

Throughout the year

COURSE: Science Grade 4
UNIT: The Scientific Method
CONTACT: athompson@bridgeportedu.net
TIME FRAME: Throughout the year

CODE:
MAP LEVEL: 4
GRADE: 4

PERFORMANCE STANDARDS

SCIENCE - SCIENTIFIC INQUIRY (I)

- B.INQ.1 Students will make observations and ask questions about objects, organisms and the environment.
- B.INQ.2 Students will seek relevant information in books, magazines and electronic sources of information.
- B.INQ.3 Students will design and conduct simple investigations.
- B.INQ.4 Students will employ simple equipment and measuring tools to gather data and extend the senses.
- B.INQ.5 Students will use data to construct reasonable explanations.
- B.INQ.6 Students will analyze, critique and communicate investigations using words, graphs and drawings.

SCIENCE - SCIENTIFIC INQUIRY (I)

- B.INQ.7 Students will read and write a variety of fiction and non-fiction science-related texts.
 - B.INQ.8 Students will search the web and locate relevant science information.
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 - B.ONQ.10 Students will use mathematics to analyze, interpret and present data.
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ESS/FOCUS QUESTIONS

What is the Scientific Method?

How do scientists develop their questions and hypotheses?

Why is it important for scientists to outline a procedure for investigations?

How do scientists collect, record, and communicate data?

CONTENT

Scientific Inquiry

-Search out, describe, explain and predict natural phenomena.

Scientific Process Skills

-Questions, hypothesis, predictions, planning, observations, interpretations, communicate

Scientific Literacy

-Speaking, listening, presenting, interpreting, reading and writing about science.

SKILLS

Raise questions which can be investigated.

Hypothesize to provide an explanation based upon the evidence.

Predict using evidence from previous experiences.

Plan and conduct a scientific investigation.

Observe differences/similarities by making use of the senses.

Interpret and develop conclusions which summarizes the evidence.

Communicate findings and present results in tables, graphs, or charts.

ASSURED EXPERIENCES

Along with science journals, all fourth grade students should be familiar with the process of scientific inquiry and have a thorough understanding of all process skills.

All fourth grade students should know how to use measurement tools, i.e., a balance, graduated cylinder, beaker, and ruler (metric and standard)

ASSESSMENTS

Teacher observations

Science journal/notebook

Tests

Quizzes

Performance based activities

OPTIONAL ACTIVITIES

RESOURCES

Harcourt Text

United streaming:

'Be An Inventor'

'Everyday Science: Discovering the Scientific Method'

'Matter and Its Properties: Measuring Matter'

'Videomath: Size'

Web sites:

www.harcourtschool.com

www.discoveryschool.com

www.unitedstreaming.com

www.nsta.org/ostbc

Excellent Rubric for Science Investigation: www.stclair.k12.il.us/services/scilit/Invstrbr.htm

ADDITIONAL NOTES

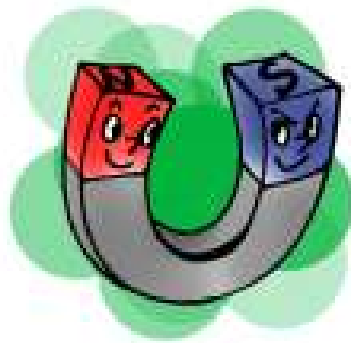
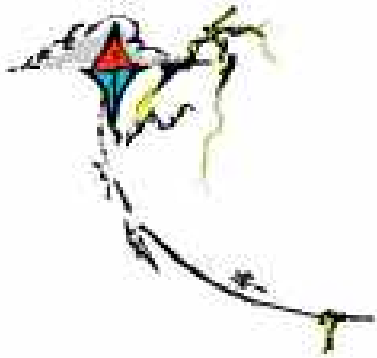
All students should maintain a science journal/notebook to record their data which may include observations, questions, summaries, charts, drawings.

Create a science word wall to house science vocabulary as the terms are introduced throughout the unit of study.

VOCABULARY

Analyze	Constant	Grams	Liter	Milliliter	Scale
Balance	Control	Hypothesis	Mass	Millimeter	Scientific method
Beaker	Data	Inference	Materials	Observations	Thermometer
Celsius	Distance	Kilograms	Meter	Predictions	Variable
Centimeter	Fahrenheit	Kilometer	Meter sticks	Procedure	Volume
Conclusion	Graduated cylinder	Length	Metric rulers	Results	

Electricity, Magnetism and Motion



2nd Marking Period

COURSE: Grade 4 Science
UNIT: Electricity, Magnetism, and Motion
CONTACT: athompson@bridgeportedu.net
TIME FRAME: 2nd Marking Period

CODE:
MAP LEVEL: 4
GRADE: 4

PERFORMANCE STANDARDS

SCIENCE - SCIENTIFIC INQUIRY (I)

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SCIENCE - PHYSICAL SCIENCE (II, III, IV)

- B.8 Students will describe the effects of pushes and pulls on the motion of objects.
- B.9 Students will describe the effect of the mass of an object on its motion.

