

6th Grade Science					
Habits of Mind		Characteristics of Science			
			Readorium Books	Readorium Articles/Videos	Teacher Resource Center Classroom Strategy Lessons (CL) with Articles (A) by Standard
S6CS1	Students will explore the importance of curiosity, honesty, openness, and skepticism in science and will exhibit these traits in their own efforts to understand how the world works	a.Understand the importance of-and keep-honest, clear, and accurate records in science	<ul style="list-style-type: none"> <li>· Artificial Satellites</li> <li>· Characteristics of a Good Scientist</li> <li>· Life on a Research Ship</li> <li>· Scientific Method</li> <li>· Scientists Who Changed the World</li> <li>· Superstition or Science</li> </ul>	<ul style="list-style-type: none"> <li>· Do Scientists Cheat? (A)</li> <li>· Women in Science (A1-5)</li> </ul>	<ul style="list-style-type: none"> <li>· Determining Importance (CL-3, A-2, Crystals)</li> </ul>
		b.Understand that hypotheses are valuable if they lead to fruitful investigations, even if they hypotheses turn out not to be completely accurate descriptions	<ul style="list-style-type: none"> <li>· Artificial Satellites</li> <li>· Characteristics of a Good Scientist</li> <li>· Life on a Research Ship</li> <li>· Scientific Method</li> <li>· Scientists Who Changed the World</li> <li>· Superstition or Science</li> </ul>	<ul style="list-style-type: none"> <li>· Do Scientists Cheat? (A)</li> </ul>	
S6CS2	Student will use standard safety practices for all classroom laboratory and field investigations	a.Follow correct procedures for use of scientific apparatus	<ul style="list-style-type: none"> <li>· Artificial Satellites</li> <li>· Characteristics of a Good Scientist</li> <li>· Life on a Research Ship</li> <li>· Scientific Method</li> <li>· Scientists Who Changed the World</li> </ul>	<ul style="list-style-type: none"> <li>· Do Scientists Cheat? (A)</li> </ul>	

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			· Superstition or Science		
		b.Demonstrate appropriate techniques in all laboratory situations	· Artificial Satellites · Characteristics of a Good Scientist · Life on a Research Ship · Scientific Method · Scientists Who Changed the World · Superstition or Science	· Do Scientists Cheat? (A)	
		c.Follow correct protocol for identifying and reporting safety problems and violations	All Readorium’s books, articles, videos, and personalized lessons delve into the multitude of topics in science that include the appropriate mathematical measurements. However, the mathematical practice that students need to experience should be found in the structured curricula of the district.		
S6CS3	Students will use computation and estimation skills necessary for analyzing data and following scientific explanations	a.Analyze scientific data by using, interpreting, and comparing numbers in several equivalent forms, such as integers and decimals			
		b.Use metric input units (such as seconds, meters, or grams per milliliter) of scientific calculations to determine the proper unit for expressing the answer			
		c.Address the relationship between accuracy and precision and the importance of each	· The Scientific Method		
		d.Draw conclusions based on analyzed data	· The Scientific Method Characteristics of Great Scientists Scientists who Changed	· Do Scientists Cheat? (A)	

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			the World		
S6CS4	Students will use tools and instruments for observing, measuring, and manipulating, equipment, and materials in scientific activities	a. Use appropriate technology to store and retrieve scientific information in topical alphabetical, numerical, and keyword files, and create simple files	Readorium is a web-based reading comprehension program that gives the students the opportunity to learn about what scientists do and how they do it. Performance activities and hands on opportunities should be given to the students through the district chosen science curriculum.		
		b. Estimate the effect of making a change in one part of a system on the system as a whole			
		c. Read analog and digital meters on instruments used to make direct measurements of length, volume, weight, elapsed time, rates, and temperature, and choose appropriate units for reporting various quantities			
S6CS5	Students will use the ideas of system, model, change, and scale in exploring scientific and technological matters	a. Observe and explain how parts are related to other parts in systems such as weather systems, solar systems, and ocean systems including how the output from one part of a system (in the form of material, energy, or information) can become the input to other parts (For example: El Nino's effect on weather)	<ul style="list-style-type: none"> <li>· Artificial Satellites</li> <li>· Big Delicious Earth</li> <li>· Pollution</li> <li>· Inner and Outer Planets</li> <li>· Total Lunacy Phases, . . .</li> <li>Eclipses, and Tides on Earth</li> <li>· Weather</li> </ul>		Determining Importance (CL-2, A-2, Garbage island)

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		b. Identify several different models (such as physical replicas, pictures, and analogies) that could be used to represent the same thing, and evaluate their usefulness, taking into account such things as the model's purpose and complexity	Readorium is a supplemental web-based reading comprehension program that gives the students the opportunity to learn about what scientists do and how they do it. Performance activities and hands on opportunities should be given to the students through the district chosen science curriculum.		
S6CS6	Students will communicate scientific ideas and activities clearly	a. Write clear, step-by-step instructions for conducting scientific investigations, operating a piece of equipment, or following a procedure			
		b. Understand and describe how writing for scientific purposes is different than writing for literary purposes			
		c. Organize scientific information using appropriate tables, charts, and graphs, and identify relationships they reveal			<ul style="list-style-type: none"> <li>· Graphic Features (CL-1, A-1, Science Mystery: What is Happening to the Bluefin Tuna?)</li> <li>· Graphic Features (CL-1, A-2, The Blue Whale Population)</li> <li>· Graphic Features (CL-3, A-1-Rainforest Precipitation)</li> <li>· Graphic Features (CL-3, A-2-Weather Across the Country)</li> <li>· Sensory Images (CL-3, A-1, Night Walk)</li> </ul>

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S6CS7	Students will question scientific claims and arguments effectively	a.Question claims based on vague attributions (such as “Leading doctors say...”) or on statements made by people outside the area of their particular expertise	All Readorium’s books, articles, videos, and personalized lessons delve into the multitude of topics in science that include the appropriate mathematical measurements. However, the mathematical practice that students need to experience should be found in the structured curricula of the district.		
		b.Recognize that there may be more than one way to interpret a given set of findings		Antlers, Beaks, Geckos and Us (V)	
<b>The Nature of Science</b>		<b>Characteristics of Science</b>			
S6CS8	Students will investigate the characteristics of scientific knowledge and how it is achieved	a.When similar investigations give different results, the scientific challenge is to judge whether the differences are trivial or significant, which often requires further study. Even with similar results, scientists may wait until an investigation has been repeated many times before accepting the results as meaningful	<ul style="list-style-type: none"> <li>· Characteristics of a Good Scientist</li> <li>· Life on a Research Ship</li> <li>· Scientific Method</li> <li>· Scientists Who Changed the World</li> <li>· Superstition or Science</li> </ul>		
		b.When new experimental results are inconsistent with an existing, well-established theory, scientists may require further experimentations to decide whether the results are flawed or the theory required modification	<ul style="list-style-type: none"> <li>· Characteristics of a Good Scientist</li> <li>· Life on a Research Ship</li> <li>· Scientific Method</li> <li>· Scientists Who Changed the World</li> <li>· Superstition or Science</li> </ul>		
		c.As prevailing theories are challenged by new	· Characteristics of a Good Scientist	Girls in Science Series: Part 1 (A)	

