

6th Grade Science

Earth and Space Science

			Readorium Books	Readorium Articles/Videos	Teacher Resource Center: Classroom Strategy Lessons (CL) with Articles (A) by Standard
S6E1	Obtain, evaluate, and communicate information about current scientific views of the universe and how those views evolved	a. Ask questions to determine changes in models of Earth’s position in the solar system, and origins of the universe as evidence that scientific theories change with the addition of new information. (Students should consider Earth’s position in geocentric and heliocentric models and the Big Bang as it describes the formation of the universe.)	<ul style="list-style-type: none"> • Big Delicious Earth • Scientists Who Changed the World • Superstition or Science • The Lives of Stars • The Future of the Sun(A) 		
		b. Develop a model to represent the position of the solar system in the Milky Way galaxy and in the known universe.	<ul style="list-style-type: none"> • Inner and Outer Planets • Lives of Stars • Where Did the Planets Come From(A) • Strange Stars(A) • Our Galactic Neighborhood(A) 	<ul style="list-style-type: none"> • The Deep Mystery of Black Holes (A) • Gaps in the Galaxies (V) 	

Readorium Scholar Alignment with Georgia State Science Standards

		<p>c. Analyze and interpret data to compare and contrast the planets in our solar system in terms of:</p> <ul style="list-style-type: none"> • size relative to Earth, • surface and atmospheric features, • relative distance from the sun, and • ability to support life. 	<ul style="list-style-type: none"> • Big Delicious Earth • Inner and Outer Planets 	<ul style="list-style-type: none"> • The Search for Life on Mars (A) • Sparkling Sunspots (V) • A Trip to Mars (A) • Aurora Borealis: The Glowing Lights (A) • Spirit and Opportunity on Mars: The Little Robots that Could (A) • Voyager Space Probes(A) 	<ul style="list-style-type: none"> • Context Clues (CL-2, A-2, The Search for Life on Mars)
		<p>d. Develop and use a model to explain the interaction of gravity and inertia that governs the motion of objects in the solar system.</p>	<ul style="list-style-type: none"> • The Earth in Motion 	<ul style="list-style-type: none"> • Our Own Star, the Sun (A) • The Future of the Sun(A) 	
		<p>e. Ask questions to compare and contrast the characteristics, composition, and location of comets,</p>	<ul style="list-style-type: none"> • Big Delicious Earth • Inner and Outer Planets 	<ul style="list-style-type: none"> • The Challenge of Gravity 	
			<ul style="list-style-type: none"> • The Space Race • Space Rocks • Inner and Outer Planets 	<ul style="list-style-type: none"> • Space Junk: Are We Trashing our Solar System? (A) • Catching a Comet(A) • Treasures in the Sky(A) 	

Readorium Scholar Alignment with Georgia State Science Standards

S6E2	Obtain, evaluate, and communicate information about the effects of the relative positions of the sun, Earth, and moon.	a. Develop and use a model to demonstrate the phases of the moon by showing the relative positions of the sun, Earth, and moon	<ul style="list-style-type: none"> • The Earth in Motion • Total Lunacy: Phases, Eclipses, and Tides on Earth • The Biggest Shadow of All: A Solar Eclipse(A) 	<ul style="list-style-type: none"> • Surface and Eclipses of the Moon (A) 	
		b. Construct an explanation of the cause of solar and lunar eclipses	<ul style="list-style-type: none"> • Total Lunacy: Phases, Eclipses, and Tides on Earth • The Biggest Shadow of All: A Solar Eclipse(A) 	<ul style="list-style-type: none"> • Surface and Eclipses of the Moon (A) 	
		c. Analyze and interpret data to relate the tilt of the Earth to the distribution of sunlight throughout the year and its effect on seasons.	<ul style="list-style-type: none"> • The Earth in Motion 	<ul style="list-style-type: none"> • Sparkling Sunspots (V) 	
S6E3	Obtain, evaluate, and communicate information to recognize the significant role of water in Earth processes.	a. Ask questions to determine where water is located on Earth's surface (oceans, rivers, lakes, swamps, groundwater, aquifers, and ice) and communicate the relative proportion of water at each location.	<ul style="list-style-type: none"> • Big Delicious Earth 		
		b. Plan and carry out an investigation to illustrate the role of the sun's energy in atmospheric conditions that lead to the cycling of water. (The water cycle should include evaporation, condensation, precipitation, transpiration, infiltration, groundwater, and runoff.)	<ul style="list-style-type: none"> • Weather 		

