Curriculum Map: Cyber 6th Grade Science
Course: 6 Science Sub-topic: General

Grade(s): None specified

Course Description: Using the Nature of Science, the focus of the curriculum is integrated across the spectrum of Biological, Physical, & Earth and Space. Students will complete course work in the areas of: **Growth and Development of Organisms-** Study of cells, living systems, diversity/change/equilibrium, classification, and genetics; **Structures of Property and Matter-**Study of physical/chemical properties and elements/ compounds/ mixtures; **Chemical Reactions-**Study of chemical reactions; **Definitions of Energy-** Study of forms of energy and energy resources; **Conservation of Energy and Energy Transfer-** Study of energy transformations and heat transfer; **Forces and Motion-** Study of force in motion; **Earth and the Solar System-** Study of the Universe, the Solar System, and the Earth, sun, and the moon; and **Earth Materials and Systems-**Study of rocks and fossils. The students can expect to complete lab-based activities and experiments, observe teacher demonstrations, and complete inquiry-based assignments.

Course Textbooks, Workbooks, Materials Citations:
Textbook

Chromebooks

Study Island

Various websites and print resources

Course Interdisciplinary Connections: Skills can also be addressed in Social Studies, ELA, and Math.

Unit: Systems, Reproduction, and Growth

Unit Description: After completion of this unit the students will be able to:

*conduct an investigation to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells.

*develop and use a model to describe the function of a cell as a whole and ways parts of cells contribute to the function.

*use argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells.

*gather and synthesize information that sensory receptors respond to stimuli by sending messages to the brain for immediate behavior or storage as memories.

*use argument based on empirical evidence and scientific reasoning to support an explanation for how characteristic animal behaviors and specialized plant structures affect the probability of successful reproduction of animals and plants respectively.

*construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms.

*develop and use a model to describe why asexual reproduction results in offspring with identical genetic information and sexual reproduction results in offspring with genetic variation.

Unit Essential Questions: *How do scientists define and organize living things?

*How does the structure of cells determine their function?

*How do systems interact in the body?

*What factors influence the growth of organisms and their ability to reproduce?

Unit Materials:

Textbook

Chrome book

Resource materials

Unit Assignments:

Lesson	Objective	Standards	Assessments	Resources
T1L1-Living Things	Students will provide evidence that supports living things are made of cells,	MS.LS1.1	Lesson 1 Test	Textbook
	explain where living things come from, and provide evidence that explains what	DCI.LS.1.A		Chromebook
	living things need to stay alive, grow, and reproduce	CCC.3		Lesson 1 Test
		SEP.3		Lesson video
T1L2-Classification Systems				
	Students will explain how living things are classified into groups, examine the organization of levels	MS.LS4.2		Textbook
	of classificaiton, and explain how the theory of evolution supports the classification of organisms.		Lesson 2 Test	Chromebook
				Lesson 2 Test
T1L3-Viruses, Bacteria, Protists, and Fungi				Lesson video
	Students will explain what all living things are made of, provide evidence that describes the characteristics of viruses,	MS.LS1.1		Textbook
	bacteria, protists, and fungi, and explain how viruses, bacteria, protists, and fungi interact with nature and people	DCI.LS.A	Lesson 3 Test	Chromebook
T1L4-Plants and Animals		CCC.3		Lesson 3 Test
		SEP.3		Lesson video
	Students will identify the forms and functions of different plants and animals, determine an organism's characteristics,	MS.LS1.1		Textbook
	illustrate differences and similarities in plant and animal cells, and identify and describe animal traits.	MS.LS1.2	Lesson 4 Test	Chromebook
		MS.LS1.3		Lesson 4 Test
		DCI.LS1.A		Lesson video
		DCI.LS1.A		
		DCI.LS1.A		
		CCC.3		
		CCC.4		
		CCC.6		
		SEP.2		
		SEP.3		
T2L1-Structure and Function of Cells		SEP.7		

		MS.LS1.1		Textbook
		MS.LS1.2	Lesson 1 Test	Chrome book
	Students will be able to recognize and explore the components of cell theory, that cells are the basic unit of life, and that cells	DCI.LS1.A		Lesson 1 Test
		CCC.3		Lesson video
	of all living things extract energy from food, get rid of waste, and reproduce; provide evidence that all living things are made up of	CCC.6		
T2L2-Cell Structures	cells and distinguish between living and nonliving things based on the presence or absence of cells,	SEP.2		
		SEP.3		
		ETS.2.A.1		
		MS.LS1.1		Textbook
		MS.LS1.3	Lesson 2 Test	Chrome book
T3L1-Body Organization		DCI.LS1.A		Lesson 2 Test
	Students will identify the parts of a cell(nucleus, chloroplasts, mitochondria, cell membrand, and cell wall), describe how each	CCC.6		Lesson video
		SEP.2		
	part of a cell contributes to the function of the cell as a whole, and compare and contrast the structure and function of major			
	parts of plant and animal cells.	MS.LS1.3		Textbook
T3L3-Supplying Energy		DCI.LS1.A	Lesson 1 Test	Chrome book
		CCC.4		Lesson 1 Test
		SEP.7		Lesson video
	Students will list the levels of organization in the body, describe the organization of body systems, describe the function of cells,			
		MS.LS1.3		Textbook
T3L4-Managing Materials	tissues, organs, and body systems, compare the structure and function of body systems to other systems, and explain the	DCI.LS1.A	Lesson 3 Test	Chrome book
	general functions of body systems, including how they work togehter to function.	CCC.4		Lesson 3 Test
		SEP.7		Lesson video
T3L5-Controlling Processes	Students will identify and explain the important nutrients a body needs to carry out its processes and how the body's sytems	MS.LS1.3		Textbook
		DCI.LS1.A	Lesson 4 Test	Chrome book
	process the foods you eat; develop arguments to explain why some food choices are healther than others and how food	CCC.4		Lesson 4 Test
	becomes materials the body can use; and analyze proportional relationships to determine the total recommended daily	SEP.7		Lesson video
T4L1-Patterns of Reproduction	allowances of food.	MS.LS1.8		Textbook
		DCI.LS1.D	Lesson 5 Test	Chrome book
	Students will explain how body systems interact to transport materials throughtout the body, explain how the respiratory system	CCC.2		Lesson 5 Test
		CCC.4		Lesson video
	interacts wtih other systems to exchange gases, and explain how other body systems interact with the excretory system to			

