

Science Curriculum

Grade 2

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, Windows on Science videodiscs, Fresh Science DVDs and specific web sites correlated to each science unit.



SCI.G2

Standard 1

CONDUCT INVESTIGATIONS

The student will conduct investigations.



Benchmark 1.a

Conduct Investigations to Understand Observations and Conclusions

The student will conduct investigations in which observation is differentiated from personal interpretations, and conclusions are drawn based on observations.



Indicator 1.a.1

Differentiate among simple observations and personal interpretations

Differentiate among simple observations and personal interpretations. This requires students to comprehend what an observation is and apply the term in novel situations related to second grade SOL concepts.



Benchmark 1.b

Repeat Observations to Ensure Accuracy

The student will conduct investigations in which observations are repeated to ensure accuracy.



Indicator 1.b.1

Experiment, predict, gather data, repeat observations, conclude

Conduct simple experiments, make predictions, gather data from those experiments, repeat observations to improve accuracy, and draw conclusions.



Benchmark 1.c

Classify Items Using Two or More Attributes

The student will conduct investigations in which two or more attributes are used to classify items.



Indicator 1.c.1

Classify items using two or more attributes such as size, color, etc.

Classify items, using two or more attributes such as size, color, texture, and weight.



Indicator 1.c.2

Analyze sets of objects & create basic categories to organize the data

Analyze sets of objects, numerical data, or pictures, and create basic categories to organize the data (descriptive or numerical).

Benchmark 1.d



Investigate to Define the Conditions which Influence a Change

The student will conduct investigations in which conditions that influence a change are defined.



Indicator 1.d.1

Define conditions that influence a change

Define conditions that influence a change.



Benchmark 1.e

Make Measurements in Metric Units and Standard English Units

The student will conduct investigations in which length, volume, mass, and temperature measurements are made in metric units (centimeters, meters, liters, degrees Celsius, grams, kilograms) and standard English units (inches, feet, yards, cups, pints, quarts, gallons, degrees Fahrenheit, ounces, pounds).



Indicator 1.e.1

Use centimeters, meters, liters, degrees Celsius, grams and kilograms

Use centimeters, meters, liters, degrees Celsius, grams, and kilograms in measurement.



Indicator 1.e.2

Use inches, feet, yards, quarts, gallons, degrees F, ounces and pounds

Use inches, feet, yards, quarts, gallons, degrees Fahrenheit, ounces, and pounds in measurement.



Benchmark 1.f

Construct Picture and Bar Graphs Using Numbered Axes

The student will conduct investigations in which pictures and bar graphs are constructed using numbered axes.



Indicator 1.f.1

Construct and interpret picture and bar graphs with numbered axes

Construct and interpret picture and bar graphs with numbered axes depicting the distribution of data.



Benchmark 1.g

Recognize Unexpected or Unusual Quantitative Data

The student will conduct investigations in which unexpected or unusual quantitative data are recognized.



Indicator 1.g.1

Judge which, if any, collected data appear to be unexpected or unusual

Judge which, if any, collected data in a small set appear to be unexpected or unusual.



Benchmark 1.h

Construct Simple Physical Models

The student will conduct investigations in which simple physical models are constructed.



Indicator 1.h.1

Construct and interpret simple models

Construct and interpret simple models (for example, weathering and erosion of land surfaces —



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Standard 2

MAGNETS HAVE CHARACTERISTICS & ATTRACT SPECIFIC TYPES OF METALS

The student will investigate and understand that natural and artificial magnets have certain characteristics and attract specific types of metals.



Benchmark 2.a

Understand Magnetism, Iron, Magnetic/Nonmagnetic, Poles, Attract/Repel

The student will investigate and understand magnetism, iron, magnetic/nonmagnetic, poles, and attract/repel.



Indicator 2.a.1

Predict and classify materials by their attraction to magnets

Predict which materials will be attracted to magnets, test the predictions, and create a chart that shows the results, classifying materials as to whether they are attracted to magnets or not.



Indicator 2.a.2

Compare natural magnets (lodestone or magnetite) & artificial magnets

Compare natural magnets (lodestone or magnetite) and artificial magnets.



Indicator 2.a.3

Identify the north and south magnetic poles of magnets

Identify the north and south magnetic poles of magnets.



Indicator 2.a.4

Determine how the different poles of magnets react to other magnets

Conduct an investigation to determine how the different poles of magnets react to the poles of other magnets.



Benchmark 2.b

Understand Important Applications of Magnetism (Magnetic Compass)

The student will investigate and understand important applications of magnetism including the magnetic compass.



Indicator 2.b.1

Use magnetic compasses to determine the directions of north and south

Use magnetic compasses to determine the directions of north and south poles.



Indicator 2.b.2

Identify important applications of magnets in everyday life

Identify important applications of magnets in everyday life:

- refrigerator magnets and chalkboard letters
- toys
- door latches
- paper clip holders




Indicator 2.b.3

Create a new application for using a magnet

Create a new application for using a magnet.

