

**Tunkhannock Area School District
Grade 5 Science Curriculum**

Unit: The Nature of Science

S5.A.1: Reasoning and Analysis
 S5A.1.1: Explain, interpret, and apply scientific, environmental, or technological knowledge presented in a variety of formats
 S5.A.1.1.1: Explain how certain questions can be answered through scientific inquiry and/or technological design (e.g., investigate to find out if all clay or foil boats designs react the same when filled with paperclips).
 S.5.A.2.1.2 Describe relationships between variables through interpretation of data and observations (i.e., make predictions for the outcome of a controlled experiment using data tables and graphs).

Overarching Understandings:

- Scientists use the scientific method to guide themselves through an experiment. It is an organized way to solve problems.

Topical Understandings	Essential Questions
<ul style="list-style-type: none"> ● Experiments must be designed to answer the question in an experiment ● The Scientific Method is an organized way to solve problems. 	<ul style="list-style-type: none"> ● What are the steps of the scientific method? ● How do variables affect the outcome of an experiment?
Knowledge	Skills
<ul style="list-style-type: none"> ● There are 5 main steps to the scientific method. ● The conclusion should be the answer to your experiment ● Constants ● Variables 	<ul style="list-style-type: none"> ● Design an experiment to answer a question: (example)How many drops of water will a penny hold before it overflows? ● Conduct the experiment to answer the question. ● Record and analyze data.

Evaluation Criteria	Evidence of Understanding
<ul style="list-style-type: none"> ● Formative Assessments: (observations, questioning, responses, graphic organizers, peer and self assessment) ● Summative Assessments: Teacher-generated quizzes and tests. 	<ul style="list-style-type: none"> ● Higher level skills: analyze for comprehension, make conclusions, construction models, predict, patterns, determine outcomes.

Source	Description of Use
<ul style="list-style-type: none">• Available classroom materials• Additional teacher generated resources	<ul style="list-style-type: none">• Skill building• Reinforcement of material• Assessment of topic

S.5.A.2 Processes, Procedures, and Tools of Scientific Investigations
 S.5.A.2.1 Apply knowledge of scientific investigation or technological design to make inferences and solve problems.
 S.5.A.2.1.1 Design a simple, controlled experiment (fair test) identifying the independent and dependent variables, how the dependent variable will be measured and which variables will be held constant (e.g., relate the effect of variables [mass, release height, length of string] to number of swings of a pendulum, investigate the relationships between variables in paper airplane designs).

Overarching Understandings:

- Design and conduct an experiment using the Scientific Method.

Topical Understandings	Essential Questions
<ul style="list-style-type: none"> • Dependent variables must be measured and certain variables should be held constant. 	<ul style="list-style-type: none"> • What are the steps of the scientific method? • What is a constant? Variable? • How is a control used in an experiment?
Knowledge	Skills
<ul style="list-style-type: none"> • A dependent variable is one whose value depends upon another. • A variable whose value does not depends upon another. 	<ul style="list-style-type: none"> • Design an experiment to answer a question: (example) Which brand of paper towels is the most absorbent? • Conduct the experiment to answer the question. • Record and analyze data. • Identify the constants, dependent and independent variable in the experiment

Evaluation Criteria	Evidence of Understanding
<ul style="list-style-type: none"> • Formative Assessments: (observations, questioning, responses, graphic organizers, peer and self assessment) • Summative Assessments: Teacher-generated quizzes and tests. 	<ul style="list-style-type: none"> • Higher level skills: analyze for comprehension, make conclusions, construction models, predict, patterns, determine outcomes.

Source	Description of Use
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S.5.A.2 Processes, Procedures, and Tools of Scientific Investigations

S.5.A.2.2 Apply appropriate instruments for specific purposes and describe the information the instruments can provide.

S.5.A.2.2.1 Describe the appropriate use of instruments and scales to accurately measure time, mass, distance, volume, and temperature safely under a variety of conditions (e.g., use a thermometer to observe and compare the interaction of food coloring in water at different temperatures)

S.5.A.2.2.2 Explain how technology extends and enhances human abilities for specific purposes (e.g., use hand lens to examine crystals in evaporation dishes; use graduated cylinders to measure the amount of water used in a controlled plant experiment).

Overarching Understandings:

- Use graduated cylinders to measure the liquid volume a container can hold.

