

Eighth Grade Science
2010 Science Framework
Assessment Pacing Guide

Implement this pacing guide beginning in the 2010-2011 school year.

First Nine Weeks

Competency	Mississippi Language Framework Objective	DOK	Date Taught	Assessment
1a*	Design, conduct, and analyze conclusions from an investigation that includes using experimental controls.	3		
1b*	Distinguish between qualitative and quantitative observations and make inferences based on observations.	3		
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.)</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 scale, 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.) • 	3		
1d*	Analyze evidence that is used to form explanations and draw conclusions	3		
1e*	Develop a logical argument defending conclusions of an experimental method	3		

1f*	Develop a logical argument to explain why perfectly designed solutions do not exist.	3		
1g*	Justify a scientists need to revise conclusions after encountering new experimental evidence that does not match existing explanations.	3		
1h*	Analyze different ideas and recognize the skepticism of others as part of the scientific processing considering alternative conclusions.	3		
*	<u>Inquiry is not an isolated unit of instruction and must be embedded throughout all content strands.</u>			
3g	Research and draw conclusions about the use of single-celled organisms in industry, in the production of food, and impacts of life.	2		
4g	<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.</p> <ul style="list-style-type: none"> • 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, housed at the University of Southern Mississippi. • • 	3		

4a	<p>Compare and contrast the lithosphere and the asthenosphere.</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 little asthenosphere (plastic and flowing). • How the lithosphere responds to tectonic forces (faulting and folding). 	1		
4b	<p>Describe the cause and effect relationship between the composition and movement within the Earth's lithosphere.</p> <ul style="list-style-type: none"> • Seismic waves velocities of earthquakes and volcanoes to lithosphere plate boundaries using seismic data. • Volcanoes formed at mid-ocean ridges, within intra-plate boundaries, at island arcs, and along some continental edges. • Modern distribution of continents to the movement of lithospheric plates since the formation of Pangaea. 	1		
4c	<p>Examine weather forecasting and describe how meteorologists use atmospheric features and technology to predict the weather.</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 	2		

4d	<p>Research the importance of the conservation of renewable and nonrenewable resources, including (but not limited to) Mississippi, and justify methods that might be useful in decreasing the human impact on global warming</p> <ul style="list-style-type: none"> • Greenhouse gases • Relationship of the cycles of water, carbon, oxygen, and nitrogen. • The effect of human population • 	2		
4e	<p>Explain how the tilt of the Earth's axis and the position of the Earth in relation to the sun determine the climate zones, seasons, and length of days. (Add moon phases)</p>	2		
4f	<p>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.</p>	2		
4h	<p>Justify why an imaginary hurricane might or might now hit a particular area, using important technological resources including, but not limited to research efforts in Mississippi.</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 • 	2		
2e	<p>Contrast various components of the electromagnetic spectrum (e.g. infrared, visible light, ultraviolet) and predict their impacts on living things.</p>	2		

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	<i>Second Nine Weeks</i>			
Competency	Mississippi Language Framework Objective	DOK	Date Taught	Assessment
3b	<p>Compare and contrast the major components and functions of different types of cells.</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) 	<u>2</u>		
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.</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 	<u>2</u>		
3h	<p>Describe how an organism gets energy from oxidizing its food and releasing some of its energy as heat.</p>	<u>1</u>		

	Third Nine Weeks			
Competency	Mississippi Language Framework Objective	DOK	Date Taught	Assessment
3a	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	<u>3</u>		
3e	<p>Explain energy flow in a specified ecosystem</p> <ul style="list-style-type: none"> • Population, communities, and habitats • Niches, ecosystems, and biomes • Producers, consumers, and decomposers in an ecosystem. • • 	<u>2</u>		
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:</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 	<u>3</u>		

2a	<p>Identify patterns found in chemical symbols, formulas, reactions, and equations that apply to the law of conservation of mass</p> <ul style="list-style-type: none"> Chemical symbols and chemical formulas of common substances such as NaCl (table salt) H_2O, $C_6H_{12}O_6$, O_2 (Oxygen Gas), CO_2 (Carbon Dioxide) and N_2 (Nitrogen Gas). Mass of reactants before a change and products after a change Balanced chemical equations such as photosynthesis and respiration <p>(Add bonding, density, and balancing equations.)</p>	<u>1</u>		
2b	<p>Predict the properties and interactions of given elements using the periodic table of the elements</p> <ul style="list-style-type: none"> Metals and non metals Acids and bases Chemical changes in matter (e.g. rusting, {slow oxidation}, combustion {fast oxidation}, food spoilage 	<u>2</u>		
2d	<p>Relate how electrical energy transfers through electrical circuits, generators, and power grids, including the importance of contributions from Mississippi companies.</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. 	<u>2</u>		

	Fourth Nine Weeks			
Competency	Mississippi Language Framework Objective	<u>DOK</u>	Date Taught	Assessment
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.	<u>2</u>		
2f	Recognize Newton's Three Laws of Motion and identify situations that illustrate each law (e.g. inertia, acceleration, action, reaction forces.)	1		
3c	Describe how viruses, bacteria, fungi, and parasites may infect the human body and interfere with normal body functions	1		
	Continue Inquiry Objectives			
	Scientific Method			
	Review			