

Seneca R 7 School District Course: 8th Grade Science Grade Level: 8

Unit	Topic	MLS		Activities	Primary Resources
1	Scientific Method	6-8.ETS1.B.2	Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success	<ul style="list-style-type: none"> Notes Bubble Lab CER Stations 	CANVAS Progress Learning Textbook: Science Explorer (Pearson Prentice Hall, 2009)
		6-8ETS1.A.1	Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions		
		Objectives	<ul style="list-style-type: none"> List the steps of the scientific method in order Identify a problem, question, and conclusion Write and/or design a scientific experiment Identify dependent and independent variables Compare and contrast constants and controls Differentiate qualitative and quantitative Describe the placebo effect Define a theory Write a CER statement based on a scenario 		
		Key Terms	Scientific method, problem, question, hypothesis, data, results, conclusion, control group, independent variable, dependent variable, experiment, data, analyze, theory, observation, constant, claim, evidence, reasoning, experimental group, qualitative, quantitative		
		Common Assessments	Quiz: Vocabulary Test: Scientific Method		

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2	Cells, Molecules, & Living	6-8.LS1.A.1	Provide evidence that organisms (unicellular and multicellular) are made of cells and that a single cell must carry out all of the basic functions of life	<ul style="list-style-type: none"> Notes Characteristics of Living Things 	CANVAS Progress Learning Textbook: Science

	Organisms	6-8.LS1.A.2	Develop and use a model to describe the function of a cell as a whole and ways parts of the cells contribute to that function	<ul style="list-style-type: none"> worksheet Cell debate slideshow Bill Nye video 	Explorer (Pearson Prentice Hall, 2009)
		6-8.LS1.A.3	Develop an argument supported by evidence for how multicellular organisms are organized by varying levels of complexity;cells, tissue, organs, organ systems		
		Objectives	<ul style="list-style-type: none"> Differentiate between living and nonliving things List the characteristics of living things Illustrate a cell and identify specific parts Draw a flow chart for the levels of organization of living things Distinguish biotic and abiotic factors 		
		Key Terms	abiotic, biotic, cell, organism, evolution, adaptation, growth, development, stimuli, evolution, reproduce, nucleus, mitochondria, cell wall, cell membrane, chloroplast, ribosomes, multicellular, unicellular, prokaryotes, eukaryotes, tissue, organ, organ system, organism		
		Common Assessments	Quiz: Biotic/Abiotic factors Vocabulary Quiz: Cell Vocabulary Test: Living Organisms Test		

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3	Body Systems	6-8.LS1.A.3	Develop an argument supported by evidence for how multicellular organisms are organized by varying levels of complexity;cells, tissue, organs, organ systems	<ul style="list-style-type: none"> Notes Body Systems Flipbook Stations Review Game Review 	CANVAS Progress Learning Textbook: Science Explorer (Pearson Prentice Hall, 2009)
		6-8.LS1.A.4	Present evidence that body systems interact to carry out key body functions, including providing nutrients and oxygen to cells, removing carbon dioxide and waste from cells and the body, controlling body motion/activity and coordination, and protecting the body		
		Objectives	<ul style="list-style-type: none"> Identify the functions of each body system. 		

			<ul style="list-style-type: none"> Describe how each body system is similar or different between various species. Identify organs in each body system based on their function. Describe how variations in organ systems increase an organism's ability to survive. 		
		Key Terms	Skeletal system, bones, cartilage, joints, ligaments, tendons, appendicular, axial, ball and socket, hinge, compact bone, spongy bone, bone marrow, muscular system, skeletal muscle, smooth muscle, cardiac muscle, capillaries, veins, arteries, aorta, atrium, ventricle, valve, lung, bronchi, diaphragm, bronchiole, alveoli, superior vena cava, inferior vena cava, kidney, ureter, bladder, urethra, esophagus, pancreas, intestines, rectum, anus, liver, ingestion, digestion		
		Common Assessments	Quiz: Circulatory and Respiratory Quiz: Digestive and Excretory Quiz: Skeletal and Muscular Test: Body Systems		

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4	Photosynthesis & Cellular Respiration	6-8.LS1.A.4	Present evidence that body systems interact to carry out key body functions, including providing nutrients and oxygen to cells, removing carbon dioxide and waste from cells and the body, controlling body motion/activity and coordination, and protecting the body	<ul style="list-style-type: none"> Notes Magic School Bus CER Photosynthesis Lab Amoeba Sisters video Lactic Acid lab 	CANVAS Progress Learning Textbook: Science Explorer (Pearson Prentice Hall, 2009)
		6-8.LS1.A.2	Develop and use a model to describe the function of a cell as a whole and ways parts of the cells contribute to that function		
		6-8.LS1.C.1	Construct a scientific explanation based on evidence for the role of photosynthesis and cellular respiration in the cycling of matter and flow of energy into and out of organisms		
		Objectives	<ul style="list-style-type: none"> Explain the process of photosynthesis 		