Topical Understandings	Essential Questions
<ul style="list-style-type: none"> • The graduated cylinder is a scientific instrument that measures liquid volume. 	<ul style="list-style-type: none"> • What does a graduated cylinder measure? • What unit of measurement does a graduated cylinder use?
Knowledge	Skills
<ul style="list-style-type: none"> • The graduated cylinder measures liquid volume in milliliters. • The level of liquid should be read from the bottom of the meniscus. 	<ul style="list-style-type: none"> • Identify and read the appropriate scale • Identify and read from the bottom of the meniscus

Evaluation Criteria	Evidence of Understanding
<ul style="list-style-type: none"> • Formative Assessments: (observations, questioning, responses, graphic organizers, peer and self assessment) • Summative Assessments: Teacher-generated quizzes and tests. 	<ul style="list-style-type: none"> • Higher level skills: analyze for comprehension, make conclusions, construction models, predict, patterns, determine outcomes.

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S.5.A.3 Systems, Models, and Patterns
 S3.A.3.1 Apply knowledge of systems and patterns to make predictions.
 S.5.A.3.1.1 Make predictions based on patterns in natural systems (e.g., phases of the Moon, time [day, month, and year], weather, seasons).

Overarching Understandings:

- Make predictions based on patterns in natural systems.

Topical Understandings	Essential Questions
<ul style="list-style-type: none"> • Scientists use models and patterns to make predictions in the natural world. • The Moon is Earth’s natural satellite 	<ul style="list-style-type: none"> • What predictions, based on patterns in natural systems can be made? • What causes day and night? • What causes the seasons? Phases of the moon?
Knowledge	Skills
<ul style="list-style-type: none"> • Earth’s rotation causes day and night. • Changing angles of sunlight cause the seasons. 	<ul style="list-style-type: none"> • Reading and interpreting data • Using models to make predictions • Students will describe the motion of the Moon • Students will describe the phases of the Moon

Evaluation Criteria	Evidence of Understanding
<ul style="list-style-type: none"> • Formative Assessments: (observations, questioning, responses, graphic organizers, peer and self assessment) • Summative Assessments: Teacher-generated quizzes and tests. 	<ul style="list-style-type: none"> • Higher level skills: analyze for comprehension, make conclusions, construction models, predict, patterns, determine outcomes.

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S.5.A.3 Systems, Models, and Patterns
 S.5.A.3.2 Apply knowledge of models to make predictions or explain technological concepts.
 S.5.A.3.2.1 Describe how models are used to better understand the relationships in natural systems (e.g., water cycle, Sun-Earth-Moon system, ecosystems, observe and draw a diagram to show the effects of flowing water in a watershed).

Overarching Understandings:

- Models can be used to make predictions

Topical Understandings	Essential Questions
<ul style="list-style-type: none"> • Models can help make predictions • Models can show relationships in natural systems. 	<ul style="list-style-type: none"> • What predictions can be made about relationships in the natural world?
Knowledge	Skills
<ul style="list-style-type: none"> • The water cycle is the constant movement of water. 	<ul style="list-style-type: none"> • Students will describe the movement of water through the water cycle.

Evaluation Criteria	Evidence of Understanding
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S.5.B.1 Structure and Function of Organisms
 S.5.B.1.1 Describe how the cell is the basic unit of structure and function for all living things.
 S.5.B.1.1.1 Recognize that all organisms are composed of cells.
 S.5.B.1.1.2 Explain the concept of the cell as the basic structural unit of all living things.

Overarching Understandings:

- Recognize that all organisms are composed of basic structural units called cells and that these are essential to life.

Topical Understandings	Essential Questions
<ul style="list-style-type: none"> • The cell is the basic unit of structure and function for all living things. 	<ul style="list-style-type: none"> • How can one cell function as an organism?
Knowledge	Skills
<ul style="list-style-type: none"> • All living things are made up of smaller units called cells. • Cells carry out the many functions needed to sustain life. • There are defining structures of cells for both plants and animals. • There are unicellular and multicellular organisms. 	<ul style="list-style-type: none"> • Explain the difference between a unicellular and multicellular organism.

Evaluation Criteria	Evidence of Understanding
<ul style="list-style-type: none"> • Formative Assessments: (observations, questioning, responses, graphic organizers, peer and self assessment) • Summative Assessments: Teacher-generated quizzes and tests. 	<ul style="list-style-type: none"> • Higher level skills: analyze for comprehension, make conclusions, construction models, predict, patterns, determine outcomes.

