

## Science Curriculum

### Grade 6

The Fairfax County Elementary Science Program of Studies is a hands-on, inquiry based curriculum designed to provide students with a basic understanding of scientific investigation as it applies to the concepts of force, motion, and energy; matter; life processes; living systems; resources; Earth patterns, cycles, and change; interrelationships in Earth and space systems. Through science process skills and the practice of experimental design, students will develop abilities to solve problems, communicate, and make connections to science in our everyday world. The program materials include activity-centered units, science trade books, science textbooks, Windows on Science videodiscs, Fresh Science DVDs and specific web sites correlated to each science unit.

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### SCI.G6

#### Standard 1

#### PLAN AND CONDUCT INVESTIGATIONS

The student will plan and conduct investigations.

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#### Benchmark 1.a

##### Use Observations to Make Fine Discriminations Between Similar Objects

The student will plan and conduct investigations in which observations are made involving fine discrimination between similar objects and organisms.



#### Indicator 1.a.1

##### Make observations that exhibit attention to fine detail

Make observations that can be used to discriminate similar objects and organisms, paying attention to fine detail.

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#### Benchmark 1.b

##### Develop a Classification System Based on Multiple Attributes

The student will plan and conduct investigations in which a classification system is developed based on multiple attributes.



#### Indicator 1.b.1

##### Develop a classification key that uses numerous characteristics

Develop a classification key that uses numerous characteristics.

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#### Benchmark 1.c

##### Record Precise and Approximate Measurements

The student will plan and conduct investigations in which precise and approximate measurements are recorded.



#### Indicator 1.c.1

##### Make precise and consistent measurements and estimations

Make precise and consistent measurements and estimations.

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#### Benchmark 1.d

##### Use Scale Models to Estimate Distance, Volume and Quantity

The student will plan and conduct investigations in which scale models are used to estimate distance, volume, and quantity.



#### Indicator 1.d.1

##### Create scale models to demonstrate distance, volume and quantity


Create approximate scale models to demonstrate an understanding of distance, volume, and quantity.

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 **Benchmark 1.e**

**Identify Independent and Dependent Variables from a Hypothesis**

The student will plan and conduct investigations in which hypotheses are stated in ways that identify the independent (manipulated) and dependent (responding) variables.

 **Indicator 1.e.1**

**Differentiate independent from dependent variables in a hypothesis**


Differentiate between independent (manipulated) and dependent (responding) variables in a hypothesis.

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 **Benchmark 1.f**


**Devise a Method to Test the Validity of Predictions and Inferences**

The student will plan and conduct investigations in which a method is devised to test the validity of predictions and inferences.

 **Indicator 1.f.1**

**Compare and contrast predictions and inferences**

Compare and contrast predictions and inferences.

 **Indicator 1.f.2**

**Analyze and judge the data used in making predictions and inferences**

Analyze and judge the evidence, observations, scientific principles, and data used in making predictions and inferences.

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 **Benchmark 1.g**

**Repeat Trials of Investigations in Which One Variable is Manipulated**

The student will plan and conduct investigations in which one variable is manipulated over time, using many repeated trials.

 **Indicator 1.g.1**

**Design an experiment in which one variable is manipulated**


Design an experiment in which one variable is manipulated over many trials.

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 **Benchmark 1.h**

**Use Appropriate Metric Measurements for Data Collection and Analysis**

The student will plan and conduct investigations in which data are collected, recorded, analyzed and reported using appropriate metric measurements.

 **Indicator 1.h.1**

**Use metric terminology to collect, record, analyze, and report data**

Use metric terminology to collect, record, analyze, and report data.

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 **Benchmark 1.i**

**Organize and Communicate Data Through Graphs, Charts and Diagrams**

The student will plan and conduct investigations in which data are organized and communicated through graphical representation (graphs, charts, and diagrams).



#### Indicator 1.i.1

#### **Organize and communicate data using graphs, charts and diagrams**

Organize and communicate data, using graphs (bar, line, and circle), charts, and diagrams.

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#### Benchmark 1.j

#### **Design Models to Explain a Sequence**

The student will plan and conduct investigations in which models are designed to explain a sequence.



