

Eighth Grade Science 2010 Science Frameworks Assessment Pacing Guide

<u>All Nine Weeks</u>				
Competency	Mississippi Science Framework Objectives	CCSS alignment	Date Taught	Assessment
1a*	Design, conduct, and analyze conclusions from an investigation that includes using experimental controls. (DOK 3)	RST.6.8.3 RST.6.8.6 RST.6.8.9		
1b*	Distinguish between qualitative and quantitative observations and make inferences based on observations. (DOK 3)	RST.6.8.8		
1c*	<p>Summarize data to show the cause and effect relationship between qualitative and quantitative observations (using standard, metric, and non-standard units of measurement). (DOK 3)</p> <ul style="list-style-type: none"> • Tools: (e.g. English rulers[to the nearest one-sixteenth of an inch], metric rulers (to the nearest millimeter), thermometers, scales, hand lenses, microscopes, balances, clocks, calculators, anemometers, rain gauges, barometers, hygrometers, telescopes, compasses, spring scales, pH indicators, stop watches, graduated cylinders, medicine droppers) • Types of data (e.g. linear measures, mass, volume, temperature, area, perimeter) • Resources (e. g. Internet, electronic encyclopedias, journals, community resources, etc.) 	RST.6.8.3		

1d*	Analyze evidence that is used to form explanations and draw conclusions. (DOK 3)	RST.6.8.7		
1e*	Develop a logical argument defending conclusions of an experimental method. (DOK 3)	RST.6.8.8		
1f*	Develop a logical argument to explain why perfectly designed solutions do not exist. (DOK 3)	RST.6.8.8		
1g*	Justify a scientist's need to revise conclusions after encountering new experimental evidence that does not match existing explanations. (DOK 3)	RST.6.8.8		
1h*	Analyze different ideas and recognize the skepticism of others as part of the scientific process in considering alternative conclusions. (DOK 3)	RST.6.8.8		

****Inquiry is not an isolated unit of instruction and must be embedded throughout all content strands.***

Content Strands	
2. Physical Science	Apply concepts relating to an understanding of chemical and physical changes, interactions involving energy, and forces that affect motion of objects.
3. Life Science	Compare and contrast the structure and functions of the cell, levels of organization of living things, basis of heredity, and adaptations that explain variations in populations.
4. Earth and Space Science	Describe the Earth's system in terms of its position to objects in the universe, structure and composition, climate, and renewable and nonrenewable resources.

First Nine Weeks

Competency	Mississippi Science Framework Objectives	CCSS alignment	Date Taught	Assessment
4e	Explain how the tilt of Earth’s axis and the position of the Earth in relation to the sun determine climatic zones, seasons, and length of days. (DOK 2)	RST.6.8.7		
4f	Describe the hierarchical structure (stars, clusters, galaxies, galactic clusters) of the universe and examine the expanding universe to include its age and history and the modern techniques (e.g. radio, infrared, ultraviolet, and x-ray astronomy) used to measure objects and distances in the universe. (DOK 2)	RST.6.8.9		
2e	Contrast various components of the electromagnetic spectrum (e.g. infrared, visible light, ultraviolet) and predict their impacts on living things. (DOK 2)	RST.6.8.8		
4d	<p>Research the importance of the conservation of renewable and nonrenewable resources, including but (but not limited to) Mississippi, and justify methods that might be useful in decreasing the human impact on global warming. (DOK 3)</p> <ul style="list-style-type: none"> • Greenhouse gases • The effects of human population • Relationship of the cycles of water, carbon, oxygen, and nitrogen 	RST.6.8.5 RST.6.8.9		

<p>4g</p>	<p>Justify the importance of continued research and use of new technology in the development and commercialization of potentially useful natural products, including, but not limited to research efforts in Mississippi. (DOK 3)</p> <ul style="list-style-type: none"> • The Thad Cochran National Center for National Products Research, house at the University of Mississippi • The Jamie Whitten Delta States Research Center in Stoneville, MS • The Mississippi Polymer Institute, house at the University of Southern Mississippi 	<p>RST.6.8.1 RST.6.8.2</p>		
<p>4a</p>	<p>Compare and contrast the lithosphere and the asthenosphere. (DOK 1)</p> <ul style="list-style-type: none"> • Composition, density, and location of continental crust and oceanic crust • Physical nature of the lithosphere (brittle and rigid) with the asthenosphere (plastic and flowing) • How the lithosphere responds to tectonic forces (faulting and folding) 	<p>RST.6.8.7 RST.6.8.8</p>		
<p>4b</p>	<p>Describe the cause and effect relationship between the composition and movement within the Earth’s lithosphere. (DOK 1)</p> <ul style="list-style-type: none"> • Seismic waves velocities of earthquakes and volcanoes to lithospheric plate boundaries using seismic data • Volcanoes formed at mid-ocean ridges, within intra-plate regions, at island arcs, and along some continental edges • Modern distribution of continents to the movement of lithospheric plates since the formation of Pangaea 	<p>RST.6.8.1 RST.6.8.7 RST.6.8.8</p>		
<p>*1a-1h</p>	<p>Inquiry Objectives</p>			