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		c. Ask questions to identify and communicate, using graphs and maps, the composition, location, and subsurface topography of the world's oceans			
		d. Analyze and interpret data to create graphic representations of the causes and effects of waves, currents, and tides in Earth's systems.			
S6E4	Obtain, evaluate, and communicate information about how the sun, land, and water affect climate and weather	a. Analyze and interpret data to compare and contrast the composition of Earth's atmospheric layers (including the ozone layer) and greenhouse gases. (Earth's atmospheric layers include the troposphere, stratosphere,	<ul style="list-style-type: none"> • Weather 	<ul style="list-style-type: none"> • 	
		b. Plan and carry out an investigation to demonstrate how energy from the sun transfers heat to air, land and water at different rates. (Heat transfer should include the processes of conduction, convection, and radiation.)	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • Twist and Shout: Tornado Trouble (V) 	

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		c. Develop a model demonstrating the interaction between unequal heating and the rotation of the Earth that causes local and global wind systems.	<ul style="list-style-type: none"> • Desert Biome • Weather 	<ul style="list-style-type: none"> • Hurricane Hunting (V) • Science on Ice (V) 	<ul style="list-style-type: none"> • Print Features (CL-3, A-2, Flying Into a Hurricane: A First-Hand Account)
		d. Construct an explanation of the relationship between air pressure, weather fronts, and air masses and meteorological events such as tornados and thunderstorms.			
		e. Analyze and interpret weather data to explain the effects of moisture evaporating from the ocean on weather patterns and weather events such as hurricanes.			
S6E5	Obtain, evaluate, and communicate information to show how Earth's surface is formed.	a. Ask questions to compare and contrast the Earth's crust, mantle, inner and outer core, including temperature, density, thickness, and composition.	<ul style="list-style-type: none"> • Big Delicious Earth • Continental Drift • On the Move with Plate Tectonics • Seafloor Spreading 	<ul style="list-style-type: none"> • Icy Evidence in the Core (V) 	<ul style="list-style-type: none"> •
		b. Plan and carry out an investigation of the characteristics of minerals and how minerals contribute to rock composition.	<ul style="list-style-type: none"> • Big Delicious Earth 	<ul style="list-style-type: none"> • Gold - The Magnificent Metal (A) 	<ul style="list-style-type: none"> • Sensory Images (CL-2, A-2, Gold-The Magnificent Metal)
		c. Construct an explanation of how to classify rocks by their formation and how rocks change through geologic processes in the rock cycle.			