T4L2-Plant Structures for Reproduction	remove wastes. Students will explain what systems control processes in the human body, explain how nerve signals travel, and demonstrate how the body senses and reacts to surroundings. Students will analyze how organisms reproduce either sexually or asexually and how these reproductive processes result in the transfer of genetic information to their offspring, describe how asexual reproduction results in offspring that are genetically identical while sexual reproduction results in offspring with genetic variation, and analyze the cause-and-effect relationship between the inheritance of half of an offspring's genes from each parent and how this leads to variation in traits. Students will explain and compare reproductive cycles in plants and illustrate the structures and sequence of events in plant reproduction.	MS.LS3.2 DCI.LS1.B DCI.LS3.A DCI.LS3.B CCC.2 MS.LS1.4 DCI.LS1.B CCC.2 SEP.7	 Lesson 1 Test Lesson 2 Test	Texbook Chrome book Lesson 1 Test Lesson video Textbook Chrome book Lesson 2 Test Lesson video

Unit Key Terminology & Definitions:

*organism-any living thing

*characteristics-features that help to identify something

*cell- the basic unit of structure and function in living things

*unicellular-made of a single cell

*multicellular- consisting of many cells

*stimulus-any change or signal in the environment that can make an organism react in some way

*response-an action or change in behavior that occurs as a result of a stimulus

*spontaneous generation-the mistaken idea that living things arise from nonliving sources

*homeostasis-the condition in which an organism's internal environment is kept stable despite changes in the external environment

*species-a group of similar organisms that can mate with each other and produce offspring that can also mate and reproduce

*classification-the process of grouping things based on their similarities

*genus-a taxonomic category that names a group of similar, closely-related organisms

*binomial nomenclature- the classification system in which each organism is given a unique, two-part scientific name indicating its genus and species

*taxonomy-the scientific study of how living things are classified

*domain-the most basic unit of classificaiton of organisms

*evolution-change over time

*convergent evolution- the process by which unrelated organisms evolve similar characteristics

*determine- to arrive at an answer by doing research

*virus- a tiny, nonliving particle that enters and then reproduces inside a living cell

*host-an organism that a parasite lives in, on, or with and provides a source of energy or a suitable environment for the parasite to live

*vaccine-a substance used in a vaccination that consists of pathogens that have been weakened or killed but can still trigger the body to produce chemicals that destroy the pathogen

*bacteria-single-celled organisms that lack a nucleus

*protist- a eukaryotic organism that cannot be classified as an aminal, plant, or fungus

*parasite- an organism that benefits by living with, on, or in a host in a parasitism interaction

*resistant-not affected, harmed, or destroyed by something

*tissue-a group of similar cells that perform a similar function

*vascular plants- a plant that has true vascular tissue for transporting materials

*nonvascular plants- a low-growing plant that lacks vascular tissue for transporting materials

*vertebrates- an animal with a backbone

*invertebrates-an animal without a backbone

*organ-a body structure that is composed of different kinds of tissues that work together

*mammals- a vertebrate whose body temperature is regulated by its internal heat, and that has skin that is covered with hair or fur, and has glands that produce milk to feed its young

*symmetry-having the characteristics of having closely identical features on both sides of an imaginary center dividing line

*microscope-an instrument that makes small objects look larger

*cell theory-a widely accepted explanation of the relationship between cells and living things

*distinguish-to be able to tell one object from another by identifying key differences

*organelle-a tiny structure that carries out a specific function within a cell

*cell wall- a rigid, supporting layer that surrounds the cells of plants and some other organisms

*cell membrane-a thin, flexible barrier that surrounds a cell and controls which substances pass into and out of a cell

*cytoplasm- the thick, fluid region of a cell located inside the cell membrane or between the cell membrane and nucleus

*nucleus- in cells, a large oval organelle that contains the cell's genetic material in the form of DNA and controls many of the cell's activities

*mitochondria- rod-shaped organelles that convert energy in food molecules into energy the cell can use to carry out its functions

*chloroplast- an organelle in the cells of plants and some other organisms that captures the energy from sunlight and changes it to an energy form that cells can use in making food

*vacuole- a sac-like organelle that stores food, water, and other materials

*structure-a set of pieces or parts that are arranged in a certain way within a larger object, system, or body

*function-the job or purpose of a specific structure or organ within an organism

*organ system- a group of organs that work together to perform a specific function

*organized-arranged or put together in an orderly way

*digestion- the process that breaks complex molecules of food into smaller nutrient molecules

*nutrients-substances in food that provide the raw materials and energy needed for an organism to carry out its essential processes

*carbohydrate- an energy-rich compound that is made of the elements of carbon, hydrogen, and oxygen

*peristalsis- waves of smooth muscle contractions that move food through the esophagus toward the stomach

*saliva- a fluid produced in the mouth that aids in mechanical and chemical digestion

*enzyme- a type of protein that speeds up chemical reactions in the body

*absorbtion- the process by which nutrient molecules pass through the wall of the digestive system and into the blood

*elimination- the process of getting rid of something that is no longer needed

*circulatory system- an organ system that transports needed materials to cells and removes wastes

*artery- a blood vessel that carries blood away from the heart

*vein- a blood vessel that carries blood back to the heart

*capillary- a tiny blood vessel where substances are exchanged between the blood and the body cells

*lymph- fluid that travels through the lymphatic system consisting of water, white blood cells, and dissolved materials