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<ul style="list-style-type: none"> • Available classroom materials • Additional teacher generated resources 	<ul style="list-style-type: none"> • Skill building • Reinforcement of material • Assessment of topic

<p>S.5.B.1 Structure and Function of Organisms</p> <p>S.5.B.1.1 Describe how the cell is the basic unit of structure and function for all living things.</p> <p>S.5.B.1.1.3 Compare the structure and function of basic cell parts in organisms (i.e., plants and animals).</p>

<p>Overarching Understandings:</p> <ul style="list-style-type: none"> Describe four related human-body transport systems that provide all the cells water, food, gas exchange, and waste disposal. Investigate the transport system in vascular plants and learn about the specialized structures, xylem and phloem tubes. Design and conduct a scientific investigation and discover that leaves play an important role in the transport of water to cells in vascular plants.
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Topical Understandings	Essential Questions
<ul style="list-style-type: none"> All living things are made up of cells Constructing models and representations of body systems to demonstrate how multiple interacting subsystems and structures work together. 	<ul style="list-style-type: none"> What major functions do both plant and animal cells share? How are plant and animal cells different? Similar? How do cells work together to complete functions?
Knowledge	Skills
<ul style="list-style-type: none"> Recognize that all living things are made up of cells. Plant and animal cells 	<ul style="list-style-type: none"> Create a model/drawing of a plant cell. Identify various organelles and explain each function Compare and contrast the functions of animals and plant cells

Evaluation Criteria	Evidence of Understanding
<ul style="list-style-type: none"> Formative Assessments: (observations, questioning, responses, graphic organizers, peer and self assessment) Summative Assessments: Teacher-generated quizzes and tests. 	<ul style="list-style-type: none"> Higher level skills: analyze for comprehension, make conclusions, construction models, predict, patterns, determine outcomes.

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<p>S.5.B.1 Structure and Function of Organisms</p> <p>S.5.B.2.1 Explain how certain inherited traits and/or behaviors allow some organisms to survive and reproduce more successfully than others.</p> <p>S.5.B.2.1.1 Differentiate between inherited and acquired traits (e.g., scars, injuries).</p> <p>S.5.B.2.1.2 Explain how inherited traits help organisms survive and reproduce in different environments.</p> <p>S.5.B.2.1.3 Explain how certain behaviors help organisms survive and reproduce in different environments.</p>

<p>Overarching Understandings:</p> <ul style="list-style-type: none"> • Traits and/or behaviors allow some organisms to survive and reproduce.
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Topical Understandings	Essential Questions
<ul style="list-style-type: none"> • Traits can be inherited from parents or acquired through observing other animals. 	<ul style="list-style-type: none"> • How do inherited traits and behaviors help organisms survive?
Knowledge	Skills
<ul style="list-style-type: none"> • Key vocabulary- acquired trait, adaptation, behavior, characteristic, gene, inherited trait, food web, energy transfer. 	<ul style="list-style-type: none"> • Explain how inherited traits and certain behaviors can help organisms survive and reproduce in different environments. • Compare inherited and acquired traits • Describe the transfer of energy between organism and the environment in an ecosystem. • Create food chains and food webs to model ecosystem relationships.

Evaluation Criteria	Evidence of Understanding
<ul style="list-style-type: none"> • Formative Assessments: (observations, questioning, responses, graphic organizers, peer and self assessment) • Summative Assessments: Teacher-generated quizzes and tests. 	<ul style="list-style-type: none"> • Higher level skills: analyze for comprehension, make conclusions, construction models, predict, patterns, determine outcomes.

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S.5.B.1 Structure and Function of Organisms
 S.5.B.2.1 Explain how certain inherited traits and/or behaviors allow some organisms to survive and reproduce more successfully than others.
 S.5.B.2.1.4 Identify changes in environmental conditions that can affect the survival of populations and entire species.

Overarching Understandings:

- Changes in environmental conditions can affect the survival of populations and entire species.