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		information, scientific knowledge may change and grow	<ul style="list-style-type: none"> <li>· Life on a Research Ship</li> <li>· Scientific Method</li> <li>· Scientists Who Changed the World</li> <li>· Superstition or Science</li> </ul>		
S6CS9	Students will investigate the features of the process of scientific inquiry	a.Scientific investigations are conducted for different reasons. They usually involve collecting evidence, reasoning, devising hypotheses, and formulating explanations	<ul style="list-style-type: none"> <li>· Characteristics of a Good Scientist</li> <li>· Life on a Research Ship</li> <li>· Scientific Method</li> <li>· Scientists Who Changed the World</li> <li>· Superstition or Science</li> </ul>		· Inferring (CL-3, A-1, Meet a Scientist)
		b.Scientists often collaborate to design research. To prevent bias, scientists conduct independent studies of the same questions	<ul style="list-style-type: none"> <li>· Characteristics of a Good Scientist</li> <li>· Life on a Research Ship</li> <li>· Scientific Method</li> <li>· Superstition or Science</li> </ul>	All videos from the Science Alive Section of the library show collaboration of scientists to conduct research. Research is in the following categories: <ul style="list-style-type: none"> <li>· Animals</li> <li>· Earth</li> <li>· Energy</li> <li>· Extreme Weather</li> <li>· The Future</li> <li>· Human</li> <li>· Medical</li> <li>· Nature</li> <li>· Women in Science</li> </ul>	
		c.Accurate record keeping, data sharing, and replication of results are essential for maintaining an investigator's credibility with other scientists and society	<ul style="list-style-type: none"> <li>· Characteristics of a Good Scientist</li> <li>· Life on a Research Ship</li> <li>· Scientific Method</li> <li>· Scientists Who Changed the World</li> <li>· Superstition or Science</li> </ul>		· Inferring (CL-3, A-1, Meet a Scientist)

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		d.Scientists use technology and mathematics to enhance the process of scientific inquiry		<ul style="list-style-type: none"> <li>· Flowing Free (V)</li> <li>· Snaking Around (V)</li> <li>· Virtual Wildfires (V)</li> <li>· Chores Don't Have to be a Pain in the But...ler! (V)</li> <li>· Musical Computer</li> <li>· Robots of Your Dreams</li> <li>· Sensible Sensors</li> <li>· Robots with Whiskers</li> <li>· Signing Made Simple</li> <li>· Smart Cars!</li> <li>· Smart Helicopters</li> <li>· Strong but Sensitive: · Metal Foam</li> <li>· X-Ray Vision: Beyond the Bones</li> <li>· How Can You Become an Astronaut? (A)</li> </ul>	
		e.The ethics of science require that special care must be taken and used for human subjects and animals in scientific research. Scientists must adhere to the appropriate rules and guidelines when conducting research		<ul style="list-style-type: none"> <li>· Do Scientists Cheat? (A)</li> <li>· Ant Activists (V)</li> <li>· Nanoparticles: Tiny · Glowing Cancer Killers (V)</li> <li>· Tongue Driven (V)</li> <li>· Vision for Blind People - Fact or Fiction (V)</li> <li>· Orangutans See, Orangutans Do? (V)</li> <li>· Safe from Tsunamis</li> </ul>	· Inferring (CL-3, A-1, Meet a Scientist)
S6CS10	Students will enhance reading in all curriculum areas by	a.Reading in All Curriculum Areas *Read a minimum of 25 grade-level appropriate books per year from a variety of subject disciplines and participate in discussions related to curricular learning in all areas *Read both informational and fictional	<ul style="list-style-type: none"> <li>· Artificial Satellites</li> <li>· Becoming and Staying · Healthy</li> <li>· Caves</li> <li>· Character Traits of a Good Scientist</li> <li>· Desert Biomes</li> <li>· Earth in Motion</li> <li>· Earthquakes and Seismic</li> </ul>		<p>Teacher Resource Center</p> <p>Reading Strategy Lessons</p> <p>Reading Strategy Videos</p> <p>Classroom Lessons (with plans, text, and</p>

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		<p>texts in a variety of genres and modes of discourse                  *Read technical texts related to various subject areas</p>	<p>Waves                  · Formation of Mountains and Deserts                  · Genetics: Why We Look the Way We Do                  · Inner and Outer Planets                  · Learning from Natural Disasters                  · Life in the Tundra                  · Life on a Research Ship                  · Light, Sound, Action                  · Microscopes: Seeing the Tiny World                  · Mitosis and Meiosis                  · Nature’s Weird Surprises                  · Newton’s Law                  · On the Move: Plate Tectonics                  · Our Big, Delicious Earth                  · Our Bodies: The Most Marvelous Machines                  · Pollution                  · Prairie Ecosystems                  · Rainforests                  · Scientists Who Change the World                  · Seafloor Spreading                  · Space Race                  · Space Rocks                  · Sports Physics                  · Superstition or Science?                  · Surviving in Nature                  · The Importance of Coral Reefs                  The Lives of Stars                  The Scientific Method                  Total Lunacy                  Understanding Chem 1                  Understanding Chem 2</p>		<p>graphic organizers), and Graphic Organizers</p> <ul style="list-style-type: none"> <li>· Determining Importance</li> <li>· Inferring</li> <li>· Making Connections</li> <li>· Making Sensory Images</li> <li>· Monitoring for Meaning</li> <li>· Print Features</li> <li>· Using Context Clues</li> <li>· Graphic Features</li> </ul>
		<p>b. Discussing books *Discuss messages and themes from books in all subject areas                  *Respond to a variety of texts in multiple modes of discourse *Relate messages and themes from one subject area to messages and themes in another area                  *Evaluate the merit of texts in every subject discipline                  *Examine author’s purpose in writing *Recognize the features of disciplinary texts</p>			
		<p>c. Building vocabulary knowledge *Demonstrate an understanding of contextual vocabulary in various subjects *Use content vocabulary in writing and speaking *Explore understanding of new words found in subject area</p>			
		<p>d. Establishing context *Explore life experiences related to subject area content *Discuss in both writing and speaking how certain words are subject area related *Determine strategies for finding content and contextual meaning for</p>			



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		unknown words	Volcanic Expedition Weather What is Continental Drift?		
<b>Earth Science</b>					
S6E1	Students will explore current scientific views of the universe and how those views evolved	a.Relate the Nature of Science to the progression of basic historical scientific models (geocentric, heliocentric) as they describe our solar system, and the Big Bang as it describes the formation of the universe	<ul style="list-style-type: none"> <li>· Big Delicious Earth</li> <li>· Scientists Who Changed the World</li> <li>· Superstition or Science</li> <li>· The Lives of Stars</li> <li>· The Future of the Sun(A)</li> </ul>		
		b.Describe the position of the solar system in the Milky Way galaxy and the universe	<ul style="list-style-type: none"> <li>· Inner and Outer Planets</li> <li>· Lives of Stars</li> <li>· Where Did the Planets Come From(A)</li> <li>· Strange Stars(A)</li> <li>· Our Galactic Neighborhood(A)</li> </ul>	<ul style="list-style-type: none"> <li>· The Deep Mystery of Black Holes (A)</li> <li>· Gaps in the Galaxies (V)</li> </ul>	
		c.Compare and contrast the planets in terms of *Size relative to the earth *Surface and atmospheric features *Relative distance from the sun *Ability to support life	<ul style="list-style-type: none"> <li>· Big Delicious Earth</li> <li>· Inner and Outer Planets</li> </ul>	<ul style="list-style-type: none"> <li>· The Search for Life on Mars (A)</li> <li>· Sparkling Sunspots (V)</li> <li>· A Trip to Mars (A)</li> <li>· Aurora Borealis: The Glowing Lights (A)</li> <li>· Spirit and Opportunity on Mars: The Little Robots that Could (A)</li> <li>· Voyager Space Probes(A)</li> </ul>	<ul style="list-style-type: none"> <li>· Context Clues (CL-2, A-2, The Search for Life on Mars)</li> </ul>
		d.Explain the motion of objects in the day/night sky in terms of relative position	<ul style="list-style-type: none"> <li>· The Earth in Motion</li> </ul>	<ul style="list-style-type: none"> <li>· Our Own Star, the Sun (A)</li> <li>· The Future of the Sun(A)</li> </ul>	