*bronchi- the two passages that direct air into the lungs

*alveoli- tiny sacs of lung tissue specialized for the movement of gases between air and blood

*excretion- the process by which wastes are removed from the body

*nephron-small filtering structure found in the kidneys that removes wastes from blood and produces urine

*contract- to tighten and become smaller in length, width, and/or depth

*neuron- a cell that carries information through the nervous system

*synapse- the junction where one neuron can transfer an impulse to the next structure

*brain- the part of the central nervous system that is located in the skull and controls most functions in the body

*spinal cord- a thick column of nervous tissue that links the brain to the nerves in the body

*gland- an organ that produces and releases chemicals either through ducts or into the bloodstream

*negative feedback- a process in which a system is turned off by the condition it produces

*reflex- an automatic response that occurs rapidly and without conscious control

*impulse- an electrical charge that can relay a signal or a message to another part of the body

*asexual reproduction- a reproductive process that involves only one parent and produces offspring that are genetically identical to the parent

*sexual reproduction- a reproductive process that involves two parents that combine their genetic material to produce a new organism which differs from both parents

*fertilization- the process in sexual reproduction in which an egg cell and a sperm cell join to form a new cell

*trait- a specific characteristic that an organism can pass to its offspring through its genes

*gene- a sequence of DNA that determines a trait and is passed from parent to offspring

*inheritance- the process by which an offspring receives genes from its parents

*dominant- having a greater influence over

*zygote- a fertilized egg produced by the joining of a sperm and an egg

*pollination- the transfer of pollen from male reproductive structures to female reproductive structures in plants

*cones- the reproductive structures of gymnosperms

*ovule- a plant structure in seed plants that produces the female gametophyte

*fruit- the ripened ovary and other structures of an angiosperm that enclose one or more seeds

*germination- the sprouting of an embryo out of a seed

*disperse-to be scattered or moved from one place to another

This Curriculum Map Unit has no Topics to display

Unit: Diversity of Life

Unit Description: After completion of this unit, students will be able to:

*describe why asexual reproduction results in offspring with identical genetic information and sexual reproduction results in offspring with genetic variation.

Unit Essential Questions: *How do offspring receive traits from their parents?

Unit Materials:

Textbook

Chrome book

Resource materials

Unit Assignments:

Lesson	Objective	Standards	Assessments	Resources
T1L1-Patterns of Inheritance	Students will identify Gregor Mendel's contributions to the fields of genetics and inheritance, describe how variations of traits between parents and offspring arise from variations between genes (and therefore alleles) from each parent, and predict the probability of inheritance of specific genetic variations.	MS.LS3.1 MS.LS3.2 MS.LS4.4 MS.LS4.5	Lesson 1 Test	Text book Chrome book Lesson 1 Test Lesson video

Unit Key Terminology & Definitions:

*heredity- the passing of traits from parents to offspring

*dominant allele-an allele whose trait always shows up in the organism when the allele is present

*recessive allele- an allele that is hidden whenever the dominant allele is present

*probability- a number that describes how likely it is that a particular event will occur

*genotype- an organism's genetic makeup, or allele combinations

*phenotype- an organism's physical appearance, or visible traits

*quantify- to support results with data

*factor-something that leads to or causes a specific result

This Curriculum Map Unit has no Topics to display

Unit: Relationships Within Ecosystems

Unit Description:

After completion of the unit, the students will be able to:

*construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms.

*describe how food is rearranged through chemical reactions forming new molecules that support growth and/or release energy as this matter moves through an organism.

*analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.

*explain patterns of interactions among organisms across multiple ecosystems.

*describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.

Unit Essential Questions:

*How do matter and energy cycle through organisms?

*How are matter and energy cycled in an ecosystem?

Unit Materials:

Textbook

Chromebook

Resource Materials

Unit Assignments:	Lesson	Objective	Standards	Assessments	Resources
		Students will explain how plants and other organisms use photosynthesis to make food, explain the roles of light, carbon	MS.LS1.6		
		dioxide, water, and chlorophyll in photosynthesis, and explain the role of photosynthesis in the cycling of matter and energy	MS.LS1.7	Lesson 1 Test	
	T1L1-Photosynthesis	through ecosystems.	DCI.LS1.C		Textbook
			DCI.PS3.D		Chrome book
			DCI.PS3.D		Lesson video
			CCC.5		
			SEP.2		
			NOS.2		
			MS.LS1.6		
		Students will explain how organisms use cellular respiration to break down food to provide energy, explain how cells can release	MS.LS1.7		
	T1L2-Cellular Respiration	energy without using oxygen, and explain that living systems follow the Laws of Conservation of Mass and Energy.	DCI.LS1.C	Lesson 2 Test	
			DCI.PS3.D		Textbook
			DCI.PS3.D		Chrome book
			CCC.5		Lesson video
			SEP.2		
			SEP.6		
			NO5.2		
			MS.LS2.1		
	T2L1-Living Things and the Environment		DCI.LS2.A		Textbook
		Students will analyze and interpret data to explain how changes in the amount and availability of resources affect	CCC.2	Lesson 1 Test	Chrome book
		populations within an ecosystem and analyze cause-and-effect relationships to predict how the size of a population directly			Lesson video
		affects the availability of resources	MS.LS2.3		Textbook
	T2L2-Energy Flow in Ecosystems		DCI.LS2.B		Chrome book
		Students will identify and describe how energy enters an ecosystem and the roles of producers, consumers, and decomposers in cycling energy through an ecosystem, describe the flow of energy between living and nonliving things in a food web, and explain how energy is conserved within an ecosystem.	CCC.5	Lesson 2 Test	Lesson video
			SEP.2		
					Textbook
	T2L3-Cycles of Matter		MS.LS2.1		Chrome book
			MS.LS2.3		Lesson video
			DCI.LS2.B	Lesson 3 Test	
		Students will explain how matter is transferred between the living and nonliving parts of an ecosystem and explain how matter is conserved	CCC.5		

	in an ecosystem.	SEP.2		

Unit Key Terminology & Definitions:

*photosynthesis-the process by which green plants and other autotrophs capture and use light energy to make food from carbon dioxide and water

*autotroph-an organism that is able to capture energy from sunlight or chemicals and use it to produce its own food

*heterotroph- an organism that cannot make its own food, but gets its food by consuming other living things

*chlorophyll-a green photosynthetic pigment found in the chloroplasts of plants, algae, and some bacteria

*equation-a statement that demonstrates equality between two mathematical or chemical expressions

*cellular respiration- the process in which oxygen and glucose undergo a complex series of chemical reactions inside cells, releasing energy

*fermentation- the process by which cells release energy by breaking down food molecules without using oxygen

*produce-to use a combination of materials and processes to create something new

*source-the place where something comes from; the point where something begins

*organism-any living thing

*habitat- an environment that provides the things that a specific organism needs to live, grow, and reproduce

*biotic factor- a living, or once-living thing of an organism's habitat

*abiotic factor-a nonliving part of an organism's habitat

*population- all the members of one species living in the same area

*community- all the different populations living together in a certain area

*ecosystem- the community of organisms that live in a particular area, along with their nonliving environment

*limiting factor- an environmental factor that causes a population to decrease in size

*resources- something found in nature that enhances the lives of plants, animals, and humans

*density- the measurement of how much mass of a substance is contained in a given volume

*producer- an organism that can makes its own food

*consumer- an organism that obtains energy by feeding on other organisms

*decomposer- an organism that gets energy by breaking down biotic wastes and dead organisms and returns raw materials to the soil and water

*food chain- a series of events in an ecosystem in which organisms transfer energy by eating and by being eaten

*food web- the pattern of overlapping feeding relationships or food chains among the various organisms in an ecosystem

*energy pyramid- a diagram that shows the amount of energy that moves from one feeding level to another in a food web

*role- a function played by a person or thing in a particular situation

*Law of Conservation of Mass- the principle that the total amount of matter remains the same, regardless of any chemical or physical change

*Law of Conservation of Energy- the rule that energy cannot be created or destroyed

*evaporation- the process by which molecules at the surface of liquid absorb enough energy to change to a gas

*condensation- the change of state from a gas to a liquid

*precipitation- any form of water that falls from clouds and reaches Earth's surface as rain, snow, sleet, or hail

*system- a group of parts that work together as a whole

*components- the individual objects or parts that combine or work together to form a whole

This Curriculum Map Unit has no Topics to display

Unit: Structure and Properties of Matter

Unit Description: After completion of this unit, the students will be able to:

*describe the atomic composition of simple molecules and extended structures.

*predict and describe changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed.

*analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.

Unit Essential Questions:

*How can we observe, measure, and use matter?

*What causes matter to change from one state to another?

Unit Materials:

Textbook

Chromebook

Resource Materials

Unit Assignments:

Lesson	Objective	Standards	Assessments	Resources
T1L1-Describing and Classifying Matter	The students will explain and describe what makes up matter, describe the properties of matter, describe examples of	MS.PS.1	Lesson 1 Test	Textbook
	chemical and physical properties of matter, classify different types of matter, and classify homogeneous and	DCI.PS1.A		Lesson 1 Test
	heterogenous mixtures.	CCC.3		Chrome book
		SEP.2		Lesson video
T1L2-Measuring Matter				
	The students will identify and describe how matter can be measured and how mass compares to weight; identify and calculate	MS.PS1.2	Lesson 2 Test	Textbook

     T1L3-Changes in Matter T2L1-States of Matter	properties of matter that can be determined through measurement and density as a function of mass and volume. The students will explain how matter is conserved during a physical and a chemical change, explain how thermal energy is transformed during a chemical change, explain the difference between a physical and a chemical change, and explain how changes in matter are related to changes in energy. Students will explain similarities and differences between solids liquids, and gases, similarities between high-viscosity liquids and low-viscosity liquids, and the relationship between particle motion and the state of matter; demonstrate how the arrangement and movement of particles compare in solids, liquids, and gases.	DCI.PS1.A CCC.` SEP.4 MS.PS1.2 DCI.PS1.A DCI.PS1.B CCC.1 MS.PS1.4 DCI.PS1.A CCC.2	 Lesson 3 Test Lesson 1 Test	Lesson 2 Test Chrome book Lesson video Textbook Lesson 3 Test Chrome book Lesson video Textbook Lesson 1 Test Chrome book Lesson video

Unit Key Terminology & Definitions:

*matter- anything that has mass and takes up space

*substance- a single kind of matter that is pure and has a specific set of properties

*physical property- a characteristic of a pure substance that can be observed without changing it into another substance

*chemical property- a characteristic of a substance that describes its ability to change into different substances

*atom- the basic particle from which all elements are made

*element- a substance that contains one kind of atom and cannot be broken down into a simpler form

*molecule- a neutral group of two or more atoms held together by covalent bonds

*compound- a substance made of two or more elements chemically combined in a specific ratio or proportion

*mixture- two or more substances that are together in the same place but their atoms are not chemically bonded

*distill- to separate liquids by boiling them

*mass-a measure of how much matter is in an object

*volume- the amount of space that matter occupies

*weight- a measure of the force of gravity acting on an object

*density- the measurement of how much mass of a substance is contained in a given volume

*convert-to show an equivalent value using a different unit of measurement

*physical change- a change that alters the form or appearance of a material but does not make the material into another substance

*chemical change- a change in which one or more substances combine or break apart to form new substances

*conservation- when nothing is lost or gained; to remain constant

*solid- a state of matter that has a definite shape and a definite volume

*liquid- a state of matter that has no definite shape but has a definite volume

*surface tension- the result of an inward pull among the molecules of a liquid that brings the molecules on the surface closer together , causing the surface to act as if it has a thin skin

*viscosity- a liquid's resistance to flowing

*gas- a state of matter with no definite shape or volume

*vibrate- to move back and forth slightly

This Curriculum Map Unit has no Topics to display

Unit: Energy Transfer

Unit Description: After completion of this unit, the students will be able to:

*construct and interpret graphical displays of data to describe the relationships of kinetic energy to the mass of an object and to the speed of an object.