Topical Understandings	Essential Questions
<ul style="list-style-type: none"> • Species rely on food, water, and shelter to survive. • A boom in population can adversely affect the environment and other populations. 	<ul style="list-style-type: none"> • What events can occur that can affect the survival of a species? • How do changes in environmental conditions affect the survival of populations?
Knowledge	Skills
<ul style="list-style-type: none"> • The loss of food, water, or shelter can affect the survival of populations. • Population changes can have a profound impact on environmental conditions 	<ul style="list-style-type: none"> • Describe how changes in the environment can affect the survival of populations. • Describe how events (global warming, forest fire, flood) can affect the survival of an entire species.

Evaluation Criteria	Evidence of Understanding
<ul style="list-style-type: none"> • Formative Assessments: (observations, questioning, responses, graphic organizers, peer and self assessment) • Summative Assessments: Teacher-generated quizzes and tests. 	<ul style="list-style-type: none"> • Higher level skills: analyze for comprehension, make conclusions, construction models, predict, patterns, determine outcomes.

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<ul style="list-style-type: none">• Available classroom materials• Additional teacher generated resources	<ul style="list-style-type: none">• Skill building• Reinforcement of material• Assessment of topic

<p>S.5.B.3 Ecological Behavior and Systems S.5.B.3.1 Describe the relationships between organisms in different ecosystems. S.5.B.3.1.1 Describe the roles of producers, consumers, and decomposers within a local ecosystem. S.5.B.3.1.2 Describe the relationships between organisms in different food webs.</p>
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<p>Overarching Understandings:</p> <ul style="list-style-type: none"> Organisms in Pennsylvania ecosystems rely on the food chains to transfer of energy among organisms
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Topical Understandings	Essential Questions
<ul style="list-style-type: none"> The food chain is a group of organism in a community in which members feed on the member below it on the chain. 	<ul style="list-style-type: none"> What is the relationship between producers, consumers, and decomposers in the food chain? How is energy transferred within the food chain?
Knowledge	Skills
<ul style="list-style-type: none"> Key Vocabulary: consumer, decomposer, ecologist, ecosystem, energy, food chain, lentic ecosystem, lotic ecosystem, predator, prey, primary consumers, producers, secondary consumers 	<ul style="list-style-type: none"> Create a diagram to show the relationship between producers, consumers, and decomposers in the food chain. Describe how energy is transferred within a food chain. Describe the roles of producers, consumers, and decomposers within a local ecosystem.

Evaluation Criteria	Evidence of Understanding
<ul style="list-style-type: none"> Formative Assessments: (observations, questioning, responses, graphic organizers, peer and self assessment) Summative Assessments: Teacher-generated quizzes and tests. 	<ul style="list-style-type: none"> Higher level skills: analyze for comprehension, make conclusions, construction models, predict, patterns, determine outcomes.

Source	Description of Use
<ul style="list-style-type: none">• Available classroom materials• Additional teacher generated resources	<ul style="list-style-type: none">• Skill building• Reinforcement of material• Assessment of topic

<p>S.5.B.3 Ecological Behavior and Systems</p> <p>S.5.B.3.2 Explain how renewable and nonrenewable resources provide for human needs.</p> <p>S.5.B.3.2.1 Identify fossil fuels and alternative fuels used by humans.</p> <p>S.5.B.3.2.2 Describe the usefulness of Earth’s physical resources as raw materials for the human-made world.</p> <p>S.5.B.3.2.3 Explain how different items are recycled and reused.</p>
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<p>Overarching Understandings:</p> <ul style="list-style-type: none"> • Renewable and nonrenewable resources provide for human needs
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Topical Understandings	Essential Questions
<ul style="list-style-type: none"> • Fossil fuels are essential for creation of heat/energy. • Earth’s physical resources provide raw materials for human needs. 	<ul style="list-style-type: none"> • What types of fossil fuels and alternative fuels do humans use? • What physical resources provide raw materials for the human-made world? • What types of items are recycled and reused?
Knowledge	Skills
<ul style="list-style-type: none"> • Renewable and nonrenewable resources 	<ul style="list-style-type: none"> • Identify fossil fuels and alternative fuels that humans use. • Describe the usefulness of Earth’s physical resources as raw materials. • Explain how different items are recycled and reused for human consumption.

Evaluation Criteria	Evidence of Understanding
<ul style="list-style-type: none"> • Formative Assessments: (observations, questioning, responses, graphic organizers, peer and self assessment) • Summative Assessments: Teacher-generated quizzes and tests. 	<ul style="list-style-type: none"> • Higher level skills: analyze for comprehension, make conclusions, construction models, predict, patterns, determine outcomes.