#### Indicator 1.j.1

#### **Design a model that explains a sequence of events**

Design a model that explains a sequence, for example, the sequence of events involved in the process of photosynthesis.

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#### Benchmark 1.k

#### **Understand the Nature of Science**

The student will plan and conduct investigations in which an understanding of the nature of science is developed and reinforced.



#### Indicator 1.k.1

#### **Propose hypotheses or predictions from observed patterns**

Propose hypotheses or predictions from observed patterns.

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### SCI.G6

#### Standard 2

#### **ENERGY: SOURCES, ORIGINS, TRANSFORMATIONS AND USES**

**The student will investigate and understand basic sources of energy, their origins, transformations and uses.**

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#### Benchmark 2.a

#### **Understand Potential and Kinetic Energy**

The student will investigate and understand potential and kinetic energy.



#### Indicator 2.a.1

#### **Compare and contrast potential and kinetic energy**

Compare and contrast potential and kinetic energy through common examples found in the natural environment.

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#### Benchmark 2.b

#### **Understand the Role of the Sun in the Formation of Energy Sources**

The student will investigate and understand the role of the sun in the formation of most energy sources on Earth.



#### Indicator 2.b.1

#### **Recognize the fundamental role of the sun in forming energy sources**

Recognize that the sun plays a fundamental role in the formation of most energy sources on Earth.

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#### Benchmark 2.c

#### **Understand Nonrenewable Energy Sources**

The student will investigate and understand nonrenewable energy sources (fossil fuels, including petroleum, natural gas and coal).



**Indicator 2.c.1**

**Apply basic terminology related to nonrenewable energy sources**

Comprehend and apply basic terminology related to nonrenewable energy sources.



**Indicator 2.c.2**

**Compare and contrast nonrenewable energy sources**

Compare and contrast nonrenewable energy sources in terms of their origins, how they are utilized, and their availability.



**Indicator 2.c.3**

**Analyze the advantages & disadvantages of nonrenewable energy sources**

Analyze the advantages and disadvantages of using various nonrenewable energy sources.



**Indicator 2.c.4**

**Analyze how the United States' energy use has changed over time**

Analyze and describe how the United States' energy use has changed over time.



**Indicator 2.c.5**

**Predict the impact of unanticipated energy shortages**

Predict the impact of unanticipated energy shortages.



**Benchmark 2.d**

**Understand Renewable Energy Sources**

The student will investigate and understand renewable energy sources (wood, wind, hydro, geothermal, tidal and solar).



**Indicator 2.d.1**

**Apply basic terminology related to renewable energy sources**

Comprehend and apply basic terminology related to renewable energy sources.



**Indicator 2.d.2**

**Compare and contrast renewable and nonrenewable energy sources**

Compare and contrast renewable and nonrenewable energy sources.



**Indicator 2.d.3**

**Design an application of the use of solar and wind energy**

Design an application of the use of solar and wind energy.



**Indicator 2.d.4**

**Compare and contrast renewable energy sources**

Compare and contrast renewable energy sources in terms of their origins, how they are utilized, and their availability.



**Indicator 2.d.5**

**Analyze advantages and disadvantages of renewable energy sources**

Analyze the advantages and disadvantages of using various renewable energy sources.



**Benchmark 2.e**

**Understand Energy Transformations**

The student will investigate and understand energy transformations (heat/light to mechanical, chemical, and electrical energy).

**Indicator 2.e.1****Apply basic terminology related to energy transformations**

Comprehend and apply basic terminology related to energy transformations.

**Indicator 2.e.2****Create and interpret a model or diagram of an energy transformation**

Create and interpret a model or diagram of an energy transformation.

**Indicator 2.e.3****Describe the energy transformations of fossil fuels**

Analyze and describe the transformations of energy involved with the formation and burning of coal and other fossil fuels.

**Indicator 2.e.4****Demonstrate light energy transforming into other forms of energy**

Design an investigation that demonstrates light energy being transformed into other forms of energy.