*describe that when the arrangement of objects interacting at a distance changes, different amounts of potential energy are stored in the system.

*explain how when the kinetic energy of an object changes, the energy is transferred to or from the object.

Unit Essential Questions: *How does energy cause change?

Unit Materials: Textbook

Chrome book

Resource Materials

Unit Assignments:

Lesson	Objective	Standards	Assessments	Resources
T1L1-Energy, Motion, Force, and Work T1L2-Kinetic Energy and Potential Energy	Students will define energy, motion, force, and work; relate energy to motion and force, determine the relationships among energy, motion, force, and work; calculate the amount of work done and the amount of power used. Students will identify factors related to kinetic and potential energy; explain the relationship between potential and kinetic energy; identify the linear relationship of gravitational potential energy and the nonlinear relationship of kinetic energy.	DCI.PS3.A DCI.PS3.C DCI.PS3.D CCC.2 CCC.5 SEP.6 MS.PS3.1 MS.PS3.2 DCI.PS3.A DCI.PS3.C CCC.3 CCC.4 SEP.2 SEP.4	Lesson 1 Test Lesson 2 Test	Textbook Chrome book Lesson 1 Test Lesson Video Textbook Chrome book Lesson 2 Test Lesson video

Unit Key Terminology & Definitions:

*energy-the ability to do work or cause change

*motion- the state in which one object's distance from another is changing

*force-a push or pull exerted on an object

*work-force exerted on an object that causes it to move

*power-the rate at which one form of energy is transformed into another

*maximum- the greatest possible amount

*kinetic energy- energy that an object has due to its motion

*potential energy- the energy an object has because of its position; also the internal stored energy of an object, such as energy stored in chemical bonds

*gravitational potential energy- potential energy that depends on the height of an object

*elastic potential energy- the energy of stretched or compressed objects

*virtue- indicates a good quality or power

Topic: Structures and Properties of Matter

Unit: Atoms and Chemical Reactions

Unit Description: After competion of the unit, the students will be able to:

*describe the atomic composition of simple molecules and extended structures.

*analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.

*construct, test, and modify a device that either releases or absorbs thermal energy by chemical processes.

Unit Essential Questions:

*How do atoms combine to form extended structures?

*How can you determine when a chemical reaction has occurred?

Unit Materials:

Textbook

Chrome book

Resource Materials

Unit Assignments:

Lesson	Objective	Standards	Assessments	Resources
T1L1-Atomic Theory	Students will identify and describe the properties of electrons, protons, and neutrons;	MS.PS1.1	Lesson 1 Test	Textbook
	describe the development of the atomic theory including the historical atomic models of	DCI.PS1.A		Chrome book
	Dalton, Thomson, Rutherford, and Bohr, how data from experiments caused the theory to	CCC.3		Lesson 1 Test
	change, and the basics of modern atomic theory; and explain Rutherford's gold-foil	SEP.2		Lesson video
	experiment and Chadwick's discovery of the neutron.			
T1L2-The Periodic Table				

       T2L1-MIxtures and Solutions T2L2-Chemical Change	Students will identify the organization used to create the periodic table, describe the development of the periodic table, and use the table for locating important information pertaining to the elements and to describe the elements. Students will differentiate between mixtures and solutions, describe the molecular and atomic properties of mixtures, identify the different kinds of mixtures, and describe the methods and tools needed to separate mixtures. Students will determine if a change in matter is physical or chemical and describe the factors that affect the rate at which a chemical reaction occur.	MS.PS1.1 DCI.PS1.A MS.PS1.2 DCI.PS1.A CCC.1 SEP.4 MS.PS1.2 DCI.PS1.A DCI.PS1.B CCC.1 SEP.4	Lesson 2 Test Lesson 1 Test Lesson 2 Test	Textbook Chrome book Lesson 2 Test Lesson video Textbook Chrome book Lesson 1 Test Lesson video Textbook Chrome book Lesson 2 Test Lesson video

Unit Key Terminology & Definitions:

*atom-the basic particle from which all elements are made

*electron- a tiny, negatively-charged particle that moves around the outside of the nucleus of an atom

*proton-a small, positively-charged particle that is found in the nucleus of an atom

*neutron- a small particle in the nucleus of the atom, with no electrical charge

*atomic number- the number of protons in the nucleus of an atom

*isotope- an atom with the same number of protons and a different number of neutrons from other atoms of the same element

*mass number- the sum of protons and neutrons in the nucleus of an atom

*theory- an idea that has been studied and investigated and is supported by a vast and diverse array of evidence

*atomic mass- the average mass of all the isotopes of an element

*periodic table- an arrangement of the elements showing the repeating pattern of their properties

*chemical symbol- a one- or two-letter abbreviation for an element

*period- a horizontal row of elements in the periodic table

*group- elements in the same verticle column of the periodic table

*representation- a drawing or image of an actual thing

*mixture- two or more substances that are together in the same place but their atoms are not chemically bonded

*colloid- a mixture containing small, undissolved particles that do not settle out

*suspension- a mixture in which particles can be seen and easily separated by settling or filtration

*solution- a mixture containing a solvent and at least one solute that has the same properties throughout

*solvent-the part of a solution that is usually present in the largest amound and dissolves a solute

*solubility- a measure of how much solute can dissolve in a given solute at a given temperature

*dissolve- when one substance completely disappears into another substance to form a solution

*physical change- a change that alters the form or appearance of a material but does not make the material into another substance

*chemical change- a change in which one or more substances combine or break apart to form new substances

*reactant- a substance that enters into a chemical reaction

*product- a substance formed as a result of a chemical reaction

*exothermic reaction- a reaction that releases energy, usually in the form of heat

*endothermic reaction- a reaction that absorbs energy

*rate- how slowly or quickly something happens

This Curriculum Map Unit has no Topics to display

Unit: Forces

Unit Description:

After completion of the unit, the students will be able to:

*apply Newton's Third Law to design a solution to a problem involving the motion of two colliding objects.