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		e.Explain that gravity is the force that governs the motion in the solar system	· Big Delicious Earth · Inner and Outer Planets	The Challenge of Gravity	
		f.Describe the characteristics of comets, asteroids, and meteors	· The Space Race · Space Rocks · Inner and Outer Planets	· Space Junk: Are We Trashing our Solar System? (A) · Catching a Comet(A) · Treasures in the Sky(A)	
S6E2	Students will understand the effects of the relative positions of the Earth, moon and sun	a.Demonstrate the phases of the moon by showing the alignment of the Earth, moon and sun	· The Earth in Motion · Total Lunacy: Phases, Eclipses, and Tides on Earth · The Biggest Shadow of All: A Solar Eclipse(A)		
		b.Explain the alignment of the Earth, moon and sun during solar and lunar eclipses	· Total Lunacy: Phases, Eclipses, and Tides on Earth · The Biggest Shadow of All: A Solar Eclipse(A)		
		c.Relate the tilt of the Earth to the distribution of sunlight throughout the year and its effect on climate	· The Earth in Motion	· Sparkling Sunspots (V)	
S6E3	Students will recognize the significant role of water in Earth processes	a.Explain that a large portion of the Earth's surface is water, consisting of oceans, rivers, lakes, underground water, and ice	· Big Delicious Earth		
		b.Relate various atmospheric conditions to stages of the water cycle	Weather		

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		c.Describe the composition, location, and subsurface topography of the world's oceans		Research Ship (A)	
		d.Explain the causes of waves, currents and tides	· The Earth in Motion		
S6E4	Students will understand how the distribution of land and oceans affects climate and weather	a.Demonstrate that land and water absorb and lose heat at different rates and explain the resulting effects on weather patterns	· Weather		
		b.Relate unequal heating of land and water surfaces to form large global wind systems and weather events such as tornados and thunderstorms		Twist and Shout: Tornado Trouble (V)	
		c.Relate how moisture evaporating from the oceans affects the weather patterns and weather events such as hurricanes	· Desert Biome · Weather	· Hurricane Hunting (V) · Science on Ice (V)	· Print Features (CL-3, A-2,Flying Into a Hurricane: A First-Hand Account)
S6E5	Students will investigate the scientific view of how the Earth's surface is formed	a.Compare and contrast the Earth's crust, mantle, and core including temperature, density, and composition	· Big Delicious Earth · Continental Drift · On the Move with Plate Tectonics · Seafloor Spreading	Icy Evidence in the Core (V)	
		b.Investigate the contribution of minerals to rock composition	· Big Delicious Earth	· Gold - The Magnificent Metal (A)	· Sensory Images (CL-2, A-2, Gold-The Magnificent Metal)
		c.Classify rocks by their process of formation			

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		d.Describe processes that change rocks and the surface of the Earth	· Big Delicious Earth		· Sensory Images (CL-2, A-2, Gold-The Magnificent Metal)
		e.Recognize that lithospheric plates constantly move and cause major geological events on the Earth's surface	· 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	· Getting Ready for Earthquakes (V) · Science on Ice (V)	
		f.Explain the effects of physical processes (plate tectonics, erosion, deposition, volcanic eruption, gravity) on geological features including oceans (composition, currents, and tides)	· Big Delicious Earth · Caves · Formation of Mountains and Deserts · Learning from Natural Disasters · Seafloor Spreading · Volcanic Expedition		Determining Importance (CL-3, A-1, An Anchor in the Storm: Root Adaptation)
		g.Describe how fossils show evidence of the changing surface and climate of the Earth	· Caves · Continental Drift · Sea Floor Spreading	· Getting DNA Out of Ancient Fossils (A)	
		h.Describe soil as consisting of weathered rocks and decomposed organic material	· Big Delicious Earth	· Crystals (A)	· Determining Importance (CL-3, A-2, Crystals)
		i.Explain the effects of human activity on the erosion of the Earth's surface	· Pollution		
		j.Describe methods for	· Pollution	Artificial Reefs: How and	

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		conserving natural resources such as water, soil, and air		Why We Build Them (A)	
S6E6	Students will describe various sources of energy and with their uses and conservation	a.Explain the role of the sun as the major source of energy and its relationship to wind and water energy	· Pollution	Wave of the Future (V) Sparkling Sunspots (V)	
		b.Identify renewable and nonrenewable resources	· Pollution	Wave of the Future (V)	

7th Grade Science					
Habits of Mind		Characteristics of Science			
		Readorium books	Readorium Articles/Videos	Teacher Resource Center Classroom Strategy Lessons (CL) with Articles (A) by Standard	
S7CS1	Students will explore the importance of curiosity, honesty, openness, and skepticism in science and will exhibit these traits in their own efforts to understand how the world works	a.Understand the importance of-and keep-honest, clear, and accurate records in science	· Character Traits of Good Scientists	· Do Scientists Cheat? (A) · Women in Science Series (A1-5)	
		b.Understand that hypotheses can be valuable, even if they turn out not to be completely accurate	· Character Traits of Good Scientists	· Do Scientists Cheat? (A)	
S7CS2	Students will use standard safety practices for all classroom laboratory and field investigations	a.Follow correct procedures for use of scientific apparatus	· Character Traits of Good Scientists	· Do Scientists Cheat? (A)	
		b.Demonstrate appropriate techniques in all laboratory situations	· Character Traits of Good Scientists	· Do Scientists Cheat? (A)	
		c.Follow correct protocol for identifying and	· Character Traits of Good Scientists	· Do Scientists Cheat? (A)	

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		reporting safety problems and violations			
S7CS3	Students will have the computation and estimation skills necessary for analyzing data and following scientific explanations	a. Analyze scientific data by using, interpreting, and comparing numbers in several equivalent forms, such as integers, fractions, decimals, and percents	All Readorium's books, articles, videos, and personalized lessons delve into the multitude of topics in science that include the appropriate mathematical measurements. However, the mathematical practice that students need to experience should be found in the structured curricula of the district.		
		b. Use the mean, median, and mode to analyze a set of scientific data			
		c. Apply the metric system to a scientific investigation that includes metric to metric conversion (i.e. centimeters to meters)			
		d. Draw conclusions based on analyzed data	<ul style="list-style-type: none"> <li>· The Scientific Method</li> <li>· Characteristics of Great Scientists</li> <li>· Scientists who Changed the World</li> </ul>	<ul style="list-style-type: none"> <li>· Do Scientists Cheat? (A)</li> <li>· Women in Science Series (A1-5)</li> </ul>	
		e. Decide what degree of precision is adequate and round off appropriately	All Readorium's books, articles, videos, and personalized lessons delve into the multitude of topics in science that include the appropriate mathematical measurements. However, the mathematical practice that students need to experience should be found in the structured curricula of the district.		
		f. Address the relationship between accuracy and precision and the importance of each			
S7CS4	Students will use tools and instruments for observing, measuring, and manipulating	a. Uses appropriate technology to store and retrieve scientific information in topical,		· Do Scientists Cheat? (A)	

