2008-2009 Pacing Guide
Science 5th grade
First Nine Weeks

✔	Science 2001 Frameworks
	1. Identify and describe structures and functions in living systems. (L, E)
	a. Investigate levels of organization in organisms including cells, tissues, organs, organ systems, whole organisms, and ecosystems.
	b. Explore ecosystems and biomes.
	2. Identify and describe reproduction and heredity of organisms. (L, P)
	a. Define and recognize examples of sexual and asexual reproduction.
	b. Explore how traits are used to classify individual inheritance patterns.
	3. Determine the factors that influence the regulation and behavior of organisms. (L,E)
	a. Identify and describe resources needed to grow, reproduce, maintain, and survive in a changing environment.
	b. Investigate ways organisms adapt to their environment.
	4. Examine the physical factors of populations as they relate to the formation of an ecosystem. (L, E)
	a. Identify, describe, and illustrate the roles among producers, consumers, and decomposers in a food web.
	b. Investigate resources and other factors (living and nonliving) that promote and limit growth of populations in an ecosystem.
	5. Explore the diversity and adaptations of organisms. (L, E)
	a. Classify organisms by their similarities.
	b. Explore and explain biological adaptations in a particular environment.
	c. Research and investigate environmental changes and the inability of a species to adapt.

✔	Science 2010 Frameworks
	3. Predict characteristics, structures, life cycles, environments, evolution, and diversity of organisms.
	a. Compare and contrast the diversity of organisms due to adaptations to show how organisms have evolved as a result of environmental changes. (DOK 2) * Diversity based on kingdoms, phyla, and classes (e.g., internal/external structure, body temperature, size, shape) * Adaptations that increase an organism's chances to survive and reproduce in a particular habitat (e.g., cacti needles/leaves, fur/scales) * Evidence of fossils as indicators of how life and environmental conditions have changed
	b. Research and classify the organization of living things. (DOK 2) * Differences between plant and animal cells * Examples of organisms as single-celled or multi-celled
	d. Distinguish between asexual and sexual reproduction. (DOK 1) * Asexual reproduction processes in plants and fungi (e.g., vegetative propagation in stems, roots, and leaves of plants, budding in yeasts, fruiting bodies in fungi) * Asexual cell division (mushroom spores produced/dispersed) * Sexual reproduction (e.g., eggs, seeds, fruit)
	e. Give examples of how consumers and producers (carnivores, herbivores, omnivores, and decomposers) are related in food chains and food webs. (DOK 1)

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✔	Science 2001 Frameworks
	6. Investigate the structure of the Earth. (E)
	a. Investigate the structure of the atmosphere (gas-air), hydrosphere (liquidwater), and lithosphere (solid-land).
	b. Examine how organisms affect the composition of the Earth and it's atmosphere.
	c. Analyze processes that cause changes on Earth.
	d. Explore fossils as indicators of how life and environmental conditions have changed.
	7. Investigate the Earth as a part of the solar system. (E, P)
	a. Explore how the Earth's motion defines the day and the year and influences the phases of the moon and eclipses.
	b. Explain how gravity influences the action of the tides.
	c. Explain and illustrate how the tilt of the Earth's axis and Earth's revolution around the Sun create the seasons.

✔	Science 2010 Frameworks
	4. Develop an understanding of the properties of Earth materials, objects in the sky, and changes in Earth and sky.
	a. Categorize Earth's materials. (DOK 1) * Rocks, minerals, soils, water, and atmospheric gases * Layers of the atmosphere, hydrosphere, and lithosphere
	b. Explain how surface features caused by constructive processes (e.g., depositions, volcanic eruptions, earthquakes) differ from destructive processes (e.g., erosion, weathering, impact of organisms). (DOK 2)
	c. Summarize how weather changes. (DOK 2) *(Weather changes from day to day and over the seasons * Tools by which weather is observed, recorded, and predicted
	d. Describe changes caused by humans on the environment and natural resources and cite evidence from research of ways to conserve natural resources in the United States, including (but not limited to) Mississippi. Examples of Mississippi efforts include the following: (DOK 2) *Associated Physics of America, a private company located in Greenwood Mississippi, develops ways to convert a variety of agricultural products into efficient, environment-friendly and cost-effective energy sources.