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		d. Ask questions to identify types of weathering, agents of erosion and transportation, and environments of deposition. (Environments of deposition include deltas, barrier islands, beaches, marshes, and rivers.)	<ul style="list-style-type: none"> • Big Delicious Earth 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • Sensory Images (CL-2, A-2, Gold-The Magnificent Metal)
		e. Develop a model to demonstrate how natural processes (weathering, erosion, and deposition) and human activity change rocks and the surface of the Earth.	<ul style="list-style-type: none"> • Big Delicious Earth • Continental Drift • Earthquakes & Seismic Waves • Formation of Mountains • Learning from Natural Disasters • On the Move with Plate Tectonics • Seafloor Spreading • Volcanic Expedition 	<ul style="list-style-type: none"> • Getting Ready for Earthquakes (V) • Science on Ice (V) 	
		f. Construct an explanation of how the movement of lithospheric plates, called plate tectonics, can cause major geologic events such as earthquakes and volcanic eruptions. (Include convergent, divergent, and transform boundaries.)	<ul style="list-style-type: none"> • Big Delicious Earth • Caves • Formation of Mountains and Deserts • Learning from Natural Disasters • Seafloor Spreading • Volcanic Expedition 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • Determining Importance (CL-3, A-1, An Anchor in the Storm: Root Adaptation)
		g. Construct an argument using maps and data collected to support a claim of how fossils show evidence of the changing surface and climate of the Earth.	<ul style="list-style-type: none"> • Caves • Continental Drift • Sea Floor Spreading 	<ul style="list-style-type: none"> • Getting DNA Out of Ancient Fossils (A) 	<ul style="list-style-type: none"> •
		h. Plan and carry out an investigation to provide evidence that soil is composed of layers of weathered rocks and decomposed organic material.	<ul style="list-style-type: none"> • Big Delicious Earth 	<ul style="list-style-type: none"> • Crystals (A) 	<ul style="list-style-type: none"> • Determining Importance (CL-3, A-2, Crystals)

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S6E6	Obtain, evaluate, and communicate information about the uses and conservation of various natural resources and how they impact the Earth.	a. Ask questions to determine the differences between renewable/sustainable energy resources (examples: hydro, solar, wind, geothermal, tidal, biomass) and nonrenewable energy resources (examples: nuclear: uranium, fossil fuels: oil, coal, and natural gas), and how they are used in our everyday lives.	<ul style="list-style-type: none"> • Pollution 	<ul style="list-style-type: none"> • Let's Save Our Planet • Wave of the Future (V) • Sparkling Sunspots (V) 	
		b. Design and evaluate solutions for sustaining the quality and supply of natural resources such as water, soil, and air.	<ul style="list-style-type: none"> • Pollution 	<ul style="list-style-type: none"> • Let's Save Our Planet (A) • Wave of the Future (V) 	
		c. Construct an argument evaluating contributions to the rise in global temperatures over the past century. (Tables, graphs, and maps of global and regional temperatures, and atmospheric levels of greenhouse gases such as carbon dioxide and methane, should be used as sources of evidence.)	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • Chilling Facts about a Burning Issue: The Climate Change Quiz- Part 1 (A) • Chilling Facts about a Burning Issue: The Climate Change Quiz- Part 2 (A) • It's Too Hot! (A) 	

7th Grade Science					
Life Science					
			Readorium Books	Readorium Articles/Videos	Teacher Resource Center: Classroom Strategy Lessons (CL) with Articles (A) by Standard
S7L1	Obtain, evaluate, and communicate information to investigate the diversity of living organisms and how they can be compared scientifically.	a. Develop and defend a model that categorizes organisms based on common characteristics.			
		b. Evaluate historical models of how organisms were classified based on physical characteristics and how that led to the six kingdom system (currently archaea, bacteria, protists, fungi, plants, and animals). (This includes common examples and characteristics such as, but not limited to, prokaryotic, eukaryotic, unicellular, multicellular, asexual reproduction, sexual reproduction, autotroph, heterotroph, and unique cell structures.)		<ul style="list-style-type: none"> • Cells and Smells (A) • Pirate Spiders (A) • A Spider with Deadly Aim (A) • Parasites: Nature's Thieves (A) • Spitting Spiders (A) • Looks like an Ant... Or Does It? (A) • Squid: Underwater Masters of Disguise (V) • Taking the Bite Out of Mosquito Bites (V) 	<ul style="list-style-type: none"> • Inferring (CL-3, A-2, A Memorable Reptile) • Monitoring for Meaning (CL-1, A-1, Lizard Lifestyles) • Inferring (CL-2, A-1, Sloth Stories) • Determining Importance (CL-1, A-2, The Frilled Lizard)