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	equipment and materials in scientific activities	alphabetical, numerical, and keyword files, and create simple files			
		b. Use appropriate tools for measuring objects and/or substances	All Readorium's books, articles, videos, and personalized lessons delve into the multitude of topics in science that include the appropriate mathematical measurements. However, the mathematical practice that students need to experience should be found in the structured curricula of the district.		
		c. Learn and use on a regular basis standard safety practices for scientific investigations			
S7CS5	Students will use the ideas of system, model, change, and scale in exploring scientific and technological matters	a. Observe and explain how parts can be related to other parts in a system such as predator/prey relationships in a community/ecosystem	<ul style="list-style-type: none"> <li>· Nature's Weird Surprises</li> <li>· Prairie Ecosystems</li> <li>· Rainforests</li> </ul>	<ul style="list-style-type: none"> <li>· Artificial Reefs: How and Why We Build Them (A)</li> </ul>	<ul style="list-style-type: none"> <li>· Making Connections (CL-3, A-1, The Lynx and the Snowshoe Hare: Predator-Prey Relationships)</li> <li>· Graphic Features (CL-3, A-1-Rainforest Precipitation)</li> <li>· Monitoring for Meaning (CL-1, A-1, Lizard Lifestyles)</li> <li>· Monitoring for Meaning (CL-1, A-2, Reflections on Dead Wood)</li> <li>Print Features (CL-2, A-1, Living Together and Loving It: Symbiosis)</li> <li>Determining Importance (CL-1, A-1, A Place with Many Levels)</li> <li>Print Features (CL-1, A-1, Bats)</li> <li>Print Features (CL-3,</li> </ul>



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					A-1, Home Sweet Home: Dens and Other Shelters) Determining Importance (CL-3, A-1, An Anchor in the Storm: Root Adaptation)
		b.Understand that different models (such as physical replicas, pictures, and analogies can be used to represent the same thing)		· Spirit and Opportunity on Mars: The Little Robots that Could (A) · Voyager Space Probes(A)	· Context Clues (CL-2, A-1, Life at the Top) · Context Clues (CL-2, A-2, The Search for Life on Mars)
S7CS6	Students will communicate scientific ideas and activities clearly	a.Write clear, step-by-step instructions for conducting particular scientific investigations, operating a piece of equipment, or following a procedure	· The Scientific Method		
		b.Write for scientific purposes incorporating data from circle, bar and line graphs, two way data tables, diagrams, and symbols	· The Scientific Method · Superstition or Science		· Graphic Features (CL-1, A-1, Science Mystery: What is Happening to the Bluefin Tuna?) · Graphic Features (CL-1, A-2, The Blue Whale Population)
		c.Organize scientific information using appropriate simple tables, charts, and graphs, and identify relationships they reveal	· The Scientific Method · Superstition or Science		· Graphic Features (CL-1, A-1, Science Mystery: What is Happening to the Bluefin Tuna?) · Graphic Features (CL-1, A-2, The Blue Whale Population)

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					· Sensory Images (CL-3, A-1, Night Walk)
S7CS7	Students will question scientific claims and arguments effectively	a.Question claims based on vague attributions (such as “Leading doctors say...” ) or on statements made by people outside the area of their particular expertise	Readorium is a web-based reading comprehension program that gives the students the opportunity to learn about what scientists do and how they do it. Performance activities and hands on opportunities should be given to the students through the district chosen science curriculum.		
		b.Identify the flaws of reasoning that are based on poorly designed research (i.e. facts intermingled with opinion, conclusions based on insufficient evidence)	· The Scientific Method · Superstition or Science		
		c.Question the value of arguments based on small samples of data, biased samples, or samples for which there was no control	· The Scientific Method · Superstition or Science		
		d.Recognize that there may be more than one way to interpret a given set of findings	All Readorium’s books, articles, videos, and personalized lessons delve into the multitude of topics in science that include the appropriate mathematical measurements. However, the mathematical practice that students need to experience should be found in the structured curricula of the district.		
<b>The Nature of Science</b>					
S7CS8	Students will investigate the characteristics of scientific knowledge and how that knowledge is achieved	a.When similar investigations give different results, the scientific challenge is to judge whether the differences are trivial or significant, which often	· Characteristics of a Good Scientist · Life on a Research Ship · Scientific Method · Scientists Who Changed the World		

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		requires further study. Even with similar results, scientists may wait until an investigation has been repeated many times before accepting the results as meaningful	· Superstition or Science		
		b.When new experimental results are inconsistent with an existing, well-established theory, scientists may pursue further experimentation to determine whether the results are flawed or the theory requires modification	· Characteristics of a Good Scientist · Life on a Research Ship · Scientific Method · Scientists Who Changed the World · Superstition or Science		
		c.As prevailing theories are challenged by new information, scientific knowledge may change	· Characteristics of a Good Scientist · Life on a Research Ship · Scientific Method · Scientists Who Changed the World · Superstition or Science		
S7CS9	Students will investigate the features of the process of scientific inquiry	a.Investigations are conducted for different reasons, which include exploring new phenomena, confirming previous results,, testing how well a theory predicts, and comparing competing theories	· Characteristics of a Good Scientist · Life on a Research Ship · Scientific Method · Scientists Who Changed the World · Superstition or Science	· Getting Ready for Earthquakes (V) · Chores Don't Have to be a Pain in the But...ler (V) · Ins and Outs of the Brain (V) · Locked-in Syndrome: Finding a Way Out (V)	
		b.Scientific investigations	· Characteristics of a		· Inferring (CL-3, A-1,

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		usually involve collecting evidence, reasoning, devising hypotheses, and formulating explanations to make sense of collected evidence	<p>Good Scientist</p> <ul style="list-style-type: none"> <li>· Life on a Research Ship</li> <li>· Scientific Method</li> </ul> <p>Scientists Who Changed the World</p> <ul style="list-style-type: none"> <li>· Superstition or Science</li> </ul>		<p>Meet a Scientist)</p> <ul style="list-style-type: none"> <li>· Determining Importance (CL-2, A-1, Dragonflies—Flying Aces of the Insect World)</li> </ul>
		c.Scientific experiments investigate the effect of one variable on another. All other variables are kept constant	<ul style="list-style-type: none"> <li>· Characteristics of a Good Scientist</li> <li>· Life on a Research Ship</li> <li>· Scientific Method</li> </ul> <p>Scientists Who Changed the World</p> <ul style="list-style-type: none"> <li>· Superstition or Science</li> </ul>		
		d.Scientists often collaborate to design research. To prevent this bias, scientists conduct independent studies of the same questions	<ul style="list-style-type: none"> <li>· Characteristics of a Good Scientist</li> <li>· Life on a Research Ship</li> <li>· Scientific Method</li> </ul> <p>Scientists Who Changed the World</p> <ul style="list-style-type: none"> <li>· Superstition or Science</li> </ul>	<p>All videos from the Science Alive Section of the library show collaboration of scientists to conduct research. Research is in the following categories:</p> <ul style="list-style-type: none"> <li>· Animals</li> <li>· Earth</li> <li>· Energy</li> <li>· Extreme Weather</li> <li>· The Future</li> <li>· Human</li> <li>· Medical</li> <li>· Nature</li> <li>· Women in Science</li> </ul>	
		e.Accurate record keeping, data sharing, and replication of results are essential for maintaining an investigator’s credibility	<ul style="list-style-type: none"> <li>· Characteristics of a Good Scientist</li> <li>· Life on a Research Ship</li> </ul> <p>Scientific Method</p>		<ul style="list-style-type: none"> <li>· Determining Importance (CL-2, A-1, Dragonflies—Flying Aces of the Insect World)</li> </ul>

