Unit should take approx. nine weeks to complete	<p>ESS.8.2: Earth's lithosphere consists of major and minor tectonic plates that move relative to each other.</p> <ul style="list-style-type: none"> Historical data and observations such as fossil distribution, paleomagnetism, continental drift and sea-floor spreading contributed to the theory of plate tectonics. The rigid tectonic plates move with the molten rock and magma beneath them in the upper mantle. Convection currents in the asthenosphere cause the movement of the lithospheric plates. The energy that forms convection currents comes from deep within the Earth. There are three main types of plate boundaries: divergent, 	<p>"I Can..."</p> <ul style="list-style-type: none"> Describe various historical theories and data evidence that have led to the present- day Plate Tectonic Theory. Describe Wegener's Theory of Continental Drift. Model and explain the process of sea-floor spreading. Model and explain how convection currents in the mantle cause the movement of tectonic plates. Describe the movement and interaction of the 3 primary types of plate boundaries (convergent, divergent, transform) Interpret a boundary map to explain various plate interactions around the world. Explain the resulting geological events (earthquake and volcanic activity) and formations of plate boundary movement and interaction. Identify specific geologic events and features around the world and explain how plate movement or interaction is responsible for such events. Use my knowledge of magnetic fields to explain how the reversal of 	<ul style="list-style-type: none"> Coastal Mountains Continental Drift Convection Convection Currents Convergent Core Density Divergent Earth's magnetic field Earthquakes Fault Geyser Glaciers Hawaiian Islands Hot spot Island Arcs Magma Mantle Mariana Trench Mid-Atlantic Ridge New Madrid Fault System Oceanic vent Paleoclimate Pangaea Plate Boundaries Plate Tectonic Theory Ridge Rift valley Ring of Fire San Andreas Fault 	<ul style="list-style-type: none"> Labs Short-cycle assessments Summative assessments Gizmo labs Homework Projects Models & Diagrams Graphic organizers 	

Grade: 8

Course: Science

Year: 2019-2020



Mission Statement

In partnership with our families and community, Lakewood City Schools will develop responsible citizens, who are critical and creative thinkers, committed to life-long learning, invested in a diverse society, and prepared for technological and global opportunities.

	convergent, and transform. Each type of boundary results in specific motion and causes events (such as earthquakes or volcanic activity) or features (such as mountains or trenches) that are indicative of the type of boundary.	Earth's magnetic poles is evidenced in seafloor spreading.	<ul style="list-style-type: none">● Sea-Floor Spreading● Transform● Trench● Tsunami● Volcanism● Viscosity of lava● Alfred Wegener● Harry Hess		
The Earth and Space Science Unit should take approx. nine weeks to complete	ESS.8.3: A combination of constructive and destructive geologic processes formed Earth's surface. <ul style="list-style-type: none">● Earth's surface is formed from a variety of different geological processes, including but not limited to plate tectonics.	"I Can..." <ul style="list-style-type: none">● Identify various landforms on a map (i.e. mountains, valleys, ridges, plateaus, depressions).● Interpret maps to determine what caused constructive and destructive features.● Explain various factors that contribute to geologic processes such as erosion and deposition.	<ul style="list-style-type: none">● Coastlines● Constructive Processes● Contour Lines● Destructive Processes● Erosion● Geological Processes● Gradients● Landforms● Lithosphere● Streams● Topographic Map● Physical Map● Aerial Map● Topography● Deposition● Elevation● Floodplains● Glaciers● Hydrosphere● LANDSAT● Plate Tectonics	<ul style="list-style-type: none">● Labs● Short-cycle assessments● Summative assessments● Gizmo labs● Homework● Projects● Models & Diagrams● Graphic organizers	

Grade: 8

Course: Science

Year: 2019-2020



Mission Statement

In partnership with our families and community, Lakewood City Schools will develop responsible citizens, who are critical and creative thinkers, committed to life-long learning, invested in a diverse society, and prepared for technological and global opportunities.

<p>The Earth and Space Science Unit should take approx. nine weeks to complete</p>	<p>ESS.8.4: Evidence of the dynamic changes of Earth's surface through time is found in the geologic record.</p> <ul style="list-style-type: none">• Earth is approximately 4.6 billion years old. Earth history is based on observations of the geologic record and the understanding that processes observed at present day are similar to those that occurred in the past (uniformitarianism). There are different methods to determine relative and absolute age of some rock layers in the geologic record. Within a sequence of undisturbed sedimentary rocks, the oldest rocks are at the bottom (superposition). The geologic record can help identify past environmental and climate conditions.	<p><u>"I Can..."</u></p> <ul style="list-style-type: none">• Use a variety of methods to determine the relative and absolute ages of rock layers.• Explains how the concept of uniformitarianism informs us about past and present Earth processes and conditions.• Use evidence gathered from methods like ice core sampling to infer climate characteristics of an area in the past.	<ul style="list-style-type: none">• Absolute Age• Crosscutting• Fossil Evidence• Geological Record• Geologic Time• Ice Core Sampling• Index Fossils• Law of Superposition• Radiometric Dating• Relative Age	<ul style="list-style-type: none">• Labs• Short-cycle assessments• Summative assessments• Gizmo labs• Homework• Projects• Models & Diagrams• Graphic organizers	
--	--	---	--	--	--

Grade: 8

Course: Science

Year: 2019-2020



Mission Statement

In partnership with our families and community, Lakewood City Schools will develop responsible citizens, who are critical and creative thinkers, committed to life-long learning, invested in a diverse society, and prepared for technological and global opportunities.