Readorium Scholar Alignment with Georgia State Science Standards

S7L2	Obtain, evaluate, and communicate information to describe how cell structures, cells, tissues, organs, and organ systems interact to maintain the basic needs of organisms.	a. Develop a model and construct an explanation of how cell structures (specifically the nucleus, cytoplasm, cell membrane, cell wall, chloroplasts, lysosome, and mitochondria) contribute to the function of the cell as a system in obtaining nutrients in order to grow, reproduce, make needed materials, and process waste. (The intent is for students to demonstrate how the component structures of the cell interact and work together to allow the cell as a whole to carry out various processes.	<ul style="list-style-type: none"> • Becoming and Staying Healthy • Our Bodies; The Most Marvelous Machines 	<ul style="list-style-type: none"> • I'm Squished! A Battle Between Cell Parts(A) 	<ul style="list-style-type: none"> •
		b. Develop and use a conceptual model of how cells are organized into tissues, tissues into organs, organs into systems, and systems into organisms.	<ul style="list-style-type: none"> • Our Bodies; The Most Marvelous Machines 	.	
		c. Construct an argument that systems of the body (Cardiovascular, Excretory, Digestive, Respiratory, Muscular, Nervous, and Immune) interact with one another to carry out life processes. (The emphasis is not on learning individual structures and functions associated with each system, but on how systems interact to support life processes.)	<ul style="list-style-type: none"> • Our Bodies; The Most Marvelous Machines 	<ul style="list-style-type: none"> • 25 Fascinating Facts About Humans (A) • The Very Peculiar Anglerfish (A) • Life Near Undersea Vents (A) • Bones Tell the Story (A) 	

Readorium Scholar Alignment with Georgia State Science Standards

S7L3	Obtain, evaluate, and communicate information to explain how organisms reproduce either sexually or asexually and transfer genetic information to determine the traits of their offspring.	a. Construct an explanation supported with scientific evidence of the role of genes and chromosomes in the process of inheriting a specific trait.	<ul style="list-style-type: none"> • Our Bodies; The Most Marvelous Machines • Genetics • Mitosis and Meiosis 	<ul style="list-style-type: none"> • The Very Peculiar Anglerfish (A) • Life Near Undersea Vents (A) • The Humongous Megafish (A) 	
		b. Develop and use a model to describe how asexual reproduction can result in offspring with identical genetic information while sexual reproduction results in genetic variation. (Models could include, but are not limited to, the use of monohybrid Punnett squares to demonstrate the heritability of genes and the resulting genetic variation, identification of heterozygous and homozygous, and comparison of genotype vs. phenotype.)	<ul style="list-style-type: none"> • Mitosis and Meiosis 	<ul style="list-style-type: none"> • The Venomous Sea Wasp (A) • The World's Most Disgusting Animal: The Hagfish (A) • Totally Batty (V) 	