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		with other scientists and society	<ul style="list-style-type: none"> <li>· Scientists Who Changed the World</li> <li>· Superstition or Science</li> </ul>		
		f.Scientists use technology and mathematics to enhance the process of scientific inquiry	<ul style="list-style-type: none"> <li>· Characteristics of a Good Scientist</li> <li>· Life on a Research Ship</li> <li>· Scientific Method</li> <li>· Scientists Who Changed the World</li> <li>· Superstition or Science</li> </ul>	<ul style="list-style-type: none"> <li>· Flowing Free (V)</li> <li>· Snaking Around (V)</li> <li>· Virtual Wildfires (V)</li> <li>· Chores Don't Have to be a Pain in the But...ler! (V)</li> <li>· Musical Computer</li> <li>· Robots of Your Dreams</li> <li>· Sensible Sensors</li> <li>· Robots with Whiskers</li> <li>· Signing Made Simple</li> <li>· Smart Cars!</li> <li>· Smart Helicopters</li> <li>· Strong but Sensitive: Metal Foam</li> <li>· X-Ray Vision: Beyond the Bones</li> </ul>	
		g.The ethics of science require that special care must be taken and used for human subjects and animals in scientific research. Scientists must adhere to the appropriate rules and guidelines when conducting research		<ul style="list-style-type: none"> <li>Do Scientists Cheat? (A)</li> <li>· Ant Activists (V)</li> <li>· Nanoparticles: Tiny · Glowing Cancer Killers (V)</li> <li>· Tongue Driven (V)</li> <li>· Vision for Blind People - Fact or Fiction (V)</li> <li>· Orangutans See, Orangutans Do? (V)</li> <li>· Locked-in Syndrome: Finding a Way Out (V)</li> <li>· Picking Your Brain (V)</li> <li>· The Good, the Bad, and the Baby (V)</li> <li>· What Makes Us Tick</li> </ul>	

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				· Safe from Tsunamis	
S7CS10	Students will enhance reading in all curriculum areas by	<p>a. Reading in all curriculum areas *Read a minimum of 25 grade-level appropriate books per year from a variety of subject disciplines and participate in discussions related to curricular learning in all areas</p> <p>*Read both informational and fictional texts in a variety of genres and modes of discourse</p> <p>*Read technical texts related to various subject areas</p>	<p>Artificial Satellites</p> <ul style="list-style-type: none"> <li>· Becoming and Staying Healthy</li> <li>· Caves</li> <li>· Character Traits of a Good Scientist</li> <li>· Desert Biomes</li> <li>· Earth in Motion</li> <li>· Earthquakes and Seismic Waves</li> <li>· Formation of Mountains and Deserts</li> <li>· Genetics: Why We Look the Way We Do</li> <li>· Inner and Outer Planets</li> <li>· Learning from Natural Disasters</li> <li>· Life in the Tundra</li> <li>· Life on a Research Ship</li> <li>· Light, Sound, Action</li> <li>· Microscopes: Seeing the Tiny World</li> <li>· Mitosis and Meiosis</li> <li>· Nature's Weird Surprises</li> <li>· Newton's Law</li> <li>· On the Move: Plate Tectonics</li> <li>· Our Big, Delicious Earth</li> <li>· Our Bodies: The Most Marvelous Machines</li> <li>· Pollution</li> <li>· Prairie Ecosystems</li> <li>· Rainforests</li> </ul>		<p>Teacher Resource Center</p> <p>Reading Strategy Lessons</p> <p>Reading Strategy Videos</p> <p>Classroom Lessons (with plans, text, and graphic organizers), and Graphic Organizers</p> <ul style="list-style-type: none"> <li>· Determining Importance</li> <li>· Inferring</li> <li>· Making Connections</li> <li>· Making Sensory Images</li> <li>· Monitoring for Meaning</li> <li>· Print Features</li> <li>· Using Context Clues</li> <li>· Graphic Features</li> </ul>
		<p>b. Discussing books</p> <p>*Discuss messages and themes from books in all subject areas *Respond to a variety of texts in multiple modes of discourse *Related messages and themes from one subject area to messages and themes in another area *Evaluate the merit of texts in every subject discipline</p> <p>*Examine author's purpose in writing</p> <p>*Recognize the features of disciplinary texts</p>			
		<p>c. Building vocabulary knowledge *Demonstrate</p>			

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		<p>an understanding of contextual vocabulary in various subjects *Use content vocabulary in writing and speaking *Explore understanding of new words found in subject area texts</p>	<ul style="list-style-type: none"> <li>· Scientists Who Change the World</li> <li>· Seafloor Spreading</li> <li>· Space Race</li> <li>· Space Rocks</li> <li>· Sports Physics</li> <li>· Superstition or Science?</li> </ul>		
		<p>d.Establishing context *Explore life experiences related to subject area content *Discuss in both writing and speaking how certain words are subject area related *Determine strategies for finding content and contextual meaning for unknown words</p>	<ul style="list-style-type: none"> <li>· Surviving in Nature</li> <li>· The Importance of Coral Reefs</li> <li>· The Lives of Stars</li> <li>· The Scientific Method</li> <li>· Total Lunacy</li> <li>· Understanding Chem 1</li> <li>· Understanding Chem 2</li> <li>· Volcanic Expedition</li> <li>· Weather</li> <li>· What is Continental Drift?</li> </ul>		
<b>Life Science</b>					
S7L1	Students will investigate the diversity of living organisms and how they can be compared scientifically	a.Demonstrate the process for the development of a dichotomous key			

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		b. Classify organisms based on physical characteristics using a dichotomous key of the six kingdom system (archaeobacteria, eubacteria, protists, fungi, plants, and animals)		<ul style="list-style-type: none"> <li>·Pirate Spiders (A)</li> <li>A Spider with Deadly Aim (A)</li> <li>·Parasites: Nature's Thieves (A)</li> <li>·Spitting Spiders (A)</li> <li>·Looks like an Ant... Or Does It? (A)</li> <li>·Squid: Underwater Masters of Disguise (V)</li> <li>·Taking the Bite Out of Mosquito Bites (V)</li> </ul>	<ul style="list-style-type: none"> <li>·Inferring (CL-3, A-2, A Memorable Reptile)</li> <li>·Monitoring for Meaning (CL-1, A-1, Lizard Lifestyles)</li> <li>·Inferring (CL-2, A-1, Sloth Stories)</li> <li>·Determining Importance (CL-1, A-2, The Frilled Lizard)</li> </ul>
S7L2	Students will describe the structure and function of cells, tissues, organs, and organ systems	a. Explain that cells take in nutrients in order to grow and divide and to make needed materials	<ul style="list-style-type: none"> <li>· Becoming and Staying Healthy</li> <li>· Our Bodies; The Most Marvelous Machines</li> </ul>		
		b. Relate cell structures (cell membrane, nucleus, cytoplasm, chloroplasts, mitochondria) to basic cell functions	Readorium is a web-based reading comprehension program that gives the students the opportunity to learn about what scientists do and how they do it. Performance activities and hands on opportunities should be given to the students through the district chosen science curriculum.		
		c. Explain that cells are organized into tissues, tissues into organs, organs into systems, and systems into organisms	<ul style="list-style-type: none"> <li>· Our Bodies; The Most Marvelous Machines</li> </ul>	<ul style="list-style-type: none"> <li>· 25 Fascinating Facts About Humans (A)</li> <li>· The Very Peculiar Anglerfish (A)</li> <li>· Life Near Undersea Vents (A)</li> <li>· Bones Tell the Story (A)</li> </ul>	
		d. Explain that tissues, organs, and organ systems serve the needs cells have for oxygen, food, and waste removal	<ul style="list-style-type: none"> <li>· Our Bodies; The Most Marvelous Machines</li> </ul>	<ul style="list-style-type: none"> <li>· The Very Peculiar Anglerfish (A)</li> <li>· Life Near Undersea Vents (A)</li> <li>· The Humongous Megafish (A)</li> </ul>	