 **Standard 3****BASIC PROPERTIES OF SOLIDS, LIQUIDS AND GASES**

The student will investigate and understand basic properties of solids, liquids and gases.

 **Benchmark 3.a**
Understand Mass and Volume


The student will investigate and understand mass and volume.

 **Indicator 3.a.1**
Measure the mass of solids and the volume of liquids

Measure the mass of solids and the volume of liquids in metric and standard English units.

 **Benchmark 3.b**
Understand Changes in Matter From One State to Another

The student will investigate and understand processes involved with changes in matter from one state to another (condensation, evaporation, melting, and freezing).

 **Indicator 3.b.1**
Classify materials as to whether they are liquids, solids, or gases

Classify materials as to whether they are liquids, solids, or gases.

 **Indicator 3.b.2**
Investigate to determine factors that affect the evaporation of water

Design an investigation to determine basic factors that affect the evaporation of water.

 **Indicator 3.b.3**
Describe the transformation of matter from one state to another

Examine and describe the transformation of matter from one state to another, i.e., solid water (ice) to liquid (water) to gas (steam).

 **Indicator 3.b.4**
Conduct an investigation to observe the condensation of water

Conduct an investigation to observe the condensation of water.

 **Indicator 3.b.5**
Identify examples of condensation, evaporation, melting and freezing

Describe and identify examples of condensation, evaporation, melting, and freezing of water.

 **Indicator 3.b.6**
Identify the uses of water in the home and at school

Identify the uses of water in the home and at school.

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Standard 4**PLANTS AND ANIMALS UNDERGO A SERIES OF CHANGES IN THEIR LIFE CYCLES**

The student will investigate and understand that plants and animals undergo a series of orderly changes in their life cycles.

 **Benchmark 4.a**
Understand that Some Animals Go Through Stages During Their Lives

The student will investigate and understand that some animals (frogs and butterflies) undergo distinct stages during their lives, while others generally resemble their parents.

**Indicator 4.a.1****Describe changes in the life cycle of a frog and a butterfly**

Describe changes in the life cycle of a frog and a butterfly.

**Indicator 4.a.2****Compare and contrast life cycles of a frog and a butterfly**

Compare and contrast life cycles of a frog and a butterfly.

**Indicator 4.a.3****Construct and interpret models/diagrams of animal life cycles**

Construct and interpret models/diagrams of animal life cycles.

**Indicator 4.a.4****Classify mammals, birds, fish, reptiles and amphibians**

Classify mammals, birds, fish, reptiles and amphibians.

**Benchmark 4.b****Understand that Flowering Plants Undergo Many Changes**

The student will investigate and understand that flowering plants undergo many changes, from the formation of the flower to the development of the fruit.

**Indicator 4.b.1****Identify and describe changes in a plant from flower to fruit**

Identify and describe changes in a plant from flower (blossom) to fruit.

**Indicator 4.b.2****Construct and interpret models/diagrams of plant life cycles**

Construct and interpret models/diagrams of plant life cycles.

**SCI.G2****Standard 5****LIVING THINGS ARE PART OF A SYSTEM**

The student will investigate and understand that living things are part of a system.

**Benchmark 5.a****Understand Living Organisms Are Interdependent With Their Surroundings**

The student will investigate and understand that living organisms are interdependent with their living and nonliving surroundings.

**Indicator 5.a.1****Classify objects as to whether they are living or nonliving**

Classify objects as to whether they are living or nonliving.

**Indicator 5.a.2****Describe the nonliving components of an organism's surroundings**

Describe the nonliving components of an organism's surroundings, including water, space, and shelter. (Shelter may be living or nonliving.)

**Indicator 5.a.3****Describe how animals are dependent on their surroundings**

Describe how animals are dependent on their surroundings, for example, how squirrels and other animals are affected by the loss of forest habitat.



Benchmark 5.b

Understand that Habitats Change Over Time Due to Many Influences

The student will investigate and understand that habitats change over time due to many influences.



Indicator 5.b.1

Construct and interpret simple models of different kinds of habitats

Construct and interpret simple models of different kinds of habitats, including a forest and a stream.



Indicator 5.b.2

Describe seasonal changes in habitat & their effects on living things

Predict and describe seasonal changes in habitat and their effects on plants and animals, for example, how trees change through the seasons and how animals respond to changes in the seasons.



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Standard 6

BASIC TYPES, CHANGES AND PATTERNS OF WEATHER

The student will investigate and understand basic types, changes, and patterns of weather.



Benchmark 6.a

Understand Temperature, Wind, Precipitation, Drought, Flood and Storms

The student will investigate and understand temperature, wind, precipitation, drought, flood, and storms.



Indicator 6.a.1

Describe types of precipitation, including rain, snow and ice

Observe and describe types of precipitation, including rain, snow, and ice (sleet and hail).