Readorium Scholar Alignment with Georgia State Science Standards

		<p>c. Ask questions to gather and synthesize information about the ways humans influence the inheritance of desired traits in organisms through selective breeding. (The element specifically addresses artificial selection and the ways in which it is fundamentally different from natural selection.)</p>	<ul style="list-style-type: none"> • Becoming and Staying Healthy • Our Bodies; The Most Marvelous Machines 	<ul style="list-style-type: none"> • Artificial Blood! (A) • Artificial Limbs (A) • From Blinking to Thinking: The Amazing • Human Brain (A) • Your Brain at Sleep (A) • Making Memories(A) • Dreams (A) • Strange Medical Conditions • Teeth (A) • Teenage Brain (A) • The Black Death • The Tiniest Killers (A) • Behind the Scenes at the Hospital: Pathology (A) • The Ins and Outs of the Brain (V) • Picking Your Brain (V) • The Creative Brain (V) • Locked-in Syndrome: • Finding a Way Out (V) • The Good, the Bad, and the Baby (V) • What Makes Us Tick (V) • The Warrior Gene (A) • Cloning: The More the Merrier (A) • Selective Breeding, Genetic Engineering (A) • Creating Designer Dogs (A) 	<ul style="list-style-type: none"> • Making Connections (CL-3, A-2, The Limits of the Human Body) • Context Clues (CL-1, A-2, Making Memories)
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		d. Explain the role of genes and chromosomes in the process of inheriting and specific trait	<ul style="list-style-type: none"> • Genetics • Mitosis and Meiosis 		<ul style="list-style-type: none"> • Making Connections (CL-1, A-2, The Warrior Gene)
S7L3	Obtain, evaluate, and communicate information to explain how organisms reproduce either sexually or asexually and transfer genetic information to	a. Construct an explanation supported with scientific evidence of the role of genes and chromosomes in the process of inheriting a specific trait.		<ul style="list-style-type: none"> • Pedigrees (A) • Birds Strut their Stuff (V) 	
		b. Develop and use a model to describe how asexual reproduction can result in offspring with identical genetic information while sexual reproduction results in genetic variation. (Models could include, but are not limited to, the use of monohybrid Punnett squares to demonstrate the heritability of genes and the resulting genetic variation, identification of heterozygous and homozygous, and comparison of genotype vs. phenotype.)	<ul style="list-style-type: none"> • Genetics • Mitosis and Meiosis 		
		c. Ask questions to gather and synthesize information about the ways humans influence the inheritance of desired traits in organisms through selective breeding. (The element specifically addresses artificial selection and the ways in which it is fundamentally different from natural selection.)	<ul style="list-style-type: none"> • Genetics • Mitosis and Meiosis 	<ul style="list-style-type: none"> • Creating Designer Dogs (A) 	<ul style="list-style-type: none"> •

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S7L4	Obtain, evaluate, and communicate information to examine the interdependence of organisms with one another and their environments.	a. Construct an explanation for the patterns of interactions observed in different ecosystems in terms of the relationships among and between organisms and abiotic components of the ecosystem. (The interactions include, but are not limited to, predator-prey relationships, competition, mutualism, parasitism, and commensalism.)	<ul style="list-style-type: none"> • Life on a Research Ship • Rainforests • Surviving in Nature 	<ul style="list-style-type: none"> • The Adventure of Keeping an Aquarium (A) Ant Activists (V) 	<ul style="list-style-type: none"> • Print Features (CL-3, A-1, Home Sweet Home: Dens and Other Shelters)
		b. Develop a model to describe the cycling of matter and the flow of energy among biotic and abiotic components of an ecosystem. (Emphasis is on tracing movement of matter and flow of energy, not the biochemical mechanisms of photosynthesis and cellular respiration.)		<ul style="list-style-type: none"> • Sparkling Sunspots (V) 	<ul style="list-style-type: none"> • Monitoring for Meaning (CL-3, A-1, Sharing the Sun: Foundation of the Food Web)
		c. Analyze and interpret data to provide evidence for how resource availability, disease, climate, and human activity affect individual organisms, populations, communities, and ecosystems.	<ul style="list-style-type: none"> • Desert Biome • Life on a Research Ship • Rainforests • Surviving in Nature 	<ul style="list-style-type: none"> • The Illegal Wildlife Trade (A) • Invasive Species (A) • Surviving in Nature (A) • Garbage Island (A) • What Happens When Something Goes Extinct? (A) • Head Lice - Don't Bug Me! (A) • Carnivorous Dinosaurs (A) • Let's Save Our Planet!(A) • Shrimp Farming - A Shocking Environment (A) 	<ul style="list-style-type: none"> • Monitoring for Meaning (CL-3, A-2, The Illegal Wildlife Trade) • Context Clues (CL-3, A-2, What Happens When Something Goes Extinct?)