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				<ul style="list-style-type: none"> <li>· The Venomous Sea Wasp (A)</li> <li>· The World's Most Disgusting Animal: The Hagfish (A)</li> <li>· Totally Batty (V)</li> </ul>	
		<p>e.Explain the purpose of the major organ systems in the human body (i.e. digestion, respiration, reproduction, circulation, excretion, movement, control, and coordination, and for protections from disease)</p>	<ul style="list-style-type: none"> <li>· Becoming and Staying Healthy</li> <li>· Our Bodies; The Most Marvelous Machines</li> </ul>	<ul style="list-style-type: none"> <li>· Artificial Blood! (A)</li> <li>· Artificial Limbs (A)</li> <li>· From Blinking to Thinking: The Amazing Human Brain (A)</li> <li>· Your Brain at Sleep (A)</li> <li>· Making Memories(A)</li> <li>· Dreams (A)</li> <li>· Strange Medical Conditions</li> <li>· Teeth (A)</li> <li>· Teenage Brain (A)</li> <li>· The Black Death</li> <li>· The Tiniest Killers (A)</li> <li>· Behind the Scenes at the Hospital: Pathology (A)</li> <li>· The Ins and Outs of the Brain (V)</li> <li>· Picking Your Brain (V)</li> <li>· The Creative Brain (V)</li> <li>· Locked-in Syndrome: Finding a Way Out (V)</li> <li>· The Good, the Bad, and the Baby (V)</li> <li>· What Makes Us Tick (V)</li> </ul>	<p>Making Connections (CL-3, A-2, The Limits of the Human Body)</p> <p>Context Clues (CL-1, A-2, Making Memories)</p>
S7L3	Students will recognize how biological traits are passed on to successive generations	a.Explain the role of genes and chromosomes in the process of inheriting and specific trait	<ul style="list-style-type: none"> <li>· Genetics</li> <li>· Mitosis and Meiosis</li> </ul>	<ul style="list-style-type: none"> <li>· The Warrior Gene (A)</li> <li>Cloning: The More the Merrier (A)</li> <li>· Selective Breeding, Genetic Engineering, and</li> </ul>	<p>Making Connections (CL-1, A-2, The Warrior Gene)</p>

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				· Pedigrees (A) · Birds Strut their Stuff (V)	
		b.Compare and contrast that organisms reproduce asexually and sexually (bacteria, protists, fungi, plants & animals)	· Genetics · Mitosis and Meiosis		
		c.Recognize that selective breeding can produce plants or animals with desired traits	· Genetics · Mitosis and Meiosis		
S7L4	Students will examine the dependence of organisms on one another and their environments	a.Demonstrate in a food web that matter is transferred from one organism to another and can recycle between organisms and their environments	· Life on a Research Ship · Rainforests · Surviving in Nature	The Adventure of Keeping an Aquarium (A) Ant Activists (V)	Print Features (CL-3, A-1, Home Sweet Home: Dens and Other Shelters)
		b.Explain in a food web that sunlight is the source of energy and that this energy moves from organism to organism		Sparkling Sunspots (V)	Monitoring for Meaning (CL-3, A-1, Sharing the Sun: Foundation of the Food Web)
		c.Recognize that changes in environmental conditions can affect the survival of both individuals and entire species	· Desert Biome · Life on a Research Ship · Rainforests · Surviving in Nature	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	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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				(A) Insects and Team Work (V) Make Way for Ducklings (V)	
		d.Categorize relationships between organisms that are competitive or mutually beneficial	· Surviving in Nature	The Illegal Wildlife Trade (A) Invasive Species (A) How 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)	Print Features (CL-2, A-1, Living Together and Loving It: Symbiosis)
		e.Describe the characteristics of Earth's major terrestrial biomes (i.e. tropical rain forest,	· Formation of Mountains and Deserts · Importance of Coral Reefs	Artificial Reefs: How and Why We Build Them (A)	Graphic Features (CL-3, A-1-Rainforest Precipitation) Inferring (CL-1, A-1,In

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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"> <li>· Life in the Tundra</li> <li>· Prairie Ecosystems</li> <li>· Rainforest</li> <li>· Surviving in Nature</li> </ul>		the Night) Monitoring for Meaning (CL-2, A-1, the Great Barrier Reef) Determining Importance (CL-1, A-1, A Place with Many Levels)
S7L5	Students will examine the evolution of living organisms through inherited characteristics that promote survival of organisms and the survival of successive generations of their offspring	a.Explain that physical characteristics of organisms have changed over successive generations (e.g. Darwin's finches and peppered moths of Manchester)	<ul style="list-style-type: none"> <li>· Scientists who Changed the World</li> <li>· Surviving in Nature</li> </ul>	Life Inside Deep Caves (A)	Context Clues (CL-1, A-1, Life inside Deep Caves) Print Features (CL-1, A-2,How Plants Trick Animals)
		b.Describe ways in which species on Earth have evolved due to natural selection	<ul style="list-style-type: none"> <li>· Character Traits of Good Scientists</li> <li>· Scientists who Changed the World</li> <li>· Surviving in Nature</li> </ul>		
		c.Trace evidence that the fossil record found in sedimentary rock provides evidence for the long history of changing life forms	<ul style="list-style-type: none"> <li>· Caves</li> <li>· Continental Drift</li> </ul>	Getting DNA Out of Ancient Fossils (A) Fascinating Flights (V)	

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**Eighth Grade**

Habits of Mind		Characteristics of Science			
			Readorium Books	Readorium Articles/Videos	Teacher Resource Center Classroom Strategy Lessons (CL) with Articles (A) by Standard
S8CS1	Students will explore the importance of curiosity, honesty, openness, and skepticism in science and will exhibit these traits in their own efforts to understand how the world works	a.Understand the importance of-and keep-honest, clear, and accurate records in science	· Character Traits of Good Scientists	Do Scientists Cheat? (A) Women in Science (A1-5)	
		b.Understand that hypotheses can be valuable even if they turn out not to be completely accurate	· Character Traits of Good Scientists	Do Scientists Cheat? (A)	
S8CS2	Students will use standard safety practices for all classroom laboratory and field investigations	a.Follow correct procedures for use of scientific apparatus	· Character Traits of Good Scientists	Do Scientists Cheat? (A)	Making Connections (CL-2, A-2, What we Wear)
		b.Demonstrate appropriate techniques in all laboratory situations	· Character Traits of Good Scientists	Do Scientists Cheat? (A)	
		c.Follow correct protocol for identifying and reporting safety problems		Do Scientists Cheat? (A)	

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		and violations			
S8CS3	Students will have the computation and estimation skills necessary for analyzing data and following scientific explanations	a. Analyze scientific data by using, interpreting, and comparing numbers in several equivalent forms, such as integers, fractions, decimals, and percents	All Readorium's books, articles, videos, and personalized lessons delve into the multitude of topics in science that include the appropriate mathematical measurements. However, the mathematical practice that students need to experience should be found in the structured curricula of the district.		
		b. Find the mean, median, and mode and use them to analyze a set of scientific data			
		c. Apply the metric system to scientific investigations that include metric to metric conversions (i.e., centimeters to meters)			
		d. Decide what degree of precision is adequate, and round off appropriately			
		e. Address the relationship between accuracy and precision			
		f. Use ratios and proportions, including constant rates, in appropriate problems			
S8CS4	Students will use tools and instruments for observing, measuring, and manipulating equipment and materials in scientific	a. Use appropriate technology to store and retrieve scientific information in topical, alphabetical, numerical, and keyword files, and			