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	* The Natural Resource Enterprises (NRE) Program of the Department of Wildlife and Fisheries and the Cooperative Extension Service at MSU educate landowners in the Southeast about sustainable natural resource enterprises and compatible habitat management practices. * The Engineer Research and Development Center of the Vicksburg District of the U.S. Army Corps of Engineers provides quality engineering and other professional products and services to develop and manage the Nation's water resources, reduce flood damage, and protect the environment.
	e. Predict the movement patterns of the sun, moon, and Earth over a specified time period. (DOK 1)
	f. Compare and contrast the physical characteristics of the planets (e.g., mass, surface gravity, distance from the sun, surface characteristics, moons). (DOK 2)

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✔	Science 2001 Frameworks
	8. Identify properties and changes of matter. (E, P)
	a. Observe and explore physical and chemical properties such as density, boiling/freezing point, and solubility of a substance.
	b. Explore, observe, discuss, and record physical and chemical changes using everyday substances.
	c. Recognize elements that combine chemically to produce compounds.
	d. Demonstrate the ability to use simple measuring devices using metric and English units.
	9. Investigate the effect motions and forces have on objects. (E, L, P)
	a. Explore, measure, and graph the motion of an object.
	b. Explore and measure the effect of force on an object.
	10. Examine the transformations of forms of energy. (P)
	a. Design and construct simple and compound machines.
	b. Design and construct electrical circuits (open, closed, series, parallel).
	c. Design and construct an electromagnet.

✔	Science 2010 Frameworks
	2. Understand relationships of the properties of objects and materials, position and motion of objects, and transfer of energy to explain the physical world.
	a. Determine how the properties of an object affect how it acts and interacts. (DOK 2)
	b. Differentiate between elements, compounds, and mixtures and between chemical and physical changes (e.g., gas evolves, color, and/or temperature changes). (DOK 2)
	c. Investigate the motion of an object in terms of its position, direction of motion, and speed. (DOK 2) * The relative positions and movements of objects using points of reference (distance vs. time of moving objects) * Force required to move an object using appropriate devices (e.g., spring scale) * Variables that affect speed (e.g., ramp height/length/surface, mass of object) * Effects of an unbalanced force on an object's motion in terms of speed and direction
	d. Categorize examples of potential energy as gravitational (e.g., boulder on a hill, child on a slide), elastic (e.g., compressed spring, slingshot, rubber band), or chemical (e.g., unlit match, food). (DOK 2)

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	e. Differentiate between the properties of light as reflection, refraction, and absorption. (DOK 1) * Image reflected by a plane mirror and a curved-surfaced mirror * Light passing through air or water * Optical tools such as prisms, lenses, mirrors, and eyeglasses
	f. Describe physical properties of matter (e.g., mass, density, boiling point, freezing point) including mixtures and solutions. (DOK 1) * Filtration, sifting, magnetism, evaporation, and flotation * Effects of temperature changes on the solubility of substances
	g. Categorize materials as conductors or insulators and discuss their real life applications (e.g., building construction, clothing, animal covering). (DOK 2)

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✓	Science 2001 Frameworks

✓	Science 2010 Frameworks
	1. Develop and demonstrate an understanding of scientific inquiry using process skills.
	a. Form a hypothesis, predict outcomes, and conduct a fair investigation that includes manipulating variables and using experimental controls. (DOK 3)
	b. Distinguish between observations and inferences. (DOK 2)
	c. Use precise measurement in conjunction with simple tools and technology to perform tests and collect data. (DOK 1) * Tools (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) * Types of data (height, mass, volume, temperature, length, time, distance, volume, perimeter, area)
	d. Organize and interpret data in tables and graphs to construct explanations and draw conclusions. (DOK 2)
	e. Use drawings, tables, graphs, and written and oral language to describe objects and explain ideas and actions. (DOK 2)
	g. Evaluate results of different data (whether trivial or significant). (DOK 2)
	h. Infer and describe alternate explanations and predictions. (DOK 3)
	3. Predict characteristics, structures, life cycles, environments, evolution, and diversity of organisms.
	b. Research and classify the organization of living things. (DOK 2) * Function of the major parts of body systems (nervous, circulatory, respiratory, digestive, skeletal, muscular) and the ways they support one another
	c. Research and cite evidence of the work of scientists (e.g., Pasteur, Fleming, Salk) as it contributed to the discovery and prevention of disease. (DOK 3)