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		<p>d. Ask questions to gather and synthesize information from multiple sources to differentiate between Earth's major terrestrial biomes (i.e., tropical rain forest, savanna, temperate forest, desert, grassland, taiga, and tundra) and aquatic ecosystems (i.e., freshwater, estuaries, and marine). (Emphasis is on the factors that influence patterns across biomes such as the climate, availability of food and water, and location.)</p>		<ul style="list-style-type: none"> • Insects and Team Work (V) • Make Way for Ducklings (V) 	<ul style="list-style-type: none"> •
			<p>Surviving in Nature</p>	<ul style="list-style-type: none"> • The Illegal Wildlife Trade • Invasive Species (A) • Plants Trick Animals (A) • Crime Solving Insects}{(A) • Animal Cannibals (A) • What Happens When Something Goes Extinct? (A) • Head Lice - Don't Bug Me! (A) • A Weird Animal: The Binturong (A) • The Surprising Intelligence of Birds (A) • The Marabou Stork: Exceptionally Ugly and Gross! (A) • Vampires in Nature (A) • Tardigrades.. AKA Water Bears (A) • Carnivorous Dinosaurs (A) • Insects and Team Work (V) 	<ul style="list-style-type: none"> • Print Features (CL-2, and Loving It: Symbiosis)
		<p>E .Describe the characteristics of Earth's major terrestrial biomes (i.e. tropical rain forest,</p>	<ul style="list-style-type: none"> • Formation of Mountains and Deserts • Importance of Coral Reefs 	<p>Artificial Reefs: How and Why We Build Them (A)</p>	<ul style="list-style-type: none"> • Graphic Features (CL-3, A-1-Rainforest Precipitation) • Inferring (CL-1, A-1,In the Night)

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		savannah, temperate, desert, taiga, tundra, and mountain) and aquatic communities (i.e. freshwater, estuaries, and marine)	<ul style="list-style-type: none"> • Life in the Tundra • Prairie Ecosystems • Rainforest • Surviving in Nature 		<ul style="list-style-type: none"> • Monitoring for Meaning (CL-2, A-1, the Great Barrier Reef) • Determining Importance (CL-1, A-1, A Place with Many Levels)
S7L5	Obtain, evaluate, and communicate information from multiple sources to explain the theory of evolution of living organisms through inherited characteristics.	a. Use mathematical representations to evaluate explanations of how natural selection leads to changes in specific traits of populations over successive generations. (Referencing data should be obtained from multiple sources including, but not limited to, existing research and simulations. Students should be able to calculate means, represent this data in a table or graph, and reference it when explaining the principles of natural selection.)	<ul style="list-style-type: none"> • Scientists who Changed the World • Surviving in Nature 	<ul style="list-style-type: none"> • Survival of The Fittest (A) • Life Inside Deep Caves (A) 	<ul style="list-style-type: none"> • Context Clues (CL-1, A-1, Life inside Deep Caves) • Print Features (CL-1, A-2, How Plants Trick Animals)
		b. Construct an explanation based on evidence that describes how genetic variation and environmental factors influence the probability of survival and reproduction of a species.	<ul style="list-style-type: none"> • Character Traits of Good Scientists • Scientists who Changed the World • Surviving in Nature 	<ul style="list-style-type: none"> • Shrimp Farming - A Shocking Environment (A) • Evolution of the Peppered Moth (A) 	
		c. Analyze and interpret data for patterns in the fossil record that document the existence, diversity, and extinction of organisms and their relationships to modern organisms.	<ul style="list-style-type: none"> • Caves • Continental Drift 	<ul style="list-style-type: none"> • Getting DNA Out of Ancient Fossils (A) • Fascinating Flights (V) 	