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	activities utilizing safe laboratory procedures	create simple files			
		b.Use appropriate tools and units for measuring objects and/or substances			
		c.Learn and use standard safety practices when conducting scientific investigations			
S8CS5	Students will use the ideas of system, model, change, and scale in exploring scientific and technological matters	a.Observe and explain how parts can be related to other parts in a system such as the role of simple machines in complex machines			
		b.Understand that different models (such as physical replicas, pictures, and analogies) can be used to represent the same thing			Sensory Images (CL-3, A-1, Night Walk)
S8CS6	Students will communicate scientific ideas and activities clearly	Write clear, step-by-step instructions for conducting scientific investigations, operating a piece of equipment, or following a procedure	Using Readorium’s reading comprehension program, students will read about investigations that have been completed by scientists of many fields. The writing of procedures would come from the district’s chosen curricular program.		
		b.Write for scientific purposes incorporating information from a circle, bar, or line graph, data tables, diagrams, and symbols			Graphic Features (CL-1, A-1, Science Mystery: What is Happening to the Bluefin Tuna?) Graphic Features (CL-1, A-2, The Blue Whale Population)\

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					<p>Graphic Features (CL-2, A-1, Getting Ready for High School Track)</p> <p>Graphic Features (CL-2, A-2-Household Chores)</p> <p>Graphic Features (CL-3, A-1-Rainforest Precipitation)</p> <p>Graphic Features (CL-3, A-2-Weather Across the Country)</p>
		<p>c.Organize scientific information in appropriate tables, charts, and graphs, and identify relationships they reveal</p>			<p>Graphic Features (CL-1, A-1, Science Mystery: What is Happening to the Bluefin Tuna?)</p> <p>Graphic Features (CL-1, A-2, The Blue Whale Population)</p> <p>Graphic Features (CL-2, A-1, Getting Ready for High School Track)</p> <p>Graphic Features (CL-2, A-2-Household Chores)</p> <p>Graphic Features (CL-3, A-1-Rainforest Precipitation)</p> <p>Graphic Features (CL-3, A-2-Weather Across the Country)</p>
S8CS70	<p>Students will question scientific claims and arguments effectively</p>	<p>a.Question claims based on vague attributions (such as “leading doctors say...”) or on statements made by people outside the area of their particular expertise</p>	<p>All Readorium’s books, articles, videos, and personalized lessons delve into the multitude of topics in science that include the appropriate mathematical measurements. However, the mathematical practice that students need to experience should be found in the structured curricula of the district.</p>		



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		b. Identify the flaws of reasoning in arguments that are based on poorly designed research (e.g., facts intermingled with opinion, conclusions based on insufficient evidence).	· Superstition or Science		
		c. Question the value of arguments based on small samples of data, biased samples, or samples for which there was no control	· Superstition or Science	Do Scientists Cheat? (A)	
<b>The Nature of Science</b>		<b>Characteristics of Science</b>			
S8CS8	Students will be familiar with the characteristics of scientific knowledge and how it is achieved	a. When similar investigations give different results, the scientific challenge is to judge whether the differences are trivial or significant, which often requires further study. Even with similar results, scientists may wait until an investigation has been repeated many times before accepting the results as meaningful	· Characteristics of a Good Scientist · Life on a Research Ship · Scientific Method · Scientists Who Changed the World · Superstition or Science	A Lab in a Can (V)	
		b. When new experimental results are inconsistent with an existing, well-established theory, scientists may pursue further experimentation to	· Characteristics of a Good Scientist · Life on a Research Ship · Scientific Method · Scientists Who Changed the World		

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		determine whether the results are flawed or the theory requires modification	· Superstition or Science		
		c.As prevailing theories are challenged by new information, scientific knowledge may change	Characteristics of a Good Scientist Life on a Research Ship Scientific Method Scientists Who Changed the World Superstition or Science	Girls in Science Series: Part 1 (A) Extreme Bacteria (V)	
S8CS9	Students will understand the features of the process of scientific inquiry	a.Investigations are conducted for different reasons, which include exploring new phenomena, confirming previous results, testing how well an theory predicts, and comparing different theories. Scientific investigations usually involve collecting evidence, reasoning, devising hypotheses, and formulating explanations to make sense of collected evidence	· Characteristics of a Good Scientist · Life on a Research Ship · Scientific Method · Scientists Who Changed the World · Superstition or Science	Girl Powered Science (V) Coral Corrosion (V) Getting Ready for Earthquakes Chores Don't Have to be a Pain in the But...ler (V) The Ins and Outs of the Brain (V) Locked-in Syndrome: Finding a Way Out (V) Earthworm Invasion (V) Extreme Bacteria (V) Lord of the Tree Rings (V)	
		b.Scientific investigations usually involve collecting evidence, reasoning, devising hypotheses, and formulating explanations	· Characteristics of a Good Scientist · Life on a Research Ship · Scientific Method · Scientists Who Changed	Disappearing Frogs (V) Orangutans See, Orangutans Do? (V)	

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		to make sense of collected evidence	the World · Superstition or Science		
		c.Scientific experiments investigate the effect of one variable on another. All other variables are kept constant	Characteristics of a Good Scientist Scientific Method Scientists Who Changed the World Superstition or Science		
		d.Scientists often collaborate to design research. To prevent this bias, scientists conduct independent studies of the same questions	· Scientific Method · Scientists Who Changed the World	All videos from the Science Alive Section of the library show collaboration of scientists to conduct research. Research is in the following categories: · Animals · Earth · Energy · Extreme Weather · The Future · Human · Medical · Nature · Women in Science	
		e.Accurate record keeping, data sharing, and replication of results are essential for maintaining an investigator's credibility with other scientists and society	· Characteristics of a Good Scientist · Life on a Research Ship · Scientific Method · Scientists Who Changed the World · Superstition or Science	· Nanoparticles: Tiny Glowing Cancer Killers (V)	
		f.Scientists use technology and mathematics to enhance	· Artificial Satellites · Characteristics of a Good Scientist	· Flowing Free (V) · Snaking Around (V) · Virtual Wildfires (V)	

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		<p>the process of scientific inquiry</p>	<ul style="list-style-type: none"> <li>· Life on a Research Ship</li> <li>· Scientific Method</li> <li>· Scientists Who Changed the World</li> <li>· Superstition or Science</li> </ul>	<ul style="list-style-type: none"> <li>· Chores Don't Have to be a Pain in the But...ler! (V)</li> <li>· Musical Computer</li> <li>· Robots of Your Dreams</li> <li>· Sensible Sensors</li> <li>· Robots with Whiskers</li> <li>· Signing Made Simple</li> <li>· Smart Cars!</li> <li>· Smart Helicopters</li> <li>· Strong but Sensitive: · Metal Foam</li> <li>· X-Ray Vision: Beyond the Bones</li> </ul>	
		<p>g.The ethics of science require that special care must be taken and used for human subjects and animals in scientific research. Scientists must adhere to the appropriate rules and guidelines when conducting research</p>		<p>Do Scientists Cheat? (A)</p> <ul style="list-style-type: none"> <li>· Ant Activists (V)</li> <li>· Nanoparticles: Tiny · Glowing Cancer Killers (V)</li> <li>· Tongue Driven (V)</li> <li>· Vision for Blind People - Fact or Fiction (V)</li> <li>· Orangutans See, Orangutans Do? (V)</li> <li>· Locked-in Syndrome: Finding a Way Out (V)</li> <li>· Picking Your Brain (V)</li> <li>· The Good, the Bad, and the Baby (V)</li> <li>· What Makes Us Tick</li> </ul>	

