

**Shenandoah Community School District**  
**Science**  
Grade - 5

## **5.1 Earth and Space**

### **5.1.1 (SCSD) Understand and apply knowledge of properties and uses of earth materials (D,M)**

- Know that the different physical and chemical properties of earth materials makes them useful in different ways
  - Building materials
  - Sources of fuel
  - For growing the plants we use as foods (Different growing conditions affect growth) (D,M)
- Know that Earth has natural resources that are important for life, but are limited
  - Soil
  - Water (kinds)
    - Fresh Water
    - Saline Water
  - Air
  - Plants
  - Animals
- Know the ways to take care of Earth's natural resources
- Know and describe the structure of the earth
  - Crust
  - Mantle
  - Core

### **5.1.2 (SCSD) Understand and apply knowledge of processes and changes on or in the earth's land, oceans, and atmosphere (I,D,M)**

- Know that the surface of the earth changes
  - Understands evaporation, condensation, and the water cycle (I,D,M)
  - Slow processes
    - Erosion
    - Weathering
  - Rapid Processes (D,M)
    - Landslides (D,M)
    - Volcanic Eruptions (D,M)
    - Floods (D,M)
    - Earthquakes (D,M)
    - Glaciers (D,M)
    - 🚧 Explain how they form and change the earth's surface (I-3rd)(D,M)
  - Describe how rocks change overtime and what can be learned from these changes

### **5.1.3 (SCSD) Understand and apply knowledge of fossils and the evidence they provide of past life on earth**

- Know that fossils provide evidence of plants and animals that lived long ago and nature of the environment at that time
  - How fossils are formed
  - What fossils tell us about the past
- Understand extinction and the roll of humans in a population's extinction

#### **5.1.4 (SCSD) Understand and apply knowledge of weather and weather patterns (I,D,M)**

- Know that weather is always changing and can be described by measurable quantities (I,D,M)
  - Temperature (I,D,M)
  - Wind direction (I,D,M)
  - Speed (I,D,M)
  - Precipitation (D,M)
- Know that large masses of air with certain properties move across the surface of the earth. The movement and interactions of these air masses is used to forecast the weather(I,D,M)
  - Describe air pressure and wind (I,D,M)
  - Describe air masses and fronts (I,D,M)
  - Describe a severe storm (I,D,M)
- Know that climate is defined by weather pattern over a period of time (I,D,M)
  - Describe climate (I,D,M)

#### **5.1.5 (SCSD) Understands and apply knowledge of the properties, movements, and locations of objects in our solar system**




- Know that most objects in the solar system are in regular and predictable motion
  - Earth's rotation on its axis 24 hours (day and night)
  - The sun **appears** to move across the sky in the same way every day. Its apparent path changes slowly across the seasons
  - The moon's orbit around the earth once in about 28 days
    - Changes what part of the moon is lighted by the sun
    - Changes how much of that part can be seen from the earth (phases)
  - Eight planets and many other objects revolve around our Sun in predictable patterns
    - Planets and objects are composed of varied materials

## **5.2 Life Science**

#### **5.2.1 (SCSD) Understand and apply knowledge of organisms and their environment which include:**

- 1) structures, characteristics, and adaptations of organisms that allow them to function and survive within their habitat**
- 2) how individual organisms are influenced by internal and external factors**
- 3) the relationships among living and non-living factors in terrestrial and aquatic ecosystems (I,D,M)**

- Know that plants make their own food (I,D,M)
  - Describe plant cells (I,D,M)
  - Describe photosynthesis (I,D,M)
  - Describe roots, stems, and leaves (I,D,M)
- Know that animals get food by eating other plants and animals (I,D,M)
  - Describe food chains (I,D,M)
  - Describe food webs (I,D,M)
- Know that many kinds of animals have different structures that serve different functions (I,D,M)
  - Classify living things (I,D,M)
  - Identify animal kingdoms (I,D,M)
  - Describe the structure and functions of cells, tissues, and organ systems in animals (M)
  - Explore that animals must reproduce for their species (I,D,M)

