Performance Level Descriptors (PLDs)				
	Level 1	**Level 2**	**Level 3**	**Level 4**
Policy Statement	The student has a minimal understanding of grade-level standards and is likely to need additional support at this level of learning as described in the Alabama Course of Study.	The student has a partial understanding of grade-level standards and is likely to need some additional support at this level of learning as described in the Alabama Course of Study.	The student has a strong understanding of grade-level standards and demonstrates the knowledge and skills at this level of learning as described in the Alabama Course of Study.	The student has an advanced understanding of grade-level standards and exceedingly demonstrates the knowledge and skills at this level of learning as described in the Alabama Course of Study.
The performance level descriptors describe what a typical student scoring at each achievement level can do. A student who scores at a level would be expected to also be able to demonstrate the skills described in previous levels. A student would not necessarily demonstrate all the skills listed at a particular performance level on a particular test in order to score at that level.				
	Science			
	A student at this level	**A student at this level**	**A student at this level**	**A student at this level**
8.PS.1	• recognizes that the periodic table provides the atomic numbers and the atomic masses of elements, and can differentiate metals from nonmetals.	• identifies repeating patterns that occur within the periodic table; identifies some basic models of elements.	• analyzes patterns within the periodic table to construct models (e.g., drawings, stick-and-ball models, simulations) that illustrate the structure, composition, and characteristics of atoms and simple molecules.	• predicts characteristics of specific elements and simple molecules based on patterns within the periodic table.
8.PS.2	• recognizes that elements are pure substances.	• defines pure substances as those that have a constant composition and have distinct chemical characteristics.	• plans and carries out investigations to generate evidence that supports the claim that one pure substance can be distinguished from another based on characteristic properties (e.g., density, melting and boiling points, magnetism, hardness, luster, electrical and thermal conductivity, solubility).	• predicts whether substances are pure based on the chemical compositions (formulas).

8.PS.3	• recognizes the difference between pure and impure substances as represented by graphic models.	• identifies whether a graphic model represents a compound, mixture, or solution.	• uses evidence from investigations to explain the differences between compounds, mixtures, and solutions; describes how synthetic materials (e.g., medicine, food additives, alternative fuels, plastics) are derived from natural materials and affect humans.	• predicts whether all products of a chemical reaction will be classified as compounds, mixtures, solutions, or elements based on their chemical formulas.
8.PS.4	• recognizes that adding thermal energy (heat) to a substance increases the temperature of that substance (comprehends only the addition of heat, not the subtraction of it).	• recognizes that a substance changes its state of matter when enough thermal energy (heat) is added to or removed from the system.	• designs and conducts investigations to determine changes in the particle motion, temperature, and state of matter of a pure substance when thermal energy is added to or removed from a system.	• predicts the particle motion and states of matter of substances at specific temperatures, using evidence from research to aid in those predictions.
8.PS.5	• recognizes that an individual substance has a set of specific characteristics.	• identifies characteristic properties of substances before and after a chemical reaction has occurred.	• observes and analyzes characteristic properties of substances (e.g., odor, density, solubility, flammability, melting point, boiling point) before and after two substances combine to determine whether a chemical reaction has occurred.	• predicts whether combining two substances will result in a chemical or physical change by using an equation to identify the products of a chemical reaction.

8.PS.6	• recognizes that when reactants are combined, new products are formed.	• measures and records the masses of reactants and products before and after a chemical reaction occurs (limited to the number of atoms) to support the law of conservation of mass.	• produces a model, graphic, or simulation to describe the conservation of mass (matter) in a chemical reaction and explains the resulting differences between products and reactants.	• applies the conservation of mass to a chemical reaction to predict the products of that reaction.
8.PS.7	• recognizes that there are devices designed to generate light, cool, or heat.	• explains that heat can be released or absorbed by combining two reactants.	• designs, constructs, and tests a device (e.g., glow stick, hand warmer, hot or cold pack, thermal wrap) that either releases or absorbs thermal energy and modifies the device as needed based on criteria.	• evaluates the design of devices intended to produce light, heat, or a loss of heat based on investigational data.
8.PS.8	• recognizes a force as a push or a pull on an object.	• recognizes that force is needed for an object to move or stop.	• uses Newton's first law to demonstrate and explain that an object is either at rest or moves at a constant velocity unless acted upon by an external force (e.g., model car on a table at rest).	• describes the magnitude of forces responsible for an object to overcome being at rest or in motion.
8.PS.9	• recognizes that multiple forces can act on an object at one time.	• recognizes that a greater force is needed to move an object with a larger mass and that a greater force acting on one of two objects with equal mass will result in greater acceleration of that object.	• uses Newton's second law to demonstrate and explain how changes in an object's motion depend on the sum of the external forces on the object and the mass of the object	• interprets a force diagram to quantify the external forces acting on an object and to relatively identify the mass of an object.