			<ul style="list-style-type: none"> • Illustrate the chemical reaction of photosynthesis • Explain the role of ATP regarding photosynthesis • List the reactants and products of photosynthesis • Explain how solar energy is converted to chemical energy • Contrast light dependent and light independent reactions • Explain the process of cellular respiration • Illustrate the chemical reaction of cellular respiration • Identify the three stages of cellular respiration • State the two byproducts of cellular respiration • Explain the process of fermentation • Differentiate the two types of fermentation • Contrast aerobic and anaerobic 			
		Key Terms	Photosynthesis, glucose, chloroplast, ATP, solar energy, chemical energy, light dependent, light independent, Calvin Cycle, respiration, mitochondria, glycolysis, Krebs Cycle, electron transport chain, alcoholic fermentation, lactic acid fermentation, aerobic, anaerobic			
		Common Assessments	Test: Photosynthesis and Cellular Respiration			

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5	Ecosystems	6-8.LS2.A.1	Analyze and interpret data to provide evidence for the effects of resource availability on individual organisms and populations of organisms in an ecosystem	<ul style="list-style-type: none"> • Notes • Keystone Species Debate • Biome Project • Game Reviews 	CANVAS Progress Learning Textbook: Science Explorer (Pearson Prentice Hall, 2009)
		6-8.LS2.A.2	Construct an explanation that predicts the patterns of interactions among and between the biotic and abiotic factors in a given ecosystem.		
		6-8.LS2.B.1	Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.		
		6-8.LS2.C.1	Construct an argument supported by empirical		

			evidence that explains how changes to physical or biological components of an ecosystem affect populations		
		6-8.LS2.C.2	Evaluate benefits and limitations of differing design solutions for maintaining an ecosystem.		
		Objectives	<ul style="list-style-type: none"> • Know the living and nonliving components that make up an ecosystem. • Understand how energy flows through an ecosystem. • Gain an understanding of how various nutrients are cycled through ecosystems. • Understand the difference between ecosystems and biological communities. 		
		Key Terms	decomposer, species, carnivore, autotroph, producer, niche, food chain, food web, biome, biosphere, community, scavenger, symbiosis, population, habitat, ecosystem		
		Common Assessments	Quiz: Ecology Vocabulary Test: Ecosystems Assessment		

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6	Earth & Human Activities	6-8.ESS3.C.1	Analyze data to define the relationship for how increases in human population and per-capita consumption of natural resources.	<ul style="list-style-type: none"> • Notes • Renew-a-Bean Lab • Thanos Essay • Positive Energy video • Zero Waste Plan • Game Review 	CANVAS Textbook: Science Explorer (Pearson Prentice Hall, 2009)
		6-8.ESS3.C.2	Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.		
		Objectives	<ul style="list-style-type: none"> • Use evidence to explain that humans depend on many limited natural resources that may not be renewed over human lifetimes. • Demonstrate the importance of air for human health by defining its characteristics and main dangerous pollutants 		

		<ul style="list-style-type: none"> Describe the main air pollutants and their effects on human health. Develop an activity where the student puts into practice the knowledge acquired. 		
	Key Terms	Natural resource, renewable resources, nonrenewable resources, fossil fuels, conservation, minerals, solar energy, water, sustainability, metals, pollution, environmental science		
	Common Assessments	Quiz: Natural Resources Vocabulary Test: Earth & Human Activities Assessment		

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7	Evolution	6-8.LS4.B.1	Construct an explanation based on evidence that describes how genetic variations of traits in a population increases some individuals' probability of surviving and reproducing in a specific environment.	<ul style="list-style-type: none"> Notes Bunny Phet Natural Selection Lab Game Review 	CANVAS Textbook: Science Explorer (Pearson Prentice Hall, 2009)
		6-8.LS4.B.2	Gather and synthesize information about the technologies that have changed the way humans influence the inheritance of desired traits in organisms.		
		6-8.LS4.C.1	Interpret graphical representations to support explanations of how natural selection may lead to increases and decreases of specific traits in populations over time.		
		Objectives	<ul style="list-style-type: none"> Students will be able to evaluate evidence provided by data to qualitatively and quantitatively investigate the role of natural selection in evolution. Students will be able to evaluate data-based evidence that describes evolutionary changes in the genetic makeup of a population over time. 		
		Key Terms	Adaptation, natural selection, fossil, artificial selection, Darwin, variation, evolution, gene pool, species, inherit, alleles, karyotype, chromosomes, genes, punnett square, heterozygous, homozygous, dominant, recessive, incomplete dominance, codominance		

		Common Assessments	Quiz: Evolution Vocabulary Test: Evolution Assessment
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