*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.

Unit Essential Questions:

*How is the motion of an object affected by forces that act on it?

Unit Materials:

Textbook

Chrome book

Resource Materials

Unit Assignments:

Lesson	Objective	Standards	Assessments	Resources
T1L1-Describing Motion and Force 	Students will describe how motion is a change in position relative to a reference point and how balanced and unbalanced forces affect the motion of an object. 	MS.PS2.2 DCI.PS2.A CCC.7 SEP.3 	Lesson 1 Test 	Textbook Chrome book Lesson 1 Test Lesson video
 T1L3-Newton's Laws of Motion	Students will identify evidence that an object's motion remains the same if forces on it are balanced and an object's motion changes if forces on it are unbalanced; describe the relationship between force, mass, and acceleration; and explain the effect of action and reaction forces on an object's motion.	MS.PS2.2 DCI.PS2.A CCC.7 SEP.3	 Lesson 3 Test	Textbook Chrome book Lesson 3 Test Lesson video

Unit Key Terminology & Definitions:

*motion- the state in which one object's distance from another is changing

*reference point- a place of object used for comparison to determine if an object is in motion

*force- a push or pull exerted on an object

*newton- a unit of measure that equals the force required to accelerate 1 kilogram of mass at 1 meter persecond

*friction- the force that two surfance exert on each other when they rub against each other

*gravity- the attractive force between objects

*net force- the overall force on an object when all the individual forces acting on it are added together

*relative- when one variable is dependent on another variable

*inertia- the tendency of an object to resist a change in motion

*derived- the place where something can be taken from

This Curriculum Map Unit has no Topics to display

Unit: Earth's Place in the Universe

Unit Description: After completion of the unit, the students will be able to:

*describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons.

*describe the role of gravity in the motions within galaxies and the solar system.

*determine scale proportions of objects in the solar system.

Unit Essential Questions: *How do the sun and the moon affet Earth?

*What kind of data and evidence help us to understand the universe?

Unit Materials:

Textbook

Chrome book

Resource Materials

Unit Assignments:

Lesson	Objective	Standards	Assessments	Resources
T1L1-Movement in Space	Students will identify objects and constellations visible without a telescope in the	MS.ESS1.1	Lesson 1 Test	Textbook
	night sky, explain the apparent motions of stars and planets throughout the year, and	DCI.ESS1.A		Chrome book
	explain the motion of Earth, other planets, and the sun through space.	CCC.1		Lesson 1 Test
		SEP.2		Lesson video
T1L2-Earth's Movement in Space				
	Students will explain what causes the cycle of seasons on Earth, describe how the moon	MS.ESS1.1	Lesson 2 Test	Textbook
	affects the amount of daylight, and describe factors that keep the moon and Earth in	DCI.ESS1.B		Chrome book
	orbit.	CCC.1		Lesson 2 Test
		SEP.2		Lesson video
T1L3-Phases and Eclipses				
	Students will explain why the moon appears to change shape, describe what causes solar	MS.ESS1.1	Lesson 3 Test	Textbook
	and lunar eclipses, predict the position of the Earth, sun, and moon during a given type of	DCI.ESS1.B		Chrome book
	eclipse, and describe how the sun and moon affect tides.	CCC.1		Lesson 3 Test
		SEP.2		Lesson video
T2L1-Solar System Objects				
	Students will compare and contrast solar system objects based on their characteristics	MS.ESS1.2	Lesson 1 Test	Textbook
	(color, size, motion, ability to sustain life, geographial features, etc...), describe the role	MS.ESS1.3		Chrome book

	of gravity in the motions of the planets and other objects in the solar system, describe the role of gravity in the sun's function, and describe the relationships between solar system objects.	DCI.ESS1.A DCI.ESS1.B CCC.3 CCC.4 SEP.2 SEP.4		Lesson 1 Test Lesson video
       T2L3-Stars T2L4-Galaxies	 The students will describe the physical properties of stars, explain how stars are classified, and describe the role gravity plays in the formation of stars. The students will analyze the distance between objects in the universe and the methods used to measure those distances and explain the hierarchical relationships between the various bodies in the universe.	 MS.ESS1.2 DCI.ESS1.A CCC.4 SEP.2 MS.ESS1.2 DCI.ESS1.A DCI.ESS1.B CCC.4 SEP.2	 Lesson 3 Test Lesson 4 Test	 Textbook Chrome book Lesson 3 Test Lesson video Textbook Chrome book Lesson 4 Test Lesson video

Unit Key Terminology & Definitions:

*satellite- an object that orbits a planet

*star- a ball of hot gas, primarily hydrogen and helium, that undergoes nuclear fusion

*planet- an object that orbits a star, is large enough to have become rounded by its own gravity, and has cleared the area of its orbit

*meteor- a streak of light in the sky produced by the burning of a meteoroid in Earth's atmosphere

*comet- a loose collection of ice and dust that orbits the sun, typically in a long, narrow orbit

*constellation- a pattern or grouping of stars that suggest the outline of a figure or object

*geocentric- term describing a model of the universe in which Earth is at the center of the revolving planets and stars

*heliocentric- term describing a model of the universe in which Earth and the other planets revolve around the sun

*ellipse- an oval shape, which may be elongated or nearly circular

*observations- information or data that is gathered using one of the five senses-sight, touch, hearing, taste, or smell

*axis- an imaginary line that passes through a planet's center and its north and south poles, about which the planet rotates