Source	Description of Use
<ul style="list-style-type: none">• Available classroom materials• Additional teacher generated resources	<ul style="list-style-type: none">• Skill building• Reinforcement of material• Assessment of topic

S.5.C.1 Structure, Properties, and Interaction of Matter and Energy
 S.5.C.1.1 Describe the observable physical properties of matter.
 S.5.C.1.1.1 Identify characteristic properties of matter that are independent of mass and volume.
 S.5.C.1.1.2 Differentiate between volume and mass.

Overarching Understandings:

- Differentiate between solids, liquids, gases and plasma.

Topical Understandings	Essential Questions
<ul style="list-style-type: none"> • There are 4 states of matter • Matter is composed of elements. 	<ul style="list-style-type: none"> • How does matter differ through the 4 states of matter?
Knowledge	Skills
<ul style="list-style-type: none"> • A solid is the state of matter in which the volume and shape of a substance is fixed. • A liquid is the state of matter that has a definite volume but not shape. • A gas is a state of matter that has no definite volume or shape. • Volume is the amount of space an object takes up. • Mass is a measure of how much matter is present in an object. 	<ul style="list-style-type: none"> • Observe and state differences between solids, liquids, gases, and plasma. • State the differences between mass and volume

Evaluation Criteria	Evidence of Understanding
<ul style="list-style-type: none"> • Formative Assessments: (observations, questioning, responses, graphic organizers, peer and self assessment) • Summative Assessments: Teacher-generated quizzes and tests. 	<ul style="list-style-type: none"> • Higher level skills: analyze for comprehension, make conclusions, construction models, predict, patterns, determine outcomes.

Source	Description of Use
<ul style="list-style-type: none">• Available classroom materials• Additional teacher generated resources	<ul style="list-style-type: none">• Skill building• Reinforcement of material• Assessment of topic

S.5.C.1 Structure, Properties, and Interaction of Matter and Energy
 S.5.C.1.2 Describe that matter can undergo chemical and physical changes.
 S.5.C.1.2.1 Describe how water changes from one state to another.
 S.5.C.1.2.2 Identify differences between chemical and physical changes of matter.

Overarching Understandings:

- There are differences between chemical and physical reactions. Both are processes that matter can undergo. Matter can also change from one state to another by the adding or removing heat (energy).

Topical Understandings	Essential Questions
<ul style="list-style-type: none"> • By adding or removing heat (energy), matter can change from one state to another. • Matter can undergo two major changes; chemical and physical. 	<ul style="list-style-type: none"> • How do scientists identify and sort materials? • What causes matter to change from one state to another?
Knowledge	Skills
<ul style="list-style-type: none"> • A physical change is a change from one state to another without a change to the chemical composition. • A chemical change is a process where one or more substances are altered into one or more new and different substances. 	<ul style="list-style-type: none"> • Explain the difference between volume and mass. • Define and categorize physical and chemical properties.

Evaluation Criteria	Evidence of Understanding
<ul style="list-style-type: none"> • Formative Assessments: (observations, questioning, responses, graphic organizers, peer and self assessment) • Summative Assessments: Teacher-generated quizzes and tests. 	<ul style="list-style-type: none"> • Higher level skills: analyze for comprehension, make conclusions, construction models, predict, patterns, determine outcomes.

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S.5.C.2 Forms, Sources, Conversion, and Transfer of Energy
 S.5.C.2.1 Describe basic energy types and sources, and how energy can be changed from one form to another.
 S.5.C.2.1.1 Describe how energy exists in many forms (electrical, mechanical, chemical, heat, light,) and can be transformed within a system.
 S.5.C.2.1.2 Describe how heat energy is usually a byproduct of an energy transformation.
 S.5.C.2.1.3 Distinguish between kinetic and potential energy.
 S.5.C.2.1.4 Explain how energy is conserved.

