Science Assessment Framework **Grade 5**	**BOLD=eligible for CRT** *Italics=Classroom Assessment only*
Strand I: Scientific Thinking and Practice	
Content Standard I - Understand the processes of scientific investigations and use inquiry and scientific ways of observing, experimenting, predicting, and validating to think critically.	
5 Benchmark I: Use scientific methods to develop questions, design and conduct experiments using appropriate technologies, analyze and evaluate results, make predictions, and communicate findings.	
1. Plan *and conduct* **investigations, including formulating testable questions, making systematic observations, developing logical conclusions, and communicating findings.** **2. Use appropriate technologies (e.g., calculators, computers, balances, spring scales, microscopes) to** *perform scientific tests* **and to collect and display data.** **3. Use graphic representations (e.g., charts, graphs, tables, labeled diagrams) to present data and produce explanations for investigations.** **4. Describe how credible scientific investigations use reproducible elements including single variables, controls, and appropriate sample sizes to produce valid scientific results.** **5. Communicate the steps and results of a scientific investigation.**	
5 Benchmark II: Understand the processes of scientific investigation and how scientific inquiry results in scientific knowledge.	
1. Understand that different kinds of investigations are used to answer different kinds of questions (e.g., observations, data collection, controlled experiments). **2. Understand that scientific conclusions are subject to peer and public review.**	
5 Benchmark III: Use mathematical ideas, tools, and techniques to understand scientific knowledge.	
1. Use appropriate units to make precise and varied measurements. **2. Use mathematical skills to analyze data.** **3. Make predictions based on analyses of data, observations, and explanations.** **4. Understand the attributes to be measured in a scientific investigation and describe the units, systems, and processes for making the measurement.**	
Strand II: Content of Science **Content Standard I - PHYSICAL SCIENCE: Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.**	
5 Benchmark I: Know the forms and properties of matter and how matter interacts.	
1. Describe properties (e.g., relative volume, ability to flow) of the three states of matter. **2. Describe how matter changes from one phase to another (e.g., condensation, evaporation).** **3. Know that matter is made up of particles (atoms) that can combine to form molecules and that these particles are too small to see with the naked eye.** **4. Know that the periodic table is a chart of the pure elements that make up all matter.** **5. Describe the relative location and motion of the particles (atoms and molecules) in each state of matter.** **6. Explain the relationship between temperature and the motion of particles in each state of matter.**	

5 Benchmark II: Explain the physical processes involved in the transfer, change, and conservation of energy.
1. Know that heat is transferred from hotter to cooler materials or regions until both reach the same temperature. **2. Know that heat is often produced as a by-product when one form of energy is converted to another form (e.g., when machines or organisms convert stored energy into motion).** **3. Know that there are different forms of energy.** **4. Describe how energy can be stored and converted to a different form of energy (e.g., springs, gravity) and know that machines and living things convert stored energy to motion and heat.**
5 Benchmark III: Describe and explain forces that produce motion in objects.
1.Understand how the rate of change of position is the velocity of an object in motion. **2. Recognize that acceleration is the change in velocity with time.** **3. Identify forces in nature (e.g., gravity, magnetism, electricity, friction).** **4. Understand that when a force (e.g., gravity, friction) acts on an object, the object speeds up, slows down, or goes in a different direction.** **5. Identify simple machines and describe how they give advantage to users (e.g., levers, pulleys, wheels and axles, inclined planes, screws, wedges).**
<u>Strand II: Content of Science</u> **Content Standard II - LIFE SCIENCE: Understand the properties, structures, and processes of living things and the interdependence of living things and their environments.**
5 Benchmark I: Explain the diverse structures and functions of living things and the complex relationships between living things and their environments.
1. Identify the components of habitats and ecosystems (producers, consumers, decomposers, predators). **2. Understand how food webs depict relationships between different organisms.** **3. Know that changes in the environment can have different effects on different organisms (e.g., some organisms move, some survive, some reproduce, some die).** **4. Describe how human activity impacts the environment.**
5 Benchmark II: Understand how traits are passed from one generation to the next and how species evolve.
1. Know that plants and animals have life cycles that include birth, growth and development, reproduction, and death and that these cycles differ for different organisms. **2. Identify characteristics of an organism that are inherited from its parents (e.g., eye color in humans, flower color in plants) and other characteristics that are learned or result from interactions with the environment.** **3. Understand that heredity is the process by which traits are passed from one generation to another.**
5 Benchmark III: Understand the structure of organisms and the function of cells in living systems.
1. Understand that all living organisms are composed of cells from one to many trillions, and that cells are usually only visible through a microscope. **2. Know that some organisms are made of a collection of similar cells that cooperate (e.g., algae) while other organisms are made of cells that are different in appearance and function (e.g., corn, birds).**

3. Describe the relationships among cells, tissues, organs, organ systems, whole organisms, and ecosystems.

Strand II: Content of Science

Content Standard III - EARTH AND SPACE SCIENCE: Understand the structure of Earth, the solar system, and the universe, the interconnections among them, and the processes and interactions of Earth's systems.

5 Benchmark I: Describe how the concepts of energy, matter, and force can be used to explain the observed behavior of the solar system, the universe, and and their structures.

1. Know that many objects in the universe are huge and are separated from one another by vast distances (e.g., many stars are larger than the sun but so distant that they look like points of light).
2. Understand that Earth is part of a larger solar system, which is part of an even larger galaxy (Milky Way), which is one of many galaxies.
3. Know that there have been manned and unmanned journeys to space and to the moon.

5 Benchmark II: Describe the structure of earth and its atmosphere and explain how energy, matter, and forces shape Earth's system.

1. Understand that water and air relate to Earth's processes, including:
- **how the water cycle relates to weather**
- **how clouds are made of tiny droplets of water, like fog or steam.**

2. Know that air is a substance that surrounds Earth (atmosphere), takes up space, and moves, and that temperature fluctuations and other factors produce wind currents.
3. Know that most of Earth's surface is covered by water, that most of that water is salt water in oceans, and that fresh water is found in rivers, lakes, underground sources, and glaciers.
4. Recognize that the seasons are caused by Earth's motion around the sun and the tilt of Earth's axis of rotation.

Strand III: Science and Society

Content Standard I - Understand how scientific discoveries, inventions, practices, and knowledge influence, and are influenced by, individuals and societies.

5 Benchmark I: Explain how scientific discoveries and inventions have changed individuals and societies.

1. Describe the contributions of science to understanding local or current issues (e.g., watershed and community decisions regarding water use).
2. Describe how various technologies have affected the lives of individuals (e.g., transportation, entertainment, health).

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