Life Science

<p>The Life Science Unit should take approx. nine weeks to complete</p>	<p>LS.8.1: Diversity of species, a result of variation of traits, occurs through the process of evolution and extinction over many generations. The fossil records provide evidence that changes have occurred in number and types of species.</p> <ul style="list-style-type: none">● Fossils provide important evidence of how life and environmental conditions have changed.● Changes in environmental conditions can affect how beneficial a trait will be for the survival and reproductive success of an organism or an entire species.● Throughout Earth's history, extinction of a species has occurred when the environment changes and the	<p><u>"I Can..."</u></p> <ul style="list-style-type: none">● Explain how diversity can result from sexual reproduction.● Predict how the environment will lead to the selection or extinction of a species based on their varied traits.● Describe how variations may allow for survival when the environment changes.● Use data and evidence from geologic and fossil records to infer what the environment was like at the time of deposition.● Use structural, embryological, and DNA evidence to show connections between modern day organisms and their ancestors.	<ul style="list-style-type: none">● Diversity● Fossil record● Transitional Form● Variations● Trait● Geologic records● Extinction● Homologous structures● Analogous structures● Embryology● Common ancestor● Natural selection● Adaptations● Species● Charles Darwin	<ul style="list-style-type: none">● Labs● Short-cycle assessments● Summative assessments● Gizmo labs● Homework● Projects● Models & Diagrams● Graphic organizers	
---	--	--	---	--	--

Grade: 8

Course: Science

Year: 2019-2020



Mission Statement

In partnership with our families and community, Lakewood City Schools will develop responsible citizens, who are critical and creative thinkers, committed to life-long learning, invested in a diverse society, and prepared for technological and global opportunities.

	<p>individual organisms of that species do not have the traits necessary to survive and reproduce in the changed environment. Most species (approximately 99%) that have lived on Earth are now extinct.</p>				
<p>The Life Science Unit should take approx. nine weeks to complete</p>	<p>LS.8.2: Every organism alive today comes from a long line of ancestors who reproduced successfully every generation</p> <ul style="list-style-type: none">• Reproduction is the transfer of genetic information from one generation to the next. It can occur with mixing of genes from two individuals (sexual reproduction). It can occur with the transfer of genes from one individual to the next generation (asexual reproduction). The ability to reproduce defines living things.	<p>‘I Can.....’</p> <ul style="list-style-type: none">• Explain that every organism alive today comes from a long line of ancestors who reproduced successfully every generation.• Describe reproduction as the transfer of genetic information from one generation to the next.• Predict the probability of traits that can occur with mixing of genes from two individuals (sexual reproduction)• Compare the characteristics of asexual and sexual reproduction (identical v. unique offspring: low energy expenditure v. high energy expenditure: short amount of time v. Longer gestation)• Identify the advantages and disadvantages of asexual and sexual reproduction.• Compare meiosis and mitosis, their phases, purposes, and outcomes.	<ul style="list-style-type: none">• Asexual reproduction• Sexual reproduction• Bacteria• Chromosome• Clone• Female• Male• Fertilization• Gamete• Zygote• Genetic modification• Meiosis• Mitosis	<ul style="list-style-type: none">• Labs• Short-cycle assessments• Summative assessments• Gizmo labs• Homework• Projects• Models & Diagrams• Graphic organizers	

Grade: 8

Course: Science

Year: 2019-2020



Mission Statement

In partnership with our families and community, Lakewood City Schools will develop responsible citizens, who are critical and creative thinkers, committed to life-long learning, invested in a diverse society, and prepared for technological and global opportunities.

<p>The Life Science Unit should take approx. nine weeks to complete</p>	<p>LS.8.3: The characteristics of an organism are a result of inherited traits received from parent(s)</p> <ul style="list-style-type: none">• Expression of all traits is determined by genes and environmental factors to varying degrees. Many genes influence more than one trait, and many traits are influenced by more than one gene.• During reproduction, genetic information (DNA) is transmitted between parent and offspring. In asexual reproduction, the lone parent contributes DNA to the offspring. In sexual reproduction, both parents contribute DNA to the offspring.	<p>“ I Can....”</p> <ul style="list-style-type: none">• Explain how traits are passed from one generation to the next.• Identify the difference between dominant and recessive traits.• Complete a Punnett Square to determine the probability of an offspring’s traits when given the genotype and phenotype of the parents.• Use Punnett Squares to demonstrate Mendel’s 3 Laws of Inheritance.• Analyze family histories to identify inherited genetic disorders.	<ul style="list-style-type: none">• Go•	<ul style="list-style-type: none">• Labs• Short-cycle assessments• Summative assessments• Gizmo labs• Homework• Projects• Models & Diagrams• Graphic organizers	
---	--	---	--	--	--

Old standards to be taught until the year 2020

PS.8.3 There are different types of potential energy

- Gravitational potential energy changes in a system as the masses or relative positions of objects are changed.
- Objects can have elastic potential energy due to their compression or chemical potential energy due to the nature and arrangement of the atoms that make up the object.

This standard will no longer be included starting with the 2020-21 school year.

Grade: 8

Course: Science

Year: 2019-2020



Mission Statement

In partnership with our families and community, Lakewood City Schools will develop responsible citizens, who are critical and creative thinkers, committed to life-long learning, invested in a diverse society, and prepared for technological and global opportunities.