Overarching Understandings:

- Energy can be transferred from one energy source to another

Topical Understandings	Essential Questions
<ul style="list-style-type: none"> • Renewable resources are a source of energy • Energy is never lost or destroyed • An object can contain potential or kinetic energy 	<ul style="list-style-type: none"> • What is the difference between kinetic and potential energy? • How can natural resources, such as water and wind be used to transfer energy? • How is energy measured?
Knowledge	Skills
<ul style="list-style-type: none"> • There are many types of energy (kinetic, potential, light, heat, sound, nuclear, chemical, etc) • Energy is measured in Joules. 	<ul style="list-style-type: none"> • Give examples of how energy is transferred • Explain how potential energy is transferred to kinetic energy. • List the major types and sources of energy

Evaluation Criteria	Evidence of Understanding
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- S.5.C.3 Principles of Motion and Force
 S.5.C.3.1 Explain the relationships between mass, force, and movement.
 S.5.C.3.1.1 Differentiate between the mass and weight of an object.
 S.5.C.3.1.2 Explain how the mass of an object resists change to motion (inertia).

Overarching Understandings:

- Students will learn about the differences between mass, weight and volume by exploring characteristics of common objects in a lab.

Topical Understandings	Essential Questions
<ul style="list-style-type: none"> • Newton's 1st law (law of inertia) - "an object at rest stays at rest and an object in motion stays in motion with the same speed and in the same direction unless acted on by an unbalanced force." • The mass of an object is determined by its matter, the weight of an object is determined by gravity's effect on its matter. 	<ul style="list-style-type: none"> • How do weight and mass differ? • How does gravity affect mass?
Knowledge	Skills
<ul style="list-style-type: none"> • Balance: Apparatus used to measure mass. • Matter: Anything that has mass and takes up space. • Mass: The amount of matter in something. • Weight: The measurement of the gravitation force acting on an object. • Scale: apparatus used to measure weight. • Volume: How much space an object occupies or can hold. • Inertia: A property of matter to resist changes in motion. 	<ul style="list-style-type: none"> • Explain the difference between the mass and weight of an object. • List examples of relationships between mass, force and movement. • Measure using a balance scale. • Calculate the weight of objects on other planets.

Evaluation Criteria	Evidence of Understanding
<ul style="list-style-type: none"> • Formative Assessments: (observations, questioning, responses, graphic organizers, peer and self assessment) • Summative Assessments: Teacher-generated quizzes and tests. 	<ul style="list-style-type: none"> • Higher level skills: analyze for comprehension, make conclusions, construction models, predict, patterns, determine outcomes.

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S.5.C.3 Principles of Motion and Force
 S.5.C.3.2 Observe and recognize how magnets and electricity produce related forces.
 S.5.C.3.2.1 Recognize that moving electric charges produce magnetic forces and moving magnets produce electric forces (electromagnetism).
 S.5.C.3.2.2 Identify the variables within an electric current (i.e., voltage, current, and resistance).

Overarching Understandings:

- Magnetism can create electricity and electricity can create magnetism.

Topical Understandings	Essential Questions
<ul style="list-style-type: none"> • Electric current creates magnetic forces. • Increase in voltage increases electric current. 	<ul style="list-style-type: none"> • How does a change in voltage affect the magnetic force? • How does the spacing of wire in an electromagnet affect a magnetic force? • If polarity of a battery is switched, how does that affect the poles of the electromagnet?
Knowledge	Skills
<ul style="list-style-type: none"> • A compass can be used to determine the poles of an electromagnet. • The polarity of an electromagnet can be changed by reversing the battery. 	<ul style="list-style-type: none"> • Students will build an electromagnet. • Students will use a compass to locate north and south. • Students will identify variables that can affect their electromagnet.

Evaluation Criteria	Evidence of Understanding
<ul style="list-style-type: none"> • Formative Assessments: (observations, questioning, responses, graphic organizers, peer and self assessment) • Summative Assessments: Teacher-generated quizzes and tests. 	<ul style="list-style-type: none"> • Higher level skills: analyze for comprehension, make conclusions, construction models, predict, patterns, determine outcomes.

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S.5.D.1 Earth Features and Processes That Change Earth and Its Resources
 S.5.D.1.1 Describe constructive and destructive natural processes that form different geologic structures and resources.
 S.5.D.1.1.1 Differentiate between abrupt changes in Earth’s surface (e.g., earthquakes, volcanoes, meteor impacts, landslides) and gradual changes in Earth’s surface (e.g., lifting up of mountains, wearing away by erosion).
 S.5.D.1.1.2 Explain how geological processes observed today (e.g., erosion, changes in the composition of the atmosphere, volcanic eruptions, earthquakes) are similar to those in the past.