Second Nine Weeks

Competency	Mississippi Science Framework Objectives	CCSS alignment	Date Taught	Assessment
4c	<p>Examine weather forecasting and describe how meteorologists use atmospheric features and technology to predict the weather (DOK 2)</p> <ul style="list-style-type: none"> • Temperature, precipitation, wind (speed/direction), dew point, relative humidity, and barometric pressure • How the thermal energy transferred to the air results in vertical and horizontal movement of air masses, Coriolis effect • Global wind patterns (e.g. , trade winds, westerlies, jet streams) • Satellites and computer modeling 	RST.6.8.7		
4h	<p>Justify why an imaginary hurricane might or might not hit a particular area, using important technological resources including, (but not limited to) research efforts in Mississippi. (DOK 2)</p> <ul style="list-style-type: none"> • John C. Stennis Space Center Applied Research and Technology Project Office in Hancock County • National Oceanic and Atmospheric Administration (NOAA) • The National Weather Service 			
3b	<p>Compare and contrast the major components and functions of different types of cells. (DOK 2)</p> <ul style="list-style-type: none"> • Differences in plant and animal cells • Structures (nucleus, cytoplasm, cell membrane, cell wall, mitochondrion, and nuclear membrane). • Different types of cells and tissues (e.g. epithelial, nerve, bone, blood, muscle) 	RST.6.8.4 RST.6.8.7		

3d	<p>Describe heredity as the passage of instructions from one generation to another and recognize that hereditary information is contained in genes, located in the chromosomes of each cell (DOK 2)</p> <ul style="list-style-type: none"> • How traits are passed from parents to offspring through pairs of genes • Phenotypes and genotypes • Hierarchy of DNA, genes, and chromosomes and their relationship to phenotype • Punnett square calculations 	RST.6.8.1 RST.6.8.4 RST.6.8.8		
3h	<p>Describe how an organism gets energy from oxidizing its food and releasing some of its energy as heat. (DOK 1)</p>			
3f	<p>Develop a logical argument for or against research conducted in selective breeding and genetic engineering, including (but not limited to) research conducted in Mississippi. Examples from Mississippi include the following: (DOK 3)</p> <ul style="list-style-type: none"> • The Animal Functional Genomics Laboratory at Mississippi State University • The Stoneville Pedigreed Seed Company in Stoneville, MS • Catfish Genetics Research Unit at the Thad Cochran National Warm Water Aquaculture Center in Stoneville, MS 			
*1a – 1h	Inquiry Objectives			

Third Nine Weeks

Competency	Mississippi Science Framework Objectives	CCSS alignment	Date Taught	Assessment
3a	<p>Analyze how adaptations to a particular environment (e. g. desert, aquatic, high altitude) can increase an organism’s survival and reproduction and relate organisms and their ecological niches to evolutionary change and extinction. (DOK 3)</p>			
3e	<p>Explain energy flow in a specified ecosystem (DOK 2)</p> <ul style="list-style-type: none"> • Population, communities, and habitats • Niches, ecosystems and biomes • Producers, consumers, and decomposers in an ecosystem. 			
2a	<p>Identify patterns found in chemical symbols, formulas, reactions, and equations that apply to the law of conservation of mass (DOK 1)</p> <ul style="list-style-type: none"> • Chemical symbols and chemical formulas of common substance such as NaCl (table salt) H₂O, C₆H₁₂O₆ (sugar), O₂ (oxygen gas), CO₂ (Carbon Dioxide), and N₂ (Nitrogen gas) • Mass of reactants before a change and products after a change • Balanced chemical equations such as photosynthesis and respiration. 	<p>RST.6.8.4 RST.6.8.7 RST.6.8.3</p>		

<p>2b</p>	<p>Predict the properties and interactions of given elements using the periodic table of the elements. (DOK 2)</p> <ul style="list-style-type: none"> • Metals and nonmetals • Acids and bases • Chemical changes in matter (e.g. rusting {slow oxidation}, combustion {fast oxidation}, food spoilage) • (Physical Changes) 	<p>RST.6.8.4 RST.6.8.7 RST.6.8.3</p>		
<p>2d</p>	<p>Relate how electrical energy transfers through electrical circuits, generators, and power grids, including the importance of contributions from Mississippi companies. (DOK 2)</p> <ul style="list-style-type: none"> • The Electrical Power Product Division of Howard Industries, a leading manufacturer of electrical distribution equipment in such locations as Laurel and Ellisville, MS • Kuhlman Electric Corporation, located in Crystal Springs, MS 	<p>RST.6.8.1</p>		
<p>*1a-1h</p>	<p>Inquiry Objectives</p>			

Fourth Nine Weeks

Competency	Mississippi Science Framework Objectives	CCSS alignment	Date Taught	Assessment
3g	Research and draw conclusions about the use of single-celled organisms in industry, in the production of food, and impacts on life. (DOK 3)			
3c	Describe how viruses, bacteria, fungi, and parasites may infect the human body and interfere with normal body functions. (DOK 1)	RST.6.8.1 RST.6.8.8		
2f	Recognize Newton’s Three Laws of Motion and identify situations that illustrate each law (DOK 2) (e.g. inertia, acceleration, action, reaction forces).	RST.6.8.3 RST.6.8.7		
2c	Distinguish the motion of an object by its position, direction of motion, speed, and acceleration and represent resulting data in graphic form in order to make a prediction. (DOK 2)	RST.6.8.3		
*1a – 1h	Inquiry Objectives			
	Scientific Method			
	Review			