*rotation- the spinning motion of a planet on its axis

*revolution- the movement of an object around another object

*orbit- the path of an object as it revolves around another object in space

*solstice- either of the two days of the year on which the sun reaches its greatest distance from the equator

*equinox- either of the two days of the year on which neither hemisphere is tilted towards or away from the sun

*gravity- the attractive force between objects

*law of universal gravitation- the scientific law that states that every object in the universe attracts every other object

*inertia- the tendency of an object to resist a change in motion

*hypothesize- to develop an evidence-based idea that can be tested by experimentation or investigation

*phase- one of the different shapes of the moon as seen from Earth

*eclipse- the total or partial blocking of one object in space by another

*umbra- the darkest part of a shadow

*penumbra- the part of a shadow surrounding the darkest part

*tide- the periodic rise and fall of the level of the water in the ocean

*spring tide- the tide with the greatest difference between consecutive low and high tides

*neap tide- the tide with the least difference between consecutive low and high tides

*significant- the degree to which one action influences or affects another action

*solar system- the system consisting of the sun and the planets and the other objects that revolve around it

*astronomical unit- a unit of distance equal to the average distance between Earth and Sun, about 150 million kilometers

*sun- a large, gaseous body at the center of the solar system

*planet- an object that orbits a star, is large enough to have become rounded by its gravity, and has cleared the area of its orbit

*moon- a natural satellite that orbits a planet

*asteroid- one of the rocky objects revolving around the sun that are too small and numerous to be considered a planet

*meteoroids- a chunk or rock or dust in space, generally smaller than an asteroid

*comets- a loose collection of ice and dust that orbits the sun, typically in a long, narrow orbit

*features- observable traits that stand out and set an object or organism apart from others

*nebula- a large cloud of gas and dust in space

*protostar- a contracting cloud of gas and dust with enough mass to form a star

*white dwarf- the blue-white core of a star that is left behind after its outer layers have expanded and drifted out into space

*supernova- the brilliant explosion of a dying supergiant star

*apparent brightness- the brightness of a star as seen from Earth

*absolute brightness- the brightness a star would have if it were at a standard distance from Earth

*analyze- to study something closely in order to determine the nature of its parts and how they work together

*galaxy- a huge group of single stars, star systems, star clusters, dust, and gas bound together by gravity

*universe- all of space and everything in it

*light year- the distance that light travels in one year

*big bang- the initial explosion that resulted in the formation and expansion of the universe

*determine- to arrive at an answer by doing research

This Curriculum Map Unit has no Topics to display

Unit: Earth Systems

Unit Description: Upon completion of the unit, the students will be able to:

*construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spacial scales.

*analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions.

*describe the cycling of Earth's materials and the flow of energy that drives this process.

*construct a scientific explanation based on evidence from rock strata for how the geologic time scale is used to organize Earth's 4.6 billion-year-old history.

*analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.

Unit Essential Questions: <_p20_style3d_22_20_s20_past20_be20_organized3f_3c_2f_p3e_ style="">

Unit Materials:

Textbook

Chrome book

Resource Materials

Unit Assignments:

Lesson	Objective	Standards	Assessments	Resources
T2L3-Rocks	Students will identify the three major types of rocks, explain how the formation of rocks is the result	MS.ESS2.1	Lesson 3 Test	Text book
	of the flow of energy and cycling of matter within Earth, observe rocks and classify them according to the	DCI.ESS2.A		Chrome book
	three major types, and explain how each of the three major types of rocks form.	CCC.7		Lesson 3 Test
		SEP.2		Lesson video
T2L4-Cycling of Rocks				
	Students will demonstrate how processes that occur on Earth's surface and in the crust and mantle slowly	MS.ESS2.1	Lesson 4 Test	Textbook
	change rocks from one kind to another, explain that material is not lost or gained. predict how energy from	DCI.ESS2.A		Chrome book

	deep inside Earth drives the forces that build and change the rocks of Earth's crust, explain how patterns	CCC.7		Lesson 4 Test
	of repeating events in the rock cycle constantly change rocks from one type into another, and explain the	SEP.2		Lesson video
	flow of energy within Earth cause the plate movements that help drive the rock cycle.			
T3L1-Evidence of Plate Motions				
	Students will describe evidence that supports that all continents were once fused together in a supercontinent	MS.ESS2.3	Lesson 1 Test	Textbook
	called Pangaea, describe how land masses drifted apart over time into the continents known today, describe	DCI.ESS1.C		Chrome book
	how continental coastlines appear to fit together and mountain ranges on different continents line up, identify	DCI.ESS2.B		Lesson 1 Test
	where similar plant and animal fossils are found on continents that are separated by oceans, describe how	CCC.1		Lesson video
	Earth's continents experienced different climates than the ones they have today, and describe how mid-			
T3L2-Plate Tectonics and Earth's Surface	ocean ridges and deep-sea trenches provide evidence for plate movement.			
	Students will describe how Earth's plates are in slow, constant motion due to forces within the mantle, describe	MS.ESS2.2	Lesson 2 Test	Textbook
	how convection drive plate motion, demonstrate how some features and events on Earth's surfae coincide	DCI.ESS2.A		Chrome book
	with plate boundaries, explain how the movement of Earth's plates has greatly changed the locations of the	CCC.3		Lesson 2 Test
T3L3-Earthquakes and Tsunami Hazards	continents and the size and shape of the ocean basins, predict the different features and events that occur	SEP.6		Lesson video
	at different types of plate boundaries, and analyze the resultsof plate movements at different scales.			
	Students will explain how plate movement and stress produce new landforms, explain how the energy	MS.ESS2.2	Lesson 3 Test	Textbook
	released from interacting plates results in an earthquake, compare the magnitudes of earthquakes,	MS.ESS3.2		Chrome book
	relate the energy of an earthquake to the formation of a tsunami, demonstrate the characteristics of	DCI.ESS2.A		Lesson 3 Test
	earthquakes and tsunamis can be predicted, and explain how natural phenomena can be used to	DCI.ESS3.B		Lesson Video
	mitigate risk.	CCC.1		
T3L4-Volcanoes and Earth's Surface		CCC.3		
		SEP.4		
		SEP.6		
	Students will explain how plate tectonics is connected to volcanic eruptions and landforms, explain	MS.ESS2.2	Lesson 4 Test	Textbook
	the role volcanic activity plays in shaping Earth's surface, and construct an explanation of the	MS.ESS3.2		Chrome book
	hazards that different types of volcanoes pose.	DCI.ESS2.A		Lesson 4 Test
		DCI.ESS3.B		Lesson video
T4L1- Determining Ages of Rocks		CCC.1		
		CCC.3		
		SEP.4		
		SEP.6		