			(e.g., billiard balls moving when hit with a cue stick).	
8.PS.10	• recognizes that there is an equal and opposite reaction for every action.	• identifies the action and reaction forces in a collision.	• uses Newton's third law to develop a model to demonstrate and explain the resulting motion of two colliding objects in a single plane of reference (e.g., two cars colliding, a hammer hitting a nail).	• quantifies the magnitude of forces that collide.
8.PS.11	• recognizes that opposite magnetic poles are attractive and like poles are repulsive.	• recognizes that moving two electrically charged objects farther apart decreases the strength of the attraction between them.	• plans and carries out investigations to evaluate how various factors (e.g., electric force produced between two charged objects at various positions; magnetic force produced by an electromagnet with varying numbers of wire turns, varying numbers or sizes of dry cells, and varying sizes of iron core) affect the strength of electric and magnetic forces (graphics encouraged).	• applies the concept of proportionality to describe the relationship of electrical charges over distance (Coulomb's law).
8.PS.12	• recognizes that fields exist around and between objects.	• recognizes that fields exert forces on objects even without contact.	• constructs an argument from evidence explaining that fields exist between objects exerting forces on each other even when the objects are not in contact (e.g., interactions of magnets, electrically charged strips of tape, electrically charged pith	• predicts how objects attracted to one another will react when their physical proximity is altered.

			balls, gravitational pull of the moon creating tides).	
8.PS.13	• recognizes that kinetic energy is the energy of motion.	• explains that the faster an object travels, the more kinetic energy it has.	• produces and analyzes graphical displays (e.g., bar graphs, data tables, line graphs) of data to illustrate the relationships of kinetic energy to the mass and speed of an object (e.g., riding a bicycle at different speeds, hitting a table tennis ball versus a golf ball, rolling similar toy cars with different masses down an incline).	• predicts which changes to a system will increase the kinetic energy of that system.
8.PS.14	• recognizes that potential energy is sometimes called position energy.	• recognizes that the potential energy of a system (e.g., gravitational, elastic, chemical) may vary; identifies what factors affect the amount of potential energy.	• uses models to construct an explanation of how a system of objects may contain varying types and amounts of potential energy (e.g., observing the movement of a roller coaster cart at various inclines, changing the tension in a rubber band, varying the number of batteries connected in a series, observing a balloon with static electrical charge being brought closer to a classmate's hair).	• predicts the types (e.g., gravitational, elastic, chemical) and/or amounts of potential energy of various substances.

8.PS.15	• recognizes that heat energy can move from one location to another.	• describes how heat energy moves from an area of high concentration to an area of low concentration (e.g., heating solid water to produce liquid water).	• analyzes and interprets data from investigations to determine how various factors affect energy transfer as measured by temperature (e.g., comparing final water temperatures after different masses of ice melt in the same volume of water with the same initial temperature, observing the temperature change of samples of different materials with the same mass and the same materials with different masses when adding a specific amount of energy).	• predicts and provides scientific reasoning for predictions of factors that affect the flow of energy as measured by temperature.
8.PS.16	• recognizes that there are two types of energy, kinetic or potential, and that the forms of energy (e.g., thermal, nuclear, chemical, motion, light, sound) can be changed from one form to another.	• recognizes that a change in the kinetic energy of an object indicates a change in the motion of that object.	• applies the law of conservation of energy to develop arguments supporting the claim that when the kinetic energy of an object changes, energy is transferred to or from the object (e.g., a bowling ball hitting pins, brakes being applied to a car).	• compares and predicts the potential and kinetic energy of a system at different points of observation; applies the principles of changing kinetic energy to particle motion.

8.PS.17	• identifies wavelength, amplitude, and frequency in a wave model.	• recognizes that different waves have different amounts of energy.	• produces and manipulates a model of a simple wave to predict and describe the relationships between wave properties (e.g., wavelength, frequency, amplitude) and energy; analyzes and interprets data to illustrate the electromagnetic spectrum.	• predicts the energy of a wave based on its wave properties.
8.PS.18	• recognizes that sound and light travel as waves.	• identifies materials that absorb, reflect, or transmit sound or light waves.	• uses models to demonstrate how light and sound waves differ in how they are absorbed, reflected, and transmitted through different types of media.	• predicts how changing materials will affect the transmission, absorption, and reflection of light or sound waves.
8.PS.19	• recognizes that the Global Positioning System uses satellites to locate devices.	• recognizes that cellular telephones emit a signal that is detected by a transmission tower, which then emits a signal to complete the communication.	• integrates qualitative information to explain that common communication devices (e.g., cellular telephones, radios, remote controls, Wi-Fi components, the Global Positioning System, wireless technology components) use electromagnetic waves to encode and transmit information.	• predicts why certain types of waves are best for specific information transmission.

