Eighth Grade Science
Performance Level Descriptors

Performance Level	Descriptors for Inquiry Content Strand **Competency 1**
Advanced	1a. Evaluate the design of an investigation, including the design's use of experimental controls and the design's effect on the conclusion. 1c. Predict the effect of summarized data. 1e. Justify whether an argument defending a conclusion is logical. 1h. Evaluate arguments based upon the scientific process for ideas presented as alternative conclusions.
Proficient	1a. Design, conduct, and analyze conclusions from an investigation that includes using experimental controls. 1b. Distinguish between qualitative and quantitative observations and make inferences based on observations. 1c. Summarize data to show the cause and effect relationship between qualitative and quantitative observations. 1d. Analyze evidence that is used to form explanations and draw conclusions. 1e. Develop a logical argument defending conclusions of an experimental method. 1f. Develop a logical argument to explain why perfectly designed solutions do not exist. 1g. Justify a scientist's need to revise conclusions after encountering new experimental evidence that does not match existing explanations. 1h. Analyze different ideas and recognize the skepticism of others as part of the scientific process in considering alternative conclusions.
Basic	1b. Identify an inference as being based on qualitative observations or quantitative observations. 1d. Identify evidence that supports an explanation or conclusion. 1h. Recognize appropriate scientific skepticism when reviewing alternative conclusions.

Performance Level	Descriptors for Physical Science Content Strand **Competency 2**
Advanced	2a. Balance chemical equations to illustrate the law of conservation of mass. 2c. Evaluate the motion of two or more objects to predict the effects of a Collision. 2d. Predict the outcome (positive or negative) of altering one component of the power grid system.
Proficient	2a. Identify patterns found in chemical symbols, formulas, reactions, and equations that apply to the law of conservation of mass. 2b. Predict the properties and interactions of given elements using the periodic table of the elements. 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. 2d. Relate how electrical energy transfers through electric circuits, generators, and power grids, including the importance of contributions from Mississippi companies. 2e. Contrast various components of the electromagnetic spectrum (e.g., infrared, visible light, ultraviolet) and predict their impacts on living things. 2f. Recognize Newton's Three Laws of Motion and identify situations that illustrate each law (e.g., inertia, acceleration, action, reaction forces).
Basic	2a. Identify the chemical symbols, formulas of common substances, or reactions used in a balanced equation. 2b. Use the periodic table to identify the properties of an element or a simple compound. 2e. Identify components of the electromagnetic spectrum. 2f. Identify Newton's Three Laws of Motion.

Performance Level	Descriptors for Life Science Content Strand **Competency 3**
Advanced	3d. Analyze a pedigree diagram to predict the inheritance for a particular trait for a family member. 3e. Analyze the food web of an ecosystem in which the population of an organism has been altered to explain how this change may affect another member of the food web ecosystem. 3h. Explain the process of cellular respiration to the survival of the cell and its components.
Proficient	3a. Analyze how adaptations to a particular environment can increase an organism's survival and reproduction and relate organisms and their ecological niches to evolutionary change and extinction. 3b. Compare and contrast the major components and functions of different types of cells. 3c. Describe how viruses, bacteria, fungi, and parasites may infect the human body and interfere with normal body functions. 3d. 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. 3e. Explain energy flow in a specified ecosystem. 3f. Develop a logical argument for or against research conducted in selective breeding and genetic engineering, including research conducted in Mississippi. 3g. Research and draw conclusions about the use of single-celled organisms in industry and in the production of food and about their impact on life. 3h. Describe how an organism gets energy form oxidizing its food and releasing some of its energy as heat.
Basic	3b. Identify different cell types and their structures. 3f. Identify examples of selective breeding or genetic engineering. 3g. Identify examples of single-celled organisms that are used in industry or food production or that impact life. 3h. Identify the reactants and products involved in cellular respiration.

Performance Level	Descriptors for Earth and Space Science Content Strand **Competency 4**
Advanced	4a. Explain how the composition of the lithosphere and asthenosphere affects plate movement. 4b. Predict geologic phenomena based on the composition and movement of interacting plates. 4c. Predict a change in weather based on differences in pressure, heat, air movement, and humidity. 4e. Explain how a change in the angle of Earth's axis affects climate and seasons. 4f. Explain techniques used to determine distances between objects in the universe or used to determine the age of the universe.
Proficient	4a. Compare and contrast the lithosphere and the asthenosphere. 4b. Describe the cause and effect relationship between the composition of and movement within the Earth's lithosphere. 4c. Examine weather forecasting and describe how meteorologists use atmospheric features and technology to predict the weather. 4d. Research the importance of the conservation of renewable and nonrenewable resources, including Mississippi, and justify methods that might be useful in decreasing the human impact on global warming. 4e. Explain how the tilt of Earth's axis and the position of the Earth in relation to the sun determine climatic zones, season, and length of the days. 4f. Describe the hierarchal structure (stars, clusters, galaxies, galactic clusters) of the universe and examine the expanding universe to include its age and history and the modern techniques used to measure object and distances in the universe. 4g. 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. 4h. Justify why an imaginary hurricane might or might not hit a particular area, using important technological resources.

Basic	4a. Identify the composition, physical nature, or location of the lithosphere or the asthenosphere. 4b. Identify plate boundaries based on lithospheric movement. 4d. Identify renewable or nonrenewable resources. 4e. Identify the effect of Earth's tilt on its axis or the position of Earth in relation to the Sun on seasons and climate.