	 Students will describe the ages of rocks, determine the relative ages of rocks, and provide physical evidence to show that Earth has changed over time due to natural processes. 	 MS.ESS1.4 DCI.ESS1.C CCC.3 SEP.6	 Lesson 1 Test 	 Textbook Chrome book Lesson 1 Test Lesson video
T4L2-Geologic Time Scale 	Students will identify the purpose of the geologic time scale and identify evidence that helps define and divide geologic time and how the Earth evolved due to natural processes. 	 MS.ESS1.4 DCI.ESS1.C CCC.3 SEP.6	 Lesson 2 Test 	 Textbook Chrome book Lesson 2 Test Lesson video
T4L3-Major Events in Earth's History	Students will explain that Earth's geologic history can be organized by major events, and explain using evidence how the Earth changed during the Paleozoic era, Mesozoic era, and the Cenozoic era. 	 MS.ESS1.4 DCI.ESS1.C CCC.3 SEP.6	 Lesson 3 Test	 Textbook Chrome book Lesson 3 Test Lesson video

Unit Key Terminology & Definitions:

*igneous rock- a type of rock that forms from the cooling of molten rock at or below the Earth's surface

*sedimentary rock- a type of rock that forms when particles from other rocks or the remains of plants and animals are pressed and cemented together

*sediment- small, solid pieces of material that come from rocks or the remains of organisms

*metamorphic rock- a type of rock that forms from an existing rock that is changed by heat, pressure, or chemical reactions

*apply- to add force or act on in order to cause change

*rock cycle- a series of processes on the surface and inside Earth that slowly changes rocks from one kind to another

*process- a series of changes that happen over time and lead to an expected result

*source- the place where something comes from; the point where something begins

*mid-ocean ridge- an undersea mountain chain where new ocean floor is produced

*sea floor spreading- the process by which molten material adds new oceanic crust to the ocean floor

*subduction- the process by which oceanic crust sinks beneath a deep ocean trench and back into the mantle at a convergent plate boundary

*ocean trench- an undersea valley that represents one of the deepest parts of the ocean

*hypothesis- an evidence-based idea that can be tested by experimentation or investigation

*divergent boundary-a plate boundary where two plates move away from each other

*convergent boundary- a plate boundary where two plates move toward each other

*transform boundary- a plate boundary where two plates move past each other in opposite directions

*theory- an idea that has been studied and investigated and is supported by a vast and diverse array of evidence

*stress- a force that acts on rock to change its shape or volume

*tension- stress that stretches rock so that it becomes thinner in the middle

*compression- stress that squeezes rock until it folds or breaks

*shearing- stress that pushes masses of rock in opposite directions, in sideways movement

*fault- a break in Earth's crust along which rocks move

*earthquake- the shaking which results from the movement of rock beneath the Earth's surface

*magnitude- the measurement of an earthquake's strength based on seismic waves and movement along faults

*tsunami- a giant wave usually caused by an earthquake beneath the ocean floor

*scale- the size or extent to which something occurs

*volcano- a weak spot in the crust where magma has come to the surface

*magma- a molton mixture of rock-forming substances, gases, and water from the mantle

*lava- liquid magma that reaches the surface

*hot spot- an area where magma from deep within the mantle melts through the crust above it

*extinct- term used to describe a volcano that is not longer active and unlikely to erupt again

*dormant- term used to describe a volcano that is not currently active but able to become active in the future

*active- working; in action

*composite- describes something that is made of a mixture of different parts or elements

*relative age- the age of a rock compared to the age of other rocks

*absolute age- the age of a rock given as the number of years since the rock formed

*law of superposition- the geologic principle that states that in horizotal layers of sedimentary rock, each layer is older than the layer above it and younger than the layer below it

*fossil- the preserved remains or traces of an organism that lived in the past

*unconformity- a gap in the geologic record that shows where rock layers have been lost due to erosion

*radioactive decay- the process in which the nuclei of radioactive elements break down, releasing fast-moving particles and energy

*radioactive dating- the process of determining the age of an object using the half-life of one or more radioactive isotopes

*relative- when one variable is dependent on another variable

*infer- to make a conclusion based on prior knowledge or evidence

*geologic time scale- a record of the geologic events and life form in Earth's history

*era- one of the three long unit of time in geologic time between the Precambrian and the present

*period- a horizontal row of elements in the periodic table

*organize- to make something neat; to put something in order

*refine- to make changes or improvements to something based on new information or data

*invertebrate- an animal without a backbone

*vertebrate- an animal with a backbone

*amphibian- a vertebrate whose body temperature is determined by the temperature of its environment, and that lives its early life in water and its adult life on land

*reptile- a vertebrate whose body temperature is determined by the temperature of its environment, that has lungs and scaly skin, and that lays eggs on land

*mass extinction- when entire species of living things die off at the same time

*mammal- a vertebrate whose body temperature is regulated by its internal heat, and that has skin covered by hair or fur and has glands that produce milk to feed its young

*factors- something that leads to or causes a specific result

*hypothesize- to develop an evidence-based idea that can be tested by experimentation or investigation

This Curriculum Map Unit has no Topics to display