SCIENCE - SCI & TECH IN SOCIETY (XI)

- B.14 Students will describe how batteries, wires and bulbs can transfer energy to light a light bulb.
 - B.15 Students will explain how simple electrical circuits can be used to determine what materials conduct electricity.
 - B.16 Students will describe the properties of magnets, and how they can be used to identify and separate mixtures of solid materials.
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ESS/FOCUS QUESTIONS

How is electrical and magnetic energy transferred and transformed?

What are the properties of electricity and magnetism?

What makes objects move?

CONTENT

Content Standard 4.1

The position and motion of objects can be changed by pushing or pulling. The size of the change in an object's motion is related to the strength of the push or pull. The more massive an object is, the less effect a given force will have on its motion.

Content Standard 4.4

Electrical and magnetic energy can be transferred and transformed. Electricity in circuits can be transformed into light, heat, sound and magnetic effects. Magnets can make objects move without direct contact between the object and the magnet.

SKILLS

Identify the basic forms of energy.

Recognize that magnets have poles that repel/attract each other.

Identify and list some effects of electric charge.

Compare how conductors and insulators affect electric current.

Determine what materials are good conductors and which are natural insulators.

Identify an electrical circuit.

Explain the difference between series and parallel circuits, as well as open and closed circuits.

Explain the function of circuit breakers.

Describe 2 properties of a magnetic field.

Explain how the Earth is like a magnet.

Evaluate materials to explain why they are good conductors or natural insulators.

Experiment with circuits.

Recognize that electrical power is measured in volts, watts, and kilowatts.

Use magnets to identify and separate mixtures of solid materials.

Explain that changes in speed or direction of motion are caused by forces such as gravity.

Describe Newton's Laws of Motion

Investigate the effect that pushing, pulling, mass, and distance will have upon an object in motion.

Calculate force.

ASSURED EXPERIENCES

Activity #1: "Connecticut Embedded Task"
Let It Flow

Activity #2: "Science Fair"
Participation in the School Science Fair

Activity #3: "Magnetism"
Gather materials such as copper buttons, magnets, pennies, nails (aluminum & steel), paper clip, aluminum foil, nickel, small rocks. Students should predict which items will be attracted to the magnet, test their predictions, and record their observations in their science journal/notebook.

Activity #4: "Motors"
Construct and observe a working electric motor.

Activity #5: "Lab Equipment"
All students should be able to select and use the appropriate lab equipment for measurement, i.e., beaker, graduated cylinder, balance, thermometer.

ASSESSMENTS

Harcourt Assessment Guide

Teacher observations

Science notebook/journal

Investigation activities

Electricity Research Project

Construction of working electrical motor

Tests

Quizzes

OPTIONAL ACTIVITIES

All students should complete a research project on an individual who made a significant contribution to our world of electricity (for example, Thomas Edison, Michael Faraday, Granville T. Woods, and Ben Franklin).

RESOURCES

Harcourt Text

United Streaming:

'Getting to Know Electricity'

'Hot Line: All About Electricity'

'Laws of Motion'

'Let's Move It: Newton's Laws of Motion'

Websites:

www.harcourtschool.com

www.discoveryschool.com

www.unitedstreaming.com

ADDITIONAL NOTES

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Create a science word wall to house science vocabulary as the terms are introduced throughout the unit of study.

VOCABULARY

Attract	Inertia	Pull
Circuit	Insulator	Push
Conductor	Magnet	Repel
Current	Magnetic Field	Resistance
Electrons	Mass	Static Electricity
Force	Negative (-)	Switch
Friction	Positive (+)	
Gravity	Protons	

The Water Cycle



3rd Marking Period

COURSE: Science Grade 4
UNIT: The Water Cycle
CONTACT: athompson@bridgeportedu.net
TIME FRAME: 3rd Marking Period

CODE:
MAP LEVEL: 4
GRADE: 4

PERFORMANCE STANDARDS

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SCIENCE - EARTH SCIENCE (VIII, IX, X)

- B.12 Students will describe how the sun's energy drives the water cycle.
- B.13 Students will describe the role of water in erosion and river formation.

ESS/FOCUS QUESTIONS

What is the water cycle?

How does water shape the landscape?

CONTENT

Content Standard: 4.3

Water has a major role in shaping the Earth's surface. Water circulates through the Earth's crust, oceans and atmosphere.

SKILLS

Distinguish among the various forms of precipitation (rain, sleet, snow, hail).

Explain how the water cycle works and the role played by the sun, water, air and land.