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				· Safe from Tsunamis	
S8CS10	Students will enhance reading in all curriculum areas by	<p>a. Reading in All Curriculum Areas *Read a minimum of 25 grade-level appropriate books per year from a variety of subject disciplines and participate in discussions related to curricular learning in all areas. *Read both informational and fictional texts in a variety of genres and modes of discourse. *Read technical texts related to various subject areas</p>	<p>Artificial Satellites · Becoming and Staying Healthy · Caves · Character Traits of a Good Scientist · Desert Biomes · Earth in Motion · Earthquakes and Seismic Waves · Formation of Mountains and Deserts · Genetics: Why We Look the Way We Do · Inner and Outer Planets · Learning from Natural Disasters · Life in the Tundra · Life on a Research Ship · Light, Sound, Action · Microscopes: Seeing the Tiny World · Mitosis and Meiosis · Nature's Weird Surprises · Newton's Law · On the Move: Plate Tectonics · Our Big, Delicious Earth · Our Bodies: The Most Marvelous Machines · Pollution · Prairie Ecosystems · Rainforests · Scientists Who Change the World · Seafloor Spreading · Space Race</p>		<p>Teacher Resource Center</p> <p>Reading Strategy Lessons Reading Strategy Videos Classroom Lessons (with plans, text, and graphic organizers), and Graphic Organizers</p> <p>· Determining Importance · Inferring · Making Connections · Making Sensory Images · Monitoring for Meaning · Print Features · Using Context Clues · Graphic Features</p>
		<p>b. Discussing books *Discuss messages and themes from books in all subject areas *Respond to a variety of texts in multiple modes of discourse *Relate messages and themes from one subject area to messages and themes in another area *Evaluate the merit of texts in every subject discipline *Examine author's purpose in writing *Recognize the features of disciplinary texts</p>			
		<p>c. Building vocabulary knowledge *Demonstrate</p>			

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		<p>an understanding of contextual vocabulary in various subjects *Use content vocabulary in writing and speaking *Explore understanding of new words found in subject area texts</p>	<ul style="list-style-type: none"> <li>· Space Rocks</li> <li>· Sports Physics</li> <li>· Superstition or Science?</li> <li>· Surviving in Nature</li> <li>· The Importance of Coral Reefs</li> <li>· The Lives of Stars</li> <li>· The Scientific Method</li> <li>· Total Lunacy</li> </ul>		
		<p>d.Establishing context *Explore life experiences related to subject area content *Discuss in both writing and speaking how certain words are subject area related *Determine strategies for finding content and contextual meaning for unknown words</p>	<ul style="list-style-type: none"> <li>· Understanding Chem 1</li> <li>· Understanding Chem 2</li> <li>· Volcanic Expedition</li> <li>· Weather</li> <li>· What is Continental Drift?</li> </ul>		
<b>Physical Science</b>					
S8P1	Students will examine the scientific view of the nature of matter	a.Distinguish between atoms and molecules	<ul style="list-style-type: none"> <li>· Fizz, Pop, Boom, and Beyond: Understanding Chemistry 1</li> <li>· Fizz, Pop, Boom, and Beyond: Understanding Chemistry 2</li> </ul>		
		b.Describe the difference between pure substances (elements and compounds) and mixtures	<ul style="list-style-type: none"> <li>· Fizz, Pop, Boom, and Beyond: Understanding Chemistry 1</li> <li>· Fizz, Pop, Boom, and Beyond: Understanding Chemistry 2</li> </ul>	Women in Science (A3)	
		c.Describe the movement of particles in solids,	· Fizz, Pop, Boom, and Beyond: Understanding	Cafeteria Chemistry: How to Play with	Sensory Images (CL-1, A-2, Kitchen Chemistry)

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		liquids, gases, and plasmas states.	Chemistry 1 · Fizz, Pop, Boom, and Beyond: Understanding Chemistry 2	Your Food and Astound Your Friends Kitchen Chemistry (A)	
		d.Distinguish between physical and chemical properties of matter as physical (i.e., density, melting point, boiling point) or chemical (i.e., reactivity, combustibility)	· Fizz, Pop, Boom, and Beyond: Understanding Chemistry 1 · Fizz, Pop, Boom, and Beyond: Understanding Chemistry 2		
		e.Distinguish between changes in matter as physical (i.e.physical change) or chemical (development of a gas, formation of precipitate, and change in color)	· Fizz, Pop, Boom, and Beyond: Understanding Chemistry 1 · Fizz, Pop, Boom, and Beyond: Understanding Chemistry 2	Cafeteria Chemistry: How to Play with Your Food and Astound Your Friends Kitchen Chemistry (A) Coral Corrosion (V)	Sensory Images (CL-1, A-2, Kitchen Chemistry)
		f.Recognize that there are more than 100 elements and some have similar properties as shown on the Periodic Table of Elements	· Fizz, Pop, Boom, and Beyond: Understanding Chemistry 1 · Fizz, Pop, Boom, and Beyond: Understanding Chemistry 2	The Cool World of Chemistry (A)	
		g.Identify and demonstrate the Law of Conservation of Matter	Fizz, Pop, Boom, and Beyond: Understanding Chemistry 2		
S8P2	Students will be familiar with the forms and transformations of energy	a.Explain energy transformation in terms of the Law of Conservation of Energy	Newton's Laws		
		b.Explain the relationship	· Light Sound Action	· Things That Go	Context Clues (CL-3,

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		between potential and kinetic energy	· Sports Physics	BOOM!: The History and Chemistry of Explosives (A)	A-1, Things That Go Boom! : The History and Chemistry of Explosives)
		c.Compare and contrast the different forms of energy (heat, light, electricity, mechanical motion, sound) and their characteristics	· Light Sound Action · Sports Physics	· 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)	Context Clues (CL-3, A-1, Things That Go Boom! : The History and Chemistry of Explosives)
		d.Describe how heat can be transferred through matter by the collisions of atoms(conduction) or through space (radiation). In a liquid or gas, currents will facilitate the transfer of heat (convection)	· Continental Drift · On the Move: Plate Tectonics · Sea Floor Spreading	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	· Newton's Law · Inner and Outer Planets Sports Physics	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)	



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		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"> <li>· The Space Race</li> <li>· Newton's Law</li> <li>· Sports Physics</li> </ul>	<p>The Limits of the Human Body (A) pace Junk: Are We Trashing our Solar System? (A)</p> <p>The Deep Mystery of Black Holes (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) The Challenge of Gravity</p>	
		c.Demonstrate the effect of simple machines (lever, inclined plane, pulley, wedge, screw, and wheel and axle) on work		<p>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)</p>	
S8P4	Students will explore the wave nature of sound and electromagnetic radiation	a.Identify the characteristics of electromagnetic and mechanical waves		<p>Sounds and Hearing (A) The Many Uses of Submarines (A)</p>	
		b.Describe how the behavior of light waves is manipulated causing	Light Sound Action		

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		reflection, refraction, diffraction, and absorption			
		c.Explain how the human eye sees objects and colors in terms of wavelengths	· Our Bodies; The Most Marvelous Machines	· Optical Illusions: Is Seeing Believing? (A)	
		d.Describe how the behavior of waves is affected by medium (such as air, water, solids)	· Earthquakes and Seismic Waves	· Sounds and Hearing (A) · Animal Magnetism (V)	
		e.Relate the properties of sound to everyday experiences	· Light Sound Action		
		f.Diagram the parts of the wave and explain how the parts are affected by changes in amplitude and pitch	· Light Sound Action	· 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	· The Space Race · Inner and Outer Planets	· Space Junk: Are We Trashing our Solar System? (A) · Girl Powered Science (V)	
		b.Demonstrate the advantages and disadvantages of series and parallel circuits and how they transfer energy	· Light Sound Action		
		c.Investigate and explain that electrical currents and			

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		magnets can exert force on each other			
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