Science (5)

Science

Grade(s) 5th, Duration 1 Year, 1 Credit
Required Course

Course Overview

Students will use scientific inquiry to learn selected topics in physical science, chemistry, environmental science, and earth science.

Science (grade 5) courses build on the study of various systems. They may include identification and description of cycles, comparisons of forms of matter and energy, forces, or content consistent with state academic standards. Students may make comparisons and interpret and analyze information.

Scope And Sequence

Timeframe	Unit	Instructional Topics
Ongoing	Science Inquiry/Scientific Method	1. Scientific Inquiry
6 Week(s)	Physical Science: Simple Machines	1. Forces, Motion, and Work
6 Week(s)	Physical Science: Matter	1. Structure of Matter 2. Characteristics of Matter 3. Changes of States of Matter
6 Week(s)	Life Science: Interactions Among Living Things	1. Ecosystems, Communities, and Biomes 2. Life in Ecosystems
6 Week(s)	Earth Science: Earth Systems	1. Earth's Structure 2. Earth's Changing Surface 3. Using Resources Wisely

Materials and Resources

- Houghton Mifflin Textbook
- Bill Nye
- Magic School Bus
- BrainPop
- Kids Discover
- *Reading Textbook*
- Atlas
- Various Children's Literature
- National Geographic
- Websites, as specified in Unit Overviews
- Lab equipment and materials
- Vernier lab equipment
- Supporting teacher resources for Vernier equipment

Prerequisites

Completion of fourth grade science.

Course Details

Unit: Science Inquiry/Scientific Method **Duration:** Ongoing

Science (5)

Science

Grade(s) 5th, Duration 1 Year, 1 Credit
Required Course

Unit Overview

Introduced and assessed early in the year and practiced throughout the year.

Materials and Resources

Experiments
Worksheets
Various teacher created activities
Houghton-Mifflin Science textbook pp. S2-S16

Web Resources:

www.pbskids.org/cyberchase/
www.pbskids.org/scigirls
www.pbskids.org/zoom
www.teachengineering.org

Academic Vocabulary

- Question
- Hypothesis
- Prediction
- Materials
- Procedures
- Steps
- Results
- Conclusions
- Evaluate
- Analyze
- variables
- independent variables
- dependent variables
- STEM
- Scientific Method
- experiment
- investigate

Summative Assessment

Design and conduct an experiment of their choice. Complete a lab report.

Topic: Scientific Inquiry **Duration:** Ongoing

Topic Overview

Students will review the steps to the scientific method using a consistant format.

Learning Targets

Introduction to the Scientific Method.
Students will review and practice the steps of the scientific method.

Scientists and Engineers
Students will compare and contrast the roles and activities of scientists and engineers.

Unit: Physical Science: Simple Machines **Duration:** 6 Week(s)

Science (5)

Science

Grade(s) 5th, Duration 1 Year, 1 Credit
Required Course

Unit Overview

Students will review the six simple machines and design compound machines. Students will be introduced to the concept of the amount of work/energy used or conserved. They will begin to understand Newton's Laws of Motion.

Materials and Resources

Houghton Mifflin Textbook
- Chapter 15
Brainpop.com
Bill Nye Videos
Magic School Bus books
Various library books (