Overarching Understandings:

- Earth’s features are ever changing due to natural processes.

Topical Understandings	Essential Questions
<ul style="list-style-type: none"> • The Earth can be changed through abrupt changes such as earthquakes and landslides • The Earth can be changed through gradual changes such as erosion and plate movement. 	<ul style="list-style-type: none"> • How do scientists observe and measure geological processes? • What scientific instruments help scientists observe changes in Earth’s features? • How are some of these changes constructive? Destructive?
Knowledge	Skills
<ul style="list-style-type: none"> • Scientists monitor seismic activity to determine activity of Earth’s plates. • Earth’s natural processes (earthquakes, volcanoes, erosion) continually change its surface. 	<ul style="list-style-type: none"> • Students will identify abrupt changes in Earth’s surface and its positive and negative effects. • Students will determine how scientists measure changes made to Earth’s surface.

Evaluation Criteria	Evidence of Understanding
<ul style="list-style-type: none"> • Formative Assessments: (observations, questioning, responses, graphic organizers, peer and self assessment) • Summative Assessments: Teacher-generated quizzes and tests. 	<ul style="list-style-type: none"> • Higher level skills: analyze for comprehension, make conclusions, construction models, predict, patterns, determine outcomes.

Source	Description of Use
<ul style="list-style-type: none">• Available classroom materials• Additional teacher generated resources	<ul style="list-style-type: none">• Skill building• Reinforcement of material• Assessment of topic

<p>S.5.D.1 Earth Features and Processes That Change Earth and Its Resources S.5.D.1.2 Describe characteristic features of Earth’s water systems and their impact on resources.</p> <p>S.5.D.1.2.1 Identify physical, chemical, and biological factors that affect water quality. S.5.D.1.2.2 Describe the importance of wetlands in an ecosystem.</p>

<p>Overarching Understandings:</p> <ul style="list-style-type: none"> • Earth’s water systems have a profound impact on local ecosystems.

Topical Understandings	Essential Questions
<ul style="list-style-type: none"> • All living organisms depend on water. • Water quality can influence many factors in an ecosystem. • Water is scarce on Earth because most of it is saltwater. • Even though fresh water is renewable, there is not always enough of it in a given place at a given time. 	<ul style="list-style-type: none"> • How are wetlands essential to the health of an ecosystem? • What physical, chemical, and biological factors affect water quality? • What natural factors affect water quality? • What man-made factors can affect water quality?
Knowledge	Skills
<ul style="list-style-type: none"> • Wetlands prevent flooding. • Wetlands purify and filter water. 	<ul style="list-style-type: none"> • Identify and label key parts of an ecosystem. • List factors that can affect water quality. • Describe the importance of wetlands in an ecosystem.

Evaluation Criteria	Evidence of Understanding
<ul style="list-style-type: none"> • Formative Assessments: (observations, questioning, responses, graphic organizers, peer and self assessment) • Summative Assessments: Teacher-generated quizzes and tests. 	<ul style="list-style-type: none"> • Higher level skills: analyze for comprehension, make conclusions, construction models, predict, patterns, determine outcomes.

Source	Description of Use
<ul style="list-style-type: none">• Available classroom materials• Additional teacher generated resources	<ul style="list-style-type: none">• Skill building• Reinforcement of material• Assessment of topic

<p>S.5.D.2 Weather, Climate, and Atmospheric Processes S.5.D.2.1 Differentiate between weather and climate. S.5.D.2.1.1 Explain how the cycling of water into and out of the atmosphere impacts climatic patterns. S.5.D.2.1.2 Explain the effects of oceans and lakes on climate.</p>

<p>Overarching Understandings:</p> <ul style="list-style-type: none"> Weather is what conditions of the atmosphere are over a short period of time, and climate is how the atmosphere "behaves" over relatively long periods of time.

Topical Understandings	Essential Questions
<ul style="list-style-type: none"> Climate is the description of the long term patter of weather in a particular area. Weather is what is the condition in the troposphere. 	<ul style="list-style-type: none"> How does weather affect the climate of a certain region? How does the water cycle affect local weather/climate and ecosystem?
Knowledge	Skills
<ul style="list-style-type: none"> Weather includes sunshine, rain, cloud cover, winds, hail, and snow, sleet, freezing rain, flooding, blizzards, ice storms, thunderstorms, excessive heat, heat waves and more. The ocean plays a crucial role in determining climate because of its ability to absorb, store, and transport heat from the sun. 	<ul style="list-style-type: none"> Identify water sources in a local environment. Explain and label appropriate phase of the water cycle. Identify the ocean has a heat sink.

