Fifth Grade Science

5.1 Science Practices: All students will understand that science is both a body of knowledge and an evidence-based, model-building enterprise that continually extends, refines, and revises knowledge. The four Science Practices strands encompass the knowledge and reasoning skills that students must acquire to be proficient in science.

TSW = The Student Will

Objective(s)	NJCCCS Alignment	Essential Questions	Understandings	Suggested Assessment Activities
• TSW use scientific facts, measurements, observations, and patterns in nature to build and critique scientific arguments • TSW communicate and justify explanations with reasonable and logical arguments • TSW develop predictions or explanations on the basis of discovering new evidence or learning new information • TSW demonstrate how to safely use tools, instruments, and supplies • TSW handle and treat organisms humanely, responsibly, and ethically	5.1.8.A 5.1.8.B 5.1.8.C 5.1.8.D 5.1.8.D	- What is science? - How would you develop an experiment using the Scientific Method? - Why is data important? - What ways can data be organized? - What is a scientific theory?	• Science includes observations, collection of data, and communication skills • Science content areas and disciplines interrelate and interconnect • Mathematics is the language of science since it can express relationships efficiently and accurately • Technology evolves at an accelerated pace based on the needs and wants of society	Ongoing observation & questioning during class discussions and hands-on project work Develop the abilities to communicate, critique, and analyze their work and the work of peers Compare explanations against scientific knowledge, experience, and observations of others Research and/or report on various theories indicating how they relate to current trends

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5.2 Physical Science: All students will understand that physical science principles, including fundamental ideas about matter, energy, and motion, are powerful conceptual tools for making sense of phenomena in physical, living, and Earth systems science.

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Objective(s)	NJCCCS Alignment	Essential Questions	Understandings	Suggested Assessment Activities
• TSW determine the volume of common objects using water displacement methods • TSW determine the identity of an unknown substance using data about intrinsic properties • TSW compare the properties of reactants • TSW predict the path of reflected or refracted light • TSW understand the basics of current flow in a simple electric circuit • TSW model and explain how the perspective of the description of an object's motion is different • TSW describe the force between two magnets as the distance between them is changed	5.2.6.A 5.2.6.A 5.2.6.B 5.2.6.C 5.2.6.D 5.2.6.E 5.2.6.E	- What distinguishes one substance from another? - How do we know if a chemical reaction has occurred? - What is the outcome of a chemical reaction? - What is the effect of changes in matter? - How is energy conserved? - How do matter and energy relate? - How are energy transformations applied in today's world?	• Matter can be identified by observable and measurable properties • The states of matter can be described and used to explain the behavior of matter • Temperature influences the states of matter of a substance • A circuit is a path for moving charges • A good conductor is a material that allows energy to move easily through it	Ongoing observation & questioning during class discussions and hands-on project work Diagram the evidence of a chemical reaction Categorize items of the same volume by mass Determine the melting points and boiling points of water. Graph the temperature vs. the time Diagram how a circuit works Build an open and closed circuit using wires, a light bulb, and a battery

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5.3 Life Science: All students will understand that life science principles are powerful conceptual tools for making sense of the complexity, diversity, and interconnectedness of life on Earth. Order in natural systems arises in accordance with rules that govern the physical world, and the order of natural systems can be modeled and predicted through the use of mathematics.

TSW = The Student Will

Objective(s)	NJCCCS Alignment	Essential Questions	Understandings	Suggested Assessment Activities
• TSW model the interdependence of the human body's major systems • TSW illustrate the flow of energy (food) through a community • TSW explain the impact of meeting human needs and wants on local and global environments • TSW predict the long-term effect of interference with normal patterns of reproduction • TSW describe the impact on the survival of species	5.3.6.A 5.3.6.A 5.3.6.C 5.3.6.D 5.3.6. E	- How diverse is life and why is it diverse? - How do we affect the world around us? - Are all living and nonliving things connected? - What is essential for life? - What factors influence life?	• All living things have certain needs for the survival of both the individual and the species • Living things can be grouped, or classified according to their attributes • Classifying is very important when studying the world around us • An ecosystem is the interaction between the living and nonliving things in an area	Ongoing observation & questioning during class discussions and hands-on project work Explain the necessity of each stage in the growth process Journal writing to describe the interaction between living and nonliving organisms in the local environment Research biomes and ecosystems throughout the world to gather information about deserts, rain forests, or the tundra. Identify specific characteristics of each habitat and attempt to determine the impact humans have on that environment

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5.4 Earth Systems Science: All students will understand that Earth operates as a set of complex, dynamic, and interconnected systems, and is a part of the all-encompassing system of the universe.

TSW = The Student Will

Objective(s)	NJCCCS Alignment	Essential Questions	Understandings	Suggested Assessment Activities
• TSW analyze and evaluate evidence in the form of data tables • TSW generate and analyze evidence (through simulations) that the Sun's apparent motion across the sky changes over the course of a year • TSW analyze data regarding the motion of comets, planets, and moons to find general patterns of orbital motion • TSW interpret a representation of a rock layer sequence to establish oldest and youngest layers, geologic events, and changing life forms • TSW describe methods people use to reduce soil erosion • TSW determine if landforms were created by processes of erosion	5.4.8. A 5.4.6.A 5.4.8.A 5.4.6.B 5.4.6.B 5.4.6.B	- How does soil vary from place to place? - Why is the water cycle important? - What is air made of? - How are rocks formed? - What does a physical feature tell about an area? - What characteristics does our Sun share with other stars? - What is gravity? What are its effects?	• Air moves around us • Water on Earth moves in a continuous cycle • Rocks record Earth's history • Maps can be used to locate land and water features • Gravity has an effect on the planets and their moons	Ongoing observation & questioning during class discussions and hands-on project work Create a pictorial representation (hallway mural) of major features of the Earth's crust as well as examples of weathering and erosion Estimate the percentage of the Earth's surface that is covered by water. Use a transparent grid overly and have students count the number of squares that cover land vs. water. Build graphs and tables to summarize the findings. Estimate the ratio of surface water to land surface. Draw pictures of day and night sky. Record observations pictorially, orally, and in writing

• TSW distinguish physical properties of sedimentary, igneous, or metamorphic rocks	5.4.6.C			Identify rocks by characteristic Illustrate and explain the water cycle
• TSW explain how one kind of rock could eventually become a different kind of rock	5.4.8.C			
• TSW locate areas that are being created (deposition) and destroyed (erosion) using maps and satellite images	5.4.6.D			
• TSW understand how energy is transferred	5.4.8.E			
• TSW make simple predictions	5.4.8.E			
• TSW explain the interrelationships between daily temperature, air pressure, and relative humidity data	5.4.6.F			
• TSW create a model of ecosystems in two different locations	5.4.6.G			
• TSW compare and contrast the living and nonliving components of an ecosystem	5.4.8.G			
• TSW describe ways that humans can improve the health of ecosystems around the world	5.4.6.G			

Grade 5 **Earth Systems Science** continued