- Describe animal adaptations (I,D,M)
- Know that an organism's pattern of behavior are related to the nature of that organism's environment (I,D,M)
  - All organism live in ecosystems (I,D,M)
  - Describe how populations survive (I,D,M)
    - Kinds and numbers of organisms present (I,D,M)
    - Availability of food and resources (I,D,M)
  - Physical characteristics of the environment (I,D,M)
    - Woodland (I,D,M)
    - Rain forest (I,D,M)
    - Desert (I,D,M)
    - Arctic (I,D,M)
    -  Tundra (I,D,M)
    - Water habitats (I,D,M)
      -  Freshwater (I,D,M)
      -  Marine (I,D,M)
  - Describe how ecosystems change(I,D,M)
  - When environment changes some plants and animals (I,D,M)
    - Survive (I,D,M)
    - Reproduce (I,D,M)
    - Move to a new location (I,D,M)
    - Die (I,D,M)
- Know that all organisms cause changes in the environment in which they live (I,D,M)
  - Detrimental to themselves or other organisms (I,D,M)
  - Beneficial to themselves or other organisms(I,D,M)

#### **5.2.2 (SCSD) Understand and apply knowledge of environmental stewardship (D)**

- Know that humans change environment (D)
  - Detrimental to themselves or other organisms (D)
  - Beneficial to themselves or other organisms (D)

#### **5.2.3 (SCSD) Understand and apply knowledge of basic human body systems and how they work together**

- Know that human organism has systems which interact with one another
  - Circulatory
  - Respiratory
  - Digestive
  - Musculoskeletal

#### **5.2.4 (SCSD) Understand and apply knowledge of personal health and wellness issues (M)**

- Know and demonstrate good health practices (M)
- Know and demonstrate good social skills (M)
- Know and demonstrate good decision making skills (M)
- Know and identify positive safety procedures and recognizes that media and others influences affect society (M)
- Know and practice healthy behaviors and physical activities (M)

### **5.3 Physical Science**

#### **5.3.1 (SCSD) Understand and apply knowledge of how to describe and identify substances based on characteristic properties (I,D,M)**

- Know that everything is made of matter (I,D,M)
- Know that matter can be classified (I,D,M)
  - Element (a pure substance)(I,D,M)
    - Identify elements (I,D,M)
  - Compound (a chemical union of elements)(I,D,M)
    - Identify compounds (I,D,M)
  - Mixture (two or more different substances mixed together (I,D,M)
    - Identify mixtures (I,D,M)
- Know that it may be necessary to use magnification to observe the component parts of some materials (I,D,M)
- Know that a substance has characteristic properties (Physical or chemical property that helps identify and classify substances)(I,D,M)
  - A mixture of substances often can be separated into the original substances using one or more of the characteristic properties (I,D,M)
  - Freezing/melting point (I,D,M)
  - Boiling/condensing point (I,D,M)
  - Density (I,D,M)
  - Magnetism (I,D,M)
  - Solubility (I,D,M)
- Know that properties of a substance can be measured by using tools and technology (M)
  - Ruler (M)
  - Balances (M)
  - Thermometers (M)
- Know that when a new material (compound) is made by chemically combining two or more materials, it has properties that are different from the original materials (I,D,M)
  - Many different materials can be made from a small number of basic materials (I,D,M)

### **5.3.2 (SCSD) Understand and apply knowledge of states of matter and changes in states of matter (I,D,M))**

- Know that materials can exist in different states (M)
  - Solid (M)
  - Liquid (M)
  - Gas (M)
- Knows that some common materials can be changed from one state to another by heating and cooling (I,D,M)
- Know that all substances can undergo physical and chemical changes (I-3rd) (D,M)
  - Describe physical properties (I-3rd)(D,M)
  - Describe chemical changes (I-3rd) (D,M)
 Describe matter and energy interactions (I-3rd) (D,M)

### **5.3.3 (SCSD) Understand and apply knowledge of the concepts of conservation of mass/matter (M)**

- Know that when something is broken into parts, the parts have the same total mass as the original item (M)

### **5.3.4 (SCSD) Understand and apply knowledge of sound, light, electricity, magnetism, and heat**

- Know that energy is needed to do work and comes in:
  - Types
    - Stored (potential) energy