Evaluation Criteria	Evidence of Understanding
<ul style="list-style-type: none"> Formative Assessments: (observations, questioning, responses, graphic organizers, peer and self assessment) Summative Assessments: Teacher-generated quizzes and tests. 	<ul style="list-style-type: none"> Higher level skills: analyze for comprehension, make conclusions, construction models, predict, patterns, determine outcomes.

Source	Description of Use
<ul style="list-style-type: none">• Available classroom materials• Additional teacher generated resources	<ul style="list-style-type: none">• Skill building• Reinforcement of material• Assessment of topic

S.5.D.3 Composition and Structure of the Universe
 S.5.D.3.1 Explain the relationships between objects in our solar system.
 S.5.D.3.1.1 Describe the patterns of Earth’s rotation and revolution in relation to the Sun and Moon (i.e., solar eclipse, phases of the Moon, and time)

Overarching Understandings:

- Learn about the characteristics of planets, moons, and the Sun in our solar system.

Topical Understandings	Essential Questions
<ul style="list-style-type: none"> • Models are used to better understand relationships in our solar system. 	<ul style="list-style-type: none"> • How do models help us understand relationships in our solar system? • How do relationships between the Sun, Moon, and Earth affect us?
Knowledge	Skills
<ul style="list-style-type: none"> • Solar System- The Sun and all of the objects rotating around it. • Sun- Averaged sized star at the center of our solar system. • Planet- A large natural body revolving around the Sun. • Satellite- A celestial body orbiting the Earth or another planet. 	<ul style="list-style-type: none"> • Compare the characteristic of the inner and outer planets. • Make predictions based on patterns in our solar system. • Explain how technology extends our ability to learn about our solar system.

Evaluation Criteria	Evidence of Understanding
<ul style="list-style-type: none"> • Formative Assessments: (observations, questioning, responses, graphic organizers, peer and self assessment) • Summative Assessments: Teacher-generated quizzes and tests. 	<ul style="list-style-type: none"> • Higher level skills: analyze for comprehension, make conclusions, construction models, predict, patterns, determine outcomes.

Source	Description of Use
<ul style="list-style-type: none"> • Available classroom materials • Additional teacher generated resources 	<ul style="list-style-type: none"> • Skill building • Reinforcement of material • Assessment of topic

S.5.D.3 Composition and Structure of the Universe
 S.5.D.3.1 Explain the relationships between objects in our solar system.
 S.5.D.3.1.2 Compare the general characteristics of the inner planets of our solar system (i.e., size, orbital path, surface characteristics, and moons).

Overarching Understandings:

- Organize the bodies of our solar system into categories to help them understand other characteristics of the solar system.

Topical Understandings	Essential Questions
<ul style="list-style-type: none"> The inner planets are closest to the Sun and have similar characteristics. 	<ul style="list-style-type: none"> What is the solar system? What characteristics do the inner/outer planets share?
Knowledge	Skills
<ul style="list-style-type: none"> The Sun is an average star and is composed mostly of hydrogen and helium The solar system includes the Sun and the objects that orbit it, including Earth, The Moon, seven other planets and their satellites and smaller objects, including asteroids and comets. The objects in the solar system vary in size and composition, and other characteristics, and can be classified based on those characteristics. The planets are classified as terrestrial or as gas giants. 	<ul style="list-style-type: none"> Explain the differences between the inner and outer planets. Describe the characteristics of the inner and outer planets.

Evaluation Criteria	Evidence of Understanding
<ul style="list-style-type: none"> Formative Assessments: (observations, questioning, responses, graphic organizers, peer and self assessment) Summative Assessments: Teacher-generated quizzes and tests. 	<ul style="list-style-type: none"> Higher level skills: analyze for comprehension, make conclusions, construction models, predict, patterns, determine outcomes.

Source	Description of Use
<ul style="list-style-type: none">• Available classroom materials• Additional teacher generated resources	<ul style="list-style-type: none">• Skill building• Reinforcement of material• Assessment of topic