

**Sixth Grade Science**  
**Assessment Pacing Guide**  
**for the 2010 Science Frameworks**

**First Nine Weeks**

Competency	Mississippi Science Framework Objectives	DOK	Date Taught	Assessment
1a*	Design and conduct an investigation that includes predicting outcomes, using experimental controls, and making inferences.	3		
1b*	Distinguish between qualitative and quantitative observations and make inferences based on observations.	3		
1c*	<p>Use simple tools and resources to gather and compare information (using standard, metric, and non-standard units of measurement).</p> <ul style="list-style-type: none"> <li>• 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)</li> <li>• types of data (e.g., linear measures, mass, volume, temperature, time, area, perimeter)</li> <li>• resources (e.g., Internet, electronic encyclopedias, journals, community resources, etc.)</li> </ul>	1		
1d*	Analyze data collected from a scientific investigation to construct explanations and draw conclusions.	3		
1e*	Communicate scientific procedures and conclusions using diagrams, charts, tables, graphs, maps, written explanations, and/or scientific models.	2		

1f*	Evaluate the results or solutions to problems by considering how well a product or design met the challenge to solve a problem.	3		
1g*	Infer explanations for why scientists might draw different conclusions from a given set of data.	2		
1h*	Recognize and analyze alternative explanations and predictions.	2		
4a	Compare and contrast the relative positions and components of the Earth's crust (e.g., mantle, liquid and solid core, continental crust, oceanic crust).	1		
4b	<p>Draw conclusions about historical processes that contribute to the shaping of planet Earth.</p> <ul style="list-style-type: none"> <li>• movements of the continents through time</li> <li>• continental plates, subduction zones, trenches, etc.</li> </ul>	3		
4c	Analyze climate data to draw conclusions and make predictions.	2		
4e	<p>Explain the daily and annual changes in the Earth's rotation and revolution.</p> <ul style="list-style-type: none"> <li>• how the positions of the moon and the sun affect tides</li> <li>• the phases of the moon (e.g., new, crescent, half, gibbous, full, waxing, waning).</li> </ul>	2		
4f	Differentiate between objects in the universe (e.g., stars, moons, solar systems, asteroids, galaxies).	1		

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

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**Second Nine Weeks**

Competency	Mississippi Science Framework Objectives	DOK	Date Taught	Assessment
2a	Recognize that atoms of a given element are all alike but atoms of other elements have different atomic structures.	1		
2b	Distinguish physical properties of matter (e.g., melting points, boiling points, solubility) as it relates to changes in states. <ul style="list-style-type: none"> <li>• between solids, liquids, and gases through models that relate matter to particles in motion</li> <li>• solubility in water of various solids to activities (e.g., heating, stirring, shaking, crushing) on the rate of solution</li> <li>• use of solubility differences to identify components of a mixture (e.g., chromatography)</li> </ul>	2		
2c	Investigate and describe the effects of forces acting on objects. <ul style="list-style-type: none"> <li>• gravity, friction, magnetism, drag, lift, &amp; thrust</li> <li>• forces affecting the motion of objects</li> </ul>	2		

2d	<p>Investigate the mechanical and chemical forms of energy and demonstrate the transformations from one form to another.</p> <ul style="list-style-type: none"> <li>• energy transformations represented in the use of common household objects</li> <li>• mechanical energy transformed to another form of energy (e.g., vibrations, heat through friction)</li> <li>• chemical energy transformed to another form of energy (e.g., light wands, lightning bugs, batteries, bulbs)</li> </ul>	2		
2e	<p>Apply the laws of reflection and refraction to explain everyday phenomena.</p> <ul style="list-style-type: none"> <li>• properties of reflection, refraction, transmission, &amp; absorption of light</li> <li>• images formed by plane, convex, and concave lenses and mirrors, and reflecting and refracting telescopes</li> <li>• objects that are opaque, transparent, and translucent</li> </ul>	2		

2f	<p>Develop a logical argument to explain how the forces which affect the motion of objects has real-world applications including (but not limited to) examples of Mississippi's contributions as follows:</p> <ul style="list-style-type: none"> <li>• Automotive industry (Nissan's new production plant is located in Canton, MS; Toyoto's new facility is in Blue Springs, MS.</li> <li>• Aerospace industry (The Raspet Flight Research Laboratory, housed at Mississippi State University, is one of the premier university flight research facilities in the country.)</li> <li>• Shipbuilding industry (Ingall's Shipbuilding of Pascagoula, MS is a leading supplier of marine vessels to the United States Navy.)</li> </ul>	3		
2g	<p>Predict and explain factors that affect the flow of heat in solids, liquids, and gases.</p> <ul style="list-style-type: none"> <li>• Insulating factors in real-life applications (e.g., building, construction, clothing, animal coverings)</li> <li>• conduction, convection, or radiation factors used to enhance the flow of heat</li> <li>• temperature differences on the movement of water</li> </ul>	3		

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**Third Nine Weeks**

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3b	<p>Compare and contrast structure and function in living things to include cells and whole organisms.</p> <ul style="list-style-type: none"> <li>• hierarchy of cells, tissues, organs, and organ systems to their functions in an organism</li> <li>• function of plant and animal cell parts (vacuoles, nucleus, cytoplasm, cell membrane, cell wall, chloroplast)</li> <li>• vascular and nonvascular plants, flowering and non-flowering plants, deciduous and coniferous trees</li> </ul>	2		
3c	<p>Distinguish between the organization and development of humans to include the effects of disease.</p> <ul style="list-style-type: none"> <li>• how systems work together (e.g., respiratory, circulatory)</li> <li>• fertilization, early cell division, implantation, embryonic and fetal development, infancy, childhood, adolescence, adulthood, and old age</li> <li>• common diseases caused by microorganisms (e.g., bacteria, viruses, malarial parasites)</li> </ul>	2		

3d	<p>Describe and summarize how an egg and sperm unite in the reproduction of angiosperms and gymnosperms.</p> <ul style="list-style-type: none"><li>• the path of the sperm cells to the egg cell in the ovary of a flower</li><li>• the structures and functions of parts of a seed in the formation of a plant and of fruits</li><li>• how the combinations of sex cells results in a new combination of genetic information different from either parent</li></ul>	1		
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**Fourth Nine Weeks**

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3a	<p>Describe and predict interactions (among and within populations) and the effects of these interactions on population growth to include the effects on available resources.</p> <ul style="list-style-type: none"> <li>• how cooperation, competition, and predation affect population growth</li> <li>• effects of overpopulation within an ecosystem on the amount of resources available</li> <li>• how natural selection acts on a population of organisms in a particular environment via enhanced reproductive success</li> </ul>	2		
3e	<p>Construct a diagram of the path of solar energy through food webs that include humans and explain how the organisms relate to each other.</p> <ul style="list-style-type: none"> <li>• autotrophs and heterotrophs, producers, consumers and decomposers</li> <li>• predator/prey relationships, competition, symbiosis, parasitism, commensalism, mutualism</li> </ul>	2		

4d	<p>Summarize the causes and effects of pollution on people and the environment (e.g., air pollution, ground pollution, chemical pollution) and justify how and why pollution should be minimized.</p>	1		
4g	<p>Research and cite evidence of current resources in Earth's systems.</p> <ul style="list-style-type: none"> <li>• resources such as fuels, metals, fresh water, wetlands, and farmlands</li> <li>• methods being used to extend the use of Earth's resources through recycling, reuse, and renewal</li> <li>• factors that contribute to and result from runoff {e.g., water cycle, groundwater, drainage basin (watershed)}</li> </ul>	3		