Explore the relationship between the water cycle, cloud formation and precipitation.

Review the types of clouds and be able to identify them.

Describe how water on earth cycles in different forms and in different locations, including underground and in the atmosphere.

Give examples of how the cycling of water, both in and out of the atmosphere, has an effect on climate.

Explain several factors that cause erosion and weathering.

Distinguish between chemical weathering and physical weathering.

Give examples of how the surface of the earth changes due to slow processes such as erosion and weathering, and rapid processes such as landslides, volcanic eruptions, and earthquakes.

ASSURED EXPERIENCES

Activity #1:

Design and build a terrarium to demonstrate the water cycle.

Activity #2:

Construct a basic water cycle diagram using construction paper.

Activity #3:

Create a rain gauge and measure the rainfall.

ASSESSMENTS

Harcourt Assessment Guide

Teacher observations

Scientific Investigations

Tests

Quizzes

OPTIONAL ACTIVITIES

Activity #1: Water Condensation

Have students make predictions and then set up an experiment to demonstrate water condensation. Take 2 cans, food coloring, ice water, warm water and a timer. Fill one can $\frac{1}{2}$ full with warm water and the other $\frac{1}{2}$ full with ice water. Add three drops of food coloring to each can. Wait 5 minutes and observe. Students should record what they Notice and Wonder in their science journals.

Activity #2: Collage of Clouds

Have students collect clouds from magazines, newspaper, etc., and create a collage. The clouds should be labeled either cirrus, cumulus, cumulonimbus, or stratus.

RESOURCES

Harcourt Text

United Streaming:

'Oceans Alive: Water, Water, Everywhere'

'Physical Geography'

'The Water Cycle'

'Water Smart: The Sun, Water Cycle, and Climate'

'Water Smart: Water as a Natural Resource'

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VOCABULARY

Atmosphere	Earthquakes	Rain
Circulate	Erosion	Sleet
Cirrus	Fault	Snow
Condensation	Hail	Stratus
Crust	Humidity	Volcano
Cumulus	Landscape	Water cycle
Cumulonimbus	Ocean	Water vapor
Earth	Precipitation	Weathering

Ecosystem

**Living things and the environment
in which they live.**

4th Marking Period

COURSE: Science Grade 4
UNIT: Ecosystems
CONTACT: athompson@bridgeportedu.net
TIME FRAME: 4th Marking Period

CODE:
MAP LEVEL: 4
GRADE: 4

PERFORMANCE STANDARDS

SCIENCE - SCIENTIFIC INQUIRY (I)

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SCIENCE - LIFE SCIENCE (V, VI, VII)

- B.10 Students will describe how animals, directly or indirectly, depend on plants to provide the food and energy they need in order to grow and survive.
 - B.11 Students will describe how natural phenomena and some human activities may cause changes to habitats and their inhabitants.
-

ESS/FOCUS QUESTIONS

How are the types of organisms related to the type of environment?

How can organisms benefit or harm their environment?

How does the interdependence role of plants and animals effect the environment?

What role does the occurrence of natural phenomena play on the environment?

CONTENT

Content Standard: 4.2

All organisms depend on the living and non-living features of the environment for survival. When the environment changes, some organisms survive and reproduce, and others die or move to new locations.

SKILLS

Describe the characteristics of ecosystems.

Explain why habitats are located where they are.

Identify how living and nonliving things interact with their environment.

Explain how organisms fill certain niches in their environment.

Identify examples of the variety of plants and animals found in the different ecosystems.

Describe adaptations of organisms.

Explain the relationship of plants and animals to the environmental conditions in their biome.

Explain how human activities affect the environment.

ASSURED EXPERIENCES

Activity #1:

Set up an aquatic (water) ecosystem and predict how a (terrestrial) land ecosystem would be similar.

Activity #2:

Allow all students to participate in inquiry investigations related to the topic of study.

ASSESSMENTS

Have students describe a real life situation in nature in which two living things are interdependent

Harcourt Assessment Guide

Teacher observations

Science Investigations

Tests

Quizzes

OPTIONAL ACTIVITIES

Activity #1:

Investigate the effects of algae, elodea, and duckweed in an ecosystem and communicate results to peers.

RESOURCES

Harcourt Brace

United Streaming:

'The Food Chain Mystery'

'Concepts in Nature: Adapting to Changes in Nature'

'Concepts in Nature: Animal Predators and the Balance of Nature'

'Exploring the Diversity of Life: A World of Difference'

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VOCABULARY

Adaptation	Energy	Organisms
Algae	Environment	Plants
Animals	Flood	Population
Aquatic	Grow	Reproduce
Biome	Habitat	Survive
Duckweed	Hurricane	Terrestrial
Ecosystem	Inhabitants	Tornado
Elodea	Natural Phenomena	Tsunami