Indicator 6.a.2

Describe precipitation in terms of evaporation and condensation

Observe and describe precipitation in terms of evaporation and condensation of water.



Indicator 6.a.3

Describe weather in terms of temperature, wind, and precipitation

Describe weather in terms of temperature, wind, and precipitation.



Indicator 6.a.4

Identify common types of storms

Identify common types of storms. Examples include hurricanes, tornadoes, blizzards, and thunderstorms.



Indicator 6.a.5

Compare and contrast droughts and floods

Compare and contrast droughts and floods.



Benchmark 6.b

Understand the Uses & Importance of Measuring & Recording Weather Data

The student will investigate and understand the uses and importance of measuring and recording weather data.

Indicator 6.b.1



Observe and record daily weather conditions

Observe and record daily weather conditions, such as sunny, cloudy, windy, rainy, or snowy.



Indicator 6.b.2

Use weather instruments to measure and record weather data

Measure and record weather data, using weather instruments, including a thermometer, rain gauge, and weather vane (standard English and metric measures).



Indicator 6.b.3

Record daily temperature, using a graph with numbered axes

Record and interpret daily temperature, using a graph with numbered axes.



Indicator 6.b.4

Observe and describe seasonal weather patterns and local variations

Observe and describe seasonal weather patterns and local variations.



Indicator 6.b.5

Evaluate the influence of daily weather on personal activities

Evaluate the influence of daily weather conditions on personal activities and dress.



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Standard 7

WEATHER & SEASONAL CHANGES AFFECT PLANTS, ANIMALS & THEIR SURROUNDINGS

The student will investigate and understand that weather and seasonal changes affect plants, animals and their surroundings.



Benchmark 7.a

Understand the Effects of Weather and Seasons on Growth and Behavior

The student will investigate and understand the effects of weather and seasonal changes on the growth and behavior of living things (migration, hibernation, camouflage, adaptation, dormancy).



Indicator 7.a.1

Identify responses of plants and animals to weather & seasonal changes

Identify growth and behavioral responses of plants and animals to weather and seasonal changes. Examples of responses that are adaptive include migration, hibernation, and dormancy.



Indicator 7.a.2

Identify animals that migrate or hibernate throughout the seasons

Identify animals that migrate, hibernate, or show other changes throughout the seasons or in the presence of adverse environmental conditions.



Indicator 7.a.3

Evaluate the usefulness of camouflage in an animal's habitat

Evaluate the usefulness of camouflage in an animal's habitat (for example, coloration patterns in frogs).



Indicator 7.a.4

Compare and contrast responses of plants & animals to weather changes

Compare and contrast the responses of plants and animals to weather and seasonal changes.



Benchmark 7.b

Understand Weathering and Erosion of the Land Surface

The student will investigate and understand weathering and erosion of the land surface.

 **Indicator 7.b.1**
Describe how weathering and erosion occur

Describe how weathering and erosion occur.

 **Indicator 7.b.2**
Model the effects of weathering and erosion on the land surface

Model the effects of weathering and erosion on the land surface.



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Standard 8

PLANTS PROVIDE OXYGEN, FOOD, USEFUL PRODUCTS AND BENEFITS IN NATURE

The student will investigate and understand that plants produce oxygen and food, are a source of useful products, and provide benefits in nature.

 **Benchmark 8.a**
Understand Important Plant Products

The student will investigate and understand important plant products (fiber, cotton, oil, spices, lumber, rubber, medicines, and paper).

 **Indicator 8.a.1**
Comprehend that plants produce oxygen and food

Comprehend that plants produce oxygen and food.

 **Indicator 8.a.2**
Identify sources & uses of plant products (fiber, cotton, paper, etc.)


Classify and identify the sources and uses of plant products, such as fiber, cotton, oil, spices, lumber, rubber, medicines, and paper.

 **Benchmark 8.b**
Understand that the Availability of Plant Products Affects Development

The student will investigate and understand that the availability of plant products affects the development of a geographic area.

 **Indicator 8.b.1**
Describe plant products grown in Virginia that are useful to people

Describe plant products grown in Virginia that are useful to people, including wood, fruits, and vegetables.

 **Indicator 8.b.2**
List and classify plant products

List and classify plant products.

 **Benchmark 8.c**
Understand that Plants Provide Homes and Food and Prevent Soil Erosion

The student will investigate and understand that plants provide homes and food for many animals and prevent soil from washing away.

 **Indicator 8.c.1**
Compare and contrast ways animals use plants as homes and shelters

Compare and contrast different ways animals use plants as homes and shelters.



Indicator 8.c.2

Interpret a chart illustrating the plant foods consumed by animals

Construct and interpret a chart illustrating the plant foods consumed by different animals.



Indicator 8.c.3

Interpret a model that demonstrates how plants prevent soil erosion

Construct and interpret a model that demonstrates how plants prevent soil erosion.