- Working (kinetic) energy
- Forms of energy
  - Heat (thermal)
  - Light (radiant)
  - Motion (kinetic)
  - Electrical
  - Chemical
  - Nuclear
  - Gravitational
- Sources of energy
  - Renewable ( solar, hydropower, and biomass from plants)
  - Nonrenewable (coal, oil, and natural gas)
- Compare how the six simple machines make work easier
- Know that **sound** is produced when vibrations from objects travel through a medium and are received
  - Sound can vary in volume
  - The pitch of a sound can be varied by changing the rate of vibration
- Know that **light** travels in a straight line until it strikes an object
  - Light can be
    - Reflected by a mirror
    - Refracted by a lens
    - Absorbed by an object
  - Explore colors of light
- Know that **electricity** in circuits can produce light, heat, sound, and magnetic effects
  - Electricity can only flow through a closed circuit
  - Identify the parts needed to make a circuit
- Know that **magnets** attract and repel each other and certain kinds of materials
- Know that **heat** can be produced in many ways
  - Burning
  - Rubbing
  - Mixing substances
  - Heat can move from one object to another by conduction

### 5.3.5 (SCSD) Understand and apply knowledge of how forces are related to an object's motion

- Know that the motion of an object can be described
  - Position
  - Direction
  - Motion
  - Speed
- Know that motion can be measured and represented on a graph
- Know that changes in speed or direction are caused by force
  - The greater the force, the greater the change in motion
  - The more massive an object, the less effect a given force will have in changing its motion

## 5.4 (SCSD) Science as Inquiry (M)

### 5.4.1 (SCSD) Identify and generate questions that can be answered through scientific investigations (M)

- Know how to ask questions that they can answer with scientific knowledge combined with their own observations (M)

- Know how to recognize that different questions lead to different types of investigations (M)

**5.4.2 (SCSD) Recognize that scientists perform different types of investigations depending on the types of question they want to answer**

- Describing objects, events and organisms (M)
- Classifying objects, events and organisms (M)
  - Categories objects by their composition and/or attributes and share results (M)
- Experimenting using a “fair test” (A “fair test” occurs when you change only one factor and keep all others conditions the same)(M)

**5.4.3 (SCSD) Plan and conduct scientific investigations (M)**

- Knows how to engage in
  - systematic observations (M)
  - making accurate measurements (M)
  - identifying and controlling variables (M)
- Know the concept of a “fair test” (experiment) (M)
- Know how to follow appropriate safety procedures when conducting Investigations (M)

**5.4.4 (SCSD) Uses appropriate tools and techniques to gather, process and analyze data (D)**

- Know how to enhance their skills with tools (M)
  - Rulers (M)
  - Thermometers (M)
  - Balances (M)
  - Spring scales (M)
  - Magnifiers (M)
  - Microscopes (M)
- Know how to use tools for conducting investigations (M)
  - Computers (M)
  - Calculators (M)
- Know that the use of appropriate tools is guided by the questions asked and the investigations they design (M)

**5.4.5(SCSD) Incorporate mathematics in scientific inquiry (D)**

- Know that mathematics is used to:
  - Gather data (M)
  - Organize data (M)
  - Present data (M)
  - Construct convincing explanations (M)

**5.4.6 (SCSD) Use evidence to develop reasonable explanations (M)**

- Know what is evidence (M)
- Know how to judge the merits or strength of the data and information used to make explanations (M)
- Know that their explanations should reflect the evidence they have obtained in their investigations (M)
- Know how they should check their explanations against:
  - scientific knowledge (M)
  - their own experience (M)
  - observations of others (M)

**5.4.7 (SCSD) Communicate scientific procedures and explanations (D)**

- Know that with their work and the work of other students they should:
  - Communicate (M)
  - Critique (to judge) (M)
  - Analyze (to study relationships)(M)
- Know that they should share procedures and explanations through various mean of communication (M)
- Know that scientific information can be gathered by a team and shared with others (M)

**5.4.8 (SCSD) Know how to follow appropriate safety procedures when conducting investigations (M)**