**Indicator 2.e.5****Chart and analyze the energy a person uses during a 24-hour period**

Chart and analyze the energy a person uses during a 24-hour period and determine the sources.

**Indicator 2.e.6****Construct & identify complete, incomplete, series & parallel circuits**

*Construct and identify complete, incomplete, and series and parallel circuits.*

**Indicator 2.e.7****Read and draw schematic circuit diagrams**

*Read and draw schematic circuit diagrams using common electrical symbols.*

**Indicator 2.e.8****Demonstrate how properties of a wire affect the flow of electricity**

*Demonstrate how length, diameter, and composition of a wire affect the flow of electricity in a circuit.*

**Indicator 2.e.9****Compare and contrast alternating and direct currents**

*Compare and contrast alternating and direct currents.*

**Indicator 2.e.10****Differentiate between volts and amps**

*Differentiate between volts and amps.*

**SCI.G6****Standard 3****SOLAR ENERGY'S EFFECT ON EARTH'S ATMOSPHERE, HYDROSPHERE AND SURFACE**

The student will investigate and understand the role of solar energy in driving most natural processes within the atmosphere, the hydrosphere, and on the Earth's surface.

**Benchmark 3.a****Understand the Earth's Energy Budget**

The student will investigate and understand the Earth's energy budget.

**Indicator 3.a.1****Analyze a chart or diagram showing the Earth's energy budget**

Analyze and interpret a chart or diagram showing the Earth's energy budget.



### **Indicator 3.a.2**

#### **Analyze, model, and explain the Greenhouse Effect**

Analyze, model, and explain the Greenhouse Effect in terms of the energy entering and leaving the atmosphere.

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### **Benchmark 3.b**

#### **Understand How Radiation and Convection Distribute Energy**

The student will investigate and understand the role of radiation and convection in the distribution of energy.



### **Indicator 3.b.1**

#### **Apply basic terminology related to solar energy**

Comprehend and apply basic terminology related to solar energy, including wavelength; ultraviolet, visible, and infrared radiation; and reflection and absorption.



### **Indicator 3.b.2**

#### **Investigate to determine sunlight's effect on the heating of a surface**

Design an investigation to determine the effect of sunlight on the heating of a surface.



### **Indicator 3.b.3**

#### **Recognize convection as a cyclic rising/falling pattern**

Recognize convection as the cyclic rising/falling pattern produced when warm air or water is coupled with cooler air or water.

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### **Benchmark 3.c**

#### **Understand the Motion of the Atmosphere and the Oceans**

The student will investigate and understand the motion of the atmosphere and the oceans.



### **Indicator 3.c.1**

#### **Explain how convection currents occur and distribute heat energy**

Analyze and explain how convection currents occur and how they distribute heat energy in the atmosphere and oceans.

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### **Benchmark 3.d**

#### **Understand Cloud Formation**

The student will investigate and understand cloud formation.



### **Indicator 3.d.1**

#### **Analyze the role of heating and cooling in the formation of clouds**

Analyze the role of heating and cooling in the formation of clouds.



### **Indicator 3.d.2**

#### **Order the sequence of events that takes place in cloud formation**

Order the sequence of events that takes place in the formation of a cloud.

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### **Benchmark 3.e**

#### **Understand the Role of Heat Energy in Thunderstorms and Hurricanes**

The student will investigate and understand the role of heat energy in weather-related phenomena including thunderstorms and hurricanes.



### Indicator 3.e.1

#### Recognize the role of heat energy in producing weather phenomena

Recognize the role of heat energy in producing weather phenomena such as thunderstorms and hurricanes.

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## SCI.G6

### Standard 4

#### ALL MATTER IS MADE UP OF ATOMS

The student will investigate and understand that that all matter is made up of atoms.

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### Benchmark 4.a

#### Understand that Atoms are Made up of Electrons, Protons and Neutrons

The student will investigate and understand that atoms are made up of electrons, protons and neutrons.



### Indicator 4.a.1

#### Create and interpret a simplified model of the structure of an atom

Create and interpret a simplified model of the structure of an atom.

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### Benchmark 4.b

#### Understand that Atoms of any Element are Alike

The student will investigate and understand that atoms of any element are alike but are different from atoms of other elements.