Eighth Grade

Physical Science

			Readorium Books	Readorium Articles/Videos	Teacher Resource Center Classroom Strategy Lessons (CL) with Articles (A) by Standard
S8P1	Obtain, evaluate, and communicate information about the structure and properties of matter.	a. Develop and use a model to compare and contrast pure substances (elements and compounds) and mixtures. (Include heterogeneous and homogeneous mixtures.)	<ul style="list-style-type: none"> • Fizz, Pop, Boom, and Beyond: Understanding Chemistry 1 • Fizz, Pop, Boom, and Beyond: Understanding Chemistry 2 	<ul style="list-style-type: none"> • Women in Science (A) 	<ul style="list-style-type: none"> •
		b. Develop and use models to describe the movement of particles in solids, liquids, gases, and plasma states when thermal energy is added or removed.	<ul style="list-style-type: none"> • Fizz, Pop, Boom and Beyond Understanding Chemistry 1 • Fizz, Pop, Boom, and Beyond: Understanding Chemistry 2 	<ul style="list-style-type: none"> • Your Food and Astound Your Friends • Kitchen Chemistry (A) 	<ul style="list-style-type: none"> • Sensory Images (CL-1, A-2, Kitchen Chemistry)
		c. Plan and carry out investigations to compare and contrast chemical (i.e., reactivity, combustibility) and physical (i.e., density, melting point, boiling point) properties of matter.	<ul style="list-style-type: none"> • Fizz, Pop, Boom and Beyond Understanding Chemistry 1 • Fizz, Pop, Boom, and Beyond: Understanding Chemistry 2 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> •

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		<p>d. Construct an argument based on observational evidence to support the claim that when a change in a substance occurs, it can be classified as either chemical or physical. (Evidence could include ability to separate mixtures, development of a gas, formation of a precipitate, change in energy, color, and/or form.)</p>	<ul style="list-style-type: none"> • Fizz, Pop, Boom, and Beyond: Understanding Chemistry 1 • Fizz, Pop, Boom, and Beyond: Understanding Chemistry 2 		
		<p>e. Develop models (e.g., atomic-level models, including drawings, and computer representations) by analyzing patterns within the periodic table that illustrate the structure, composition, and characteristics of atoms (protons, neutrons, and electrons) and simple molecules.</p>	<ul style="list-style-type: none"> • Fizz, Pop, Boom, and Beyond: Understanding Chemistry 1 • Fizz, Pop, Boom, and Beyond: Understanding Chemistry 2 		
		<p>f. Construct an explanation based on evidence to describe conservation of matter in a chemical reaction including the resulting differences between products and reactants. ((Evidence could include models such as balanced chemical equations.)</p>	<ul style="list-style-type: none"> • Fizz, Pop, Boom, and Beyond: Understanding Chemistry 1 • Fizz, Pop, Boom, and Beyond: Understanding Chemistry 2 		

Physical Science

			Readorium Books	Readorium Articles/Videos	Teacher Resource Center Classroom Strategy Lessons (CL) with Articles (A)
S8P2	Obtain, evaluate, and communicate information about the law of conservation of energy to develop arguments that energy can transform from one form to another within a system.	a. Analyze and interpret data to create graphical displays that illustrate the relationships of kinetic energy to mass and speed, and potential energy to mass and height of an object	<ul style="list-style-type: none"> • Newton’s Laws 		
		b. Plan and carry out an investigation to explain the transformation between kinetic and potential energy within a system (e.g., roller coasters, pendulums, rubber bands, etc.).	<ul style="list-style-type: none"> • Light Sound Action • Sports Physics 	<ul style="list-style-type: none"> • Things That Go • BOOM!: The History and Chemistry of Explosives (A) 	<ul style="list-style-type: none"> • Context Clues (CL-3, • A-1, Things That Go Boom! : The History and Chemistry of Explosives)
		c. Construct an argument to support a claim about the type of energy transformations within a system [e.g., lighting a match (light to heat), turning on a light (electrical to light)].	<ul style="list-style-type: none"> • Light Sound Action • Sports Physics 	<ul style="list-style-type: none"> • Things That Go BOOM!: The History and Chemistry of Explosives (A) • From Waste to Energy: Bacteria Gives a Boost • Hydrogen Power (V) • Pig Poop and Other Energy Sources (V) • Wave of the Future- Green Gasoline (V) • Hot Stuff – Heat on the Move 	<ul style="list-style-type: none"> • Context Clues (CL-3, A-1, Things That Go Boom! : The History and Chemistry of Explosives)

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		d. Plan and carry out investigations on the effects of heat transfer on molecular motion as it relates to the collision of atoms (conduction), through space (radiation), or in currents in a liquid or a gas (convection).	<ul style="list-style-type: none"> Continental Drift On the Move: Plate Tectonics Sea Floor Spreading 	<ul style="list-style-type: none"> The Cool World of Chemistry (A) 	
S8P3	Students will investigate relationship between force, mass, and the motion of objects	a. Determine the relationship between velocity and accelerations	<ul style="list-style-type: none"> Newton’s Law Inner and Outer Planets Sports Physics 	<ul style="list-style-type: none"> The Limits of the Human Body (A) Weapons Older than Dirt: The History of Some of the World's Most Ancient Weapons (A) Machines of Ancient War: The Physics and History of Siege Engine(A) 	<ul style="list-style-type: none">
		b. Demonstrate the effect of balanced and unbalanced forces on an object in terms of gravity, inertia, and friction	<ul style="list-style-type: none"> The Space Race Newton’s Law Sports Physics 	<ul style="list-style-type: none"> The Limits of the Human Body (A) Space Junk: Are We Trashing our Solar System? (A) The Deep Mystery of Black Holes (A) Weapons Older than Dirt: The History of Some of the World' Most Ancient Weapons (A) Machines of Ancient War: The Physics and History of Siege Engine(A) The Challenge of Gravity (A) A Titanic Collision: The Science behind the Sunken Ship (A) Gravity: The Evil Basketball Player (A) 	<ul style="list-style-type: none">

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		c. Demonstrate the effect of simple machines (lever, inclined plane, pulley, wedge, screw, and wheel and axle) on work		<ul style="list-style-type: none"> • Weapons Older than Dirt: The History of Some of the World's Most Ancient Weapons (A) • Machines of Ancient War: The Physics and History of Siege Engine(A) 	
S8P4	Students will explore the wave nature of sound and electromagnetic radiation	a. Identify the characteristics of electromagnetic and mechanical waves		<ul style="list-style-type: none"> • Sounds and Hearing (A) • The Many Uses of Submarines (A) 	
		b. Describe how the behavior of light waves is manipulated causing reflection, refraction, diffraction, and absorption	<ul style="list-style-type: none"> • Light Sound Action 		
		c. Explain how the human eye sees objects and colors in terms of wavelengths	<ul style="list-style-type: none"> • Our Bodies; The Most Marvelous Machines 	<ul style="list-style-type: none"> • Optical Illusions: Is Seeing Believing? (A) 	
		d. Describe how the behavior of waves is affected by medium (such as air, water, solids)	<ul style="list-style-type: none"> • Earthquakes and Seismic Waves 	<ul style="list-style-type: none"> • Sounds and Hearing (A) • Animal Magnetism (V) 	

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		e. Relate the properties of sound to everyday experiences	<ul style="list-style-type: none"> • Light Sound Action 	<ul style="list-style-type: none"> • 	
		f. Diagram the parts of the wave and explain how the parts are affected by changes in amplitude and pitch	<ul style="list-style-type: none"> • Light Sound Action 	<ul style="list-style-type: none"> • Sounds and Hearing (A) 	
S8P5	Students will recognize characteristics of gravity, electricity, and magnetism as major kinds of forces acting in nature	a. Recognize that every object exerts gravitational force on every other object and that the force exerted depends on how much mass the objects have and how far apart they are	<ul style="list-style-type: none"> • The Space Race • Inner and Outer Planets 	<ul style="list-style-type: none"> • Space Junk: Are We Trashing our Solar System? (A) • Gravity: The Evil Basketball Player (A) • Girl Powered Science (V) 	
		b. Demonstrate the advantages and disadvantages of series and parallel circuits and how they transfer energy	<ul style="list-style-type: none"> • Light Sound Action 		
		c. Investigate and explain that electrical currents and magnets can exert force on each other			