### Indicator 4.b.1

#### Compare and contrast the atomic structure of two different elements

Compare and contrast the atomic structure of two different elements.



### Indicator 4.b.2

#### Recognize that atoms of any element are alike

Recognize that atoms of any element are alike but are different from atoms of other elements.

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### Benchmark 4.c

#### Understand that Elements May Be Represented by Chemical Symbols

The student will investigate and understand that elements may be represented by chemical symbols.



### Indicator 4.c.1

#### Explain that elements are represented by symbols

Explain that elements are represented by symbols.

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### Benchmark 4.d

#### Understand that Two or More Atoms May Be Chemically Combined

The student will investigate and understand that two or more atoms may be chemically combined.



### Indicator 4.d.1

#### Recognize that two or more atoms may be chemically combined

Recognize that two or more atoms may be chemically combined.

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 **Benchmark 4.e**

**Understand that Compounds May Be Represented by Chemical Formulas**

The student will investigate and understand that compounds may be represented by chemical formulas.

 **Indicator 4.e.1**

**Identify the name and number of each element in a molecule or compound**

Identify the name and number of each element present in a simple molecule or compound, such as O<sub>2</sub>, H<sub>2</sub>O, CO<sub>2</sub>, or CaCO<sub>3</sub>.

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 **Benchmark 4.f**

**Understand that Chemical Equations Are Used to Model Chemical Changes**

The student will investigate and understand that chemical equations can be used to model chemical changes.

 **Indicator 4.f.1**

**Model a simple chemical change with an equation**

Model a simple chemical change with an equation and account for all atoms.

 **Indicator 4.f.2**

**Distinguish the types & number of each element in a chemical equation**

Distinguish the types of elements and number of each element in the chemical equation.

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 **Benchmark 4.g**

**Understand that a Limited Number of Elements Comprise the Earth**

The student will investigate and understand that a limited number of elements comprise the largest portion of the solid Earth, living matter, the oceans, and the atmosphere.

 **Indicator 4.g.1**

**Name some of the predominant elements found in the atmosphere & Earth**

Name some of the predominant elements found in the atmosphere, the oceans, living matter, and the Earth's crust.

 **Indicator 4.g.2**

**Recognize that a limited number of elements comprise our world**

Recognize that a limited number of elements comprise the largest portion of the solid Earth, living matter, the oceans, and the atmosphere.

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 **SCI.G6**

**Standard 5**

**UNIQUE PROPERTIES OF WATER AND ITS ROLES IN THE ENVIRONMENT**

**The student will investigate and understand the unique properties and characteristics of water and its roles in the natural and human-made environment.**

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 **Benchmark 5.a**

**Understand Water as the Universal Solvent**

The student will investigate and understand water as the universal solvent.

 **Indicator 5.a.1**

**Apply key terminology related to water and its properties and uses**

Comprehend and apply key terminology related to water and its properties and uses.



### Indicator 5.a.2

#### **Demonstrate the ability of water to dissolve materials**

Design an investigation to demonstrate the ability of water to dissolve materials.

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### Benchmark 5.b

#### **Understand the Properties of Water in all Three States**

The student will investigate and understand the properties of water in all three states.



### Indicator 5.b.1

#### **Model and explain the shape and composition of a water molecule**

Model and explain the shape and composition of a water molecule.



### Indicator 5.b.2

#### **Determine the relative density of liquid and solid water**

Design an investigation to determine the relative density of liquid and solid water at various temperatures.



### Indicator 5.b.3

#### **Compare the relative densities of liquid and solid water**

Compare the relative densities of liquid and solid water.



### Indicator 5.b.4

#### **Comprehend the adhesive and cohesive properties of water**

Comprehend the adhesive and cohesive properties of water.



### Indicator 5.b.5

#### **Determine the effects of heat on the states of water**

Design an investigation to determine the effects of heat on the states of water.



### Indicator 5.b.6

#### **Model and explain why ice is less dense than liquid water**

Model and explain why ice is less dense than liquid water.

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### Benchmark 5.c

#### **Understand the Action of Water in Physical and Chemical Weathering**

The student will investigate and understand the action of water in physical and chemical weathering.



### Indicator 5.c.1

#### **Model the action of freezing water on rock material**

Design an investigation to model the action of freezing water on rock material.



### Indicator 5.c.2

#### **Model the action of acidified water on building materials**

Design an investigation to model the action of acidified water on building materials such as concrete, limestone, or marble.



### Indicator 5.c.3

#### **Chart, record and describe evidence of chemical weathering**

Chart, record, and describe evidence of chemical weathering in the local environment.


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### Benchmark 5.d



## **Understand the Ability of Large Bodies of Water to Store Heat**


The student will investigate and understand the ability of large bodies of water to store heat and moderate climate.



### **Indicator 5.d.1**

#### **Analyze the difference between coastal and inland winter temperatures**

Analyze and explain the difference in average winter temperatures among areas in central and western Virginia and cities and counties along the Chesapeake Bay and Atlantic coast.



### **Indicator 5.d.2**

#### **Explain the ability of large bodies of water to store heat**


Explain the ability of large bodies of water to store heat and moderate climate.

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## **Benchmark 5.e** **Understand the Origin and Occurrence of Water on Earth**

The student will investigate and understand the origin and occurrence of water on Earth.



### **Indicator 5.e.1**

#### **Relate the three states of water to the water cycle**


Relate the three states of water to the water cycle.

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## **Benchmark 5.f** **Understand the Importance of Water for Agriculture, Power & Health**


The student will investigate and understand the importance of water for agriculture, power generation, and public health.



### **Indicator 5.f.1**

#### **Investigate to determine the presence of water in plant material**

Design an investigation to determine the presence of water in plant material (e.g., a fruit).



### **Indicator 5.f.2**

#### **Explain the role of water in power generation**


Explain the role of water in power generation.

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## **Benchmark 5.g** **Understand the Importance of Protecting & Maintaining Water Resources**


The student will investigate and understand the importance of protecting and maintaining water resources.



### **Indicator 5.g.1**

#### **Infer how the unique properties of water are key to life processes**

Infer how the unique properties of water are key to the life processes of organisms.



### **Indicator 5.g.2**

#### **Describe the importance of careful management of water resources**

Describe the importance of careful management of water resources.

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The student will investigate and understand the properties of air and the structure and dynamics of the Earth's atmosphere.

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 **Benchmark 6.a**

**Understand Air as a Mixture of Gaseous Elements and Compounds**

The student will investigate and understand air as a mixture of gaseous elements and compounds.

 **Indicator 6.a.1**

**Apply basic terminology related to air and the atmosphere**

Comprehend and apply basic terminology related to air and the atmosphere.

 **Indicator 6.a.2**

**Identify the composition & physical characteristics of the atmosphere**


Identify the composition and physical characteristics of the atmosphere.

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 **Benchmark 6.b**


**Understand Air Pressure, Temperature and Humidity**

The student will investigate and understand air pressure, temperature, and humidity.

 **Indicator 6.b.1**

**Analyze charts and graphs of the atmosphere's temperature and pressure**

Analyze and interpret charts and graphs of the atmosphere in terms of temperature and pressure.

 **Indicator 6.b.2**

**Measure and record air temperature, air pressure and humidity**


Measure and record air temperature, air pressure, and humidity, using appropriate units of measurement and tools.

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 **Benchmark 6.c**

**Understand How the Atmosphere Changes with Altitude**

The student will investigate and understand how the atmosphere changes with altitude.

 **Indicator 6.c.1**

**Recognize that as altitude increases temperature decreases**


Recognize that as altitude increases temperature decreases.

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 **Benchmark 6.d**

**Understand Natural and Human-Caused Changes to the Atmosphere**

The student will investigate and understand natural and human-caused changes to the atmosphere.

 **Indicator 6.d.1**

**Analyze some of the effects of natural events and human activities**

Analyze and explain some of the effects that natural events and human activities may have on weather, atmosphere, and climate.

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 **Benchmark 6.e**

**Understand the Relationship of Atmospheric Measures and Weather**

The student will investigate and understand the relationship of atmospheric measures

and weather conditions.



**Indicator 6.e.1**

**Relate temperature, pressure & humidity to changing weather conditions**

Design an investigation to relate temperature, barometric pressure, and humidity to changing weather conditions.



**Indicator 6.e.2**

**Compare and contrast cloud types**

Compare and contrast cloud types.



**Indicator 6.e.3**

**Relate cloud types to weather conditions**

Relate cloud types to weather conditions.



**Indicator 6.e.4**

**Compare and contrast types of precipitation**

Compare and contrast types of precipitation.



**Indicator 6.e.5**

**Compare and contrast weather-related phenomena**

Compare and contrast weather-related phenomena, including thunderstorms, tornadoes, hurricanes and drought.



**Benchmark 6.f**

**Understand Basic Information from Weather Maps**

The student will investigate and understand basic information from weather maps including fronts, systems, and basic measurements.



**Indicator 6.f.1**

**Map the movement of cold and warm fronts and interpret their effects**

Map the movement of cold and warm fronts and interpret their effects on observable weather conditions.



**Indicator 6.f.2**

**Interpret basic weather maps and make forecasts**

Interpret basic weather maps and make forecasts based on the information presented.



**Benchmark 6.g**

**Understand the Importance of Protecting and Maintaining Air Quality**

The student will investigate and understand the importance of protecting and maintaining air quality.



**Indicator 6.g.1**

**Understand the importance of protecting and maintaining air quality**

Understand the importance of protecting and maintaining air quality.



**Indicator 6.g.2**

**Evaluate their own roles in protecting air quality**

Evaluate their own roles in protecting air quality.



**SCI.G6**

**Standard 8**

**SOLAR SYSTEM ORGANIZATION & RELATIONSHIPS AMONG ITS COMPONENTS**


The student will investigate and understand the organization of the solar system and the relationships among the various bodies that comprise it.

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 **Benchmark 8.a**

**Understand the Sun, Moon, Earth, Planets, Meteors, Asteroids & Comets**

The student will investigate and understand the sun, moon, Earth, other planets and their moons, meteors, asteroids, and comets.

 **Indicator 8.a.1**


**Describe the nine planets and their relative positions from the sun**

Describe the nine planets and their relative positions from the sun.

 **Indicator 8.a.2**

**Describe the sun, moon, Earth, and other planets and their moons**


Describe the sun, moon, Earth, and other planets and their moons.

 **Indicator 8.a.3**

**Identify the characteristics of meteors, asteroids and comets**


Identify the characteristics of meteors, asteroids and comets.

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 **Benchmark 8.b**

**Understand the Relative Size and Distance Between Planets**


The student will investigate and understand the relative size of and distance between planets.

 **Indicator 8.b.1**

**Design and interpret a scale model of the solar system**


Design and interpret a scale model of the solar system. (A scale model may be a physical representation of an object or concept. It can also be a mathematical representation that uses factors such as ratios, proportions and percentages.)

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 **Benchmark 8.c**

**Understand the Role of Gravity**

The student will investigate and understand the role of gravity.

 **Indicator 8.c.1**

**Explain the role of gravity in the solar system**


Explain the role of gravity in the solar system.

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 **Benchmark 8.d**


**Understand Revolution and Rotation**

The student will investigate and understand revolution and rotation.

 **Indicator 8.d.1**

**Compare and contrast revolution and rotation**

Compare and contrast revolution and rotation.

 **Indicator 8.d.2**

**Apply the terms revolution and rotation to the movements of planets**

Apply the terms revolution and rotation to the relative movements of planets and their moons.



### **Benchmark 8.e**

#### **Understand the Mechanics of Day and Night and the Phases of the Moon**

The student will investigate and understand the mechanics of day and night and the phases of the moon.



#### **Indicator 8.e.1**

##### **Model and describe how day and night occur**

Model and describe how day and night occur.



#### **Indicator 8.e.2**

##### **Model and describe how the phases of the moon occur**

Model and describe how the phases of the moon occur.



### **Benchmark 8.f**

#### **Understand the Unique Properties of Earth as a Planet**

The student will investigate and understand the unique properties of Earth as a planet.



#### **Indicator 8.f.1**

##### **Describe the unique characteristics of planet Earth**

Describe the unique characteristics of planet Earth.



### **Benchmark 8.g**

#### **Understand the Relationship of the Earth's Tilt and the Seasons**

The student will investigate and understand the relationship of the Earth's tilt and the seasons.



#### **Indicator 8.g.1**

##### **Describe how the Earth's tilt and its annual orbit cause the seasons**

Model and describe how the Earth's axial tilt and its annual orbit around the sun cause the seasons.



### **Benchmark 8.h**

#### **Understand the Cause of Tides**

The student will investigate and understand the cause of tides.



#### **Indicator 8.h.1**

##### **Relate the gravitational pull of the moon to the cycle of tides**

Discuss the relationship between the gravitational pull of the moon and the cycle of tides.



### **Benchmark 8.i**

#### **Understand the History and Technology of Space Exploration**

The student will investigate and understand the history and technology of space exploration.



#### **Indicator 8.i.1**

##### **Compare the Ideas of Ptolemy, Aristotle, Copernicus and Galileo**

Compare and contrast the ideas of Ptolemy, Aristotle, Copernicus and Galileo related to the solar system.



### Indicator 8.i.2

#### Interpret a timeline highlighting solar system exploration

Create and interpret a timeline highlighting the advancements in solar system exploration over the past half century. This should include information on the first modern rockets, artificial satellites, orbital missions, missions to the moon, Mars robotic explorers, and exploration of the outer planets.



## SCI.G6

### Standard 9

#### PUBLIC POLICY DECISIONS RELATING TO THE ENVIRONMENT

The student will investigate and understand public policy decisions relating to the environment.



### Benchmark 9.a

#### Understand Management of Renewable Resources - Water, Air, Soil, etc.

The student will investigate and understand management of renewable resources (water, air, soil, plant life, animal life).



### Indicator 9.a.1

#### Analyze how renewable resources are used and managed

Analyze how renewable resources are used and managed within the home, school, and community.



### Indicator 9.a.2

#### Describe the role of conservation professionals in managing resources

Describe the role of local and state conservation professionals in managing natural resources. These include wildlife protection; forestry and waste management; and air, water, and soil conservation.



### Indicator 9.a.3

#### Evaluate the impact of renewable resource use in school and at home

Evaluate the impact of renewable resource use in the school and home environment.



### Benchmark 9.b

#### Understand Management of Nonrenewable Resources - Coal, Oil, etc.

The student will investigate and understand the management of nonrenewable resources (coal, oil, natural gas, nuclear power, mineral resources).



### Indicator 9.b.1

#### Analyze how nonrenewable resources are used and managed

Analyze how nonrenewable resources are used and managed within the home, school, and community.



### Indicator 9.b.2

#### Differentiate between renewable and nonrenewable resources

Differentiate between renewable and nonrenewable resources.



### Indicator 9.b.3

#### Evaluate the impact of nonrenewable resource use in school & at home

Evaluate the impact of nonrenewable resource use in the school and home environment.



### Benchmark 9.c

#### Understand the Mitigation of Land-Use and Environmental Hazards

The student will investigate and understand the mitigation of land-use and environmental hazards through preventive measures.

**Indicator 9.c.1****Evaluate the impact of waste management and pollution prevention**

Evaluate the impact of waste management and pollution prevention in the school and home environment.

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**Benchmark 9.d****Understand the Cost/Benefit Tradeoffs in Conservation Policies**

The student will investigate and understand the cost/benefit tradeoffs in conservation policies.

**Indicator 9.d.1****Analyze resource-use options in everyday activities & waste generation**

Analyze resource-use options in everyday activities and determine how personal choices have costs and benefits related to the generation of waste.

**Indicator 9.d.2****Analyze reports & media articles about waste management & resource use**

Analyze reports, media articles, and other narrative materials related to waste management and resource use to determine various perspectives concerning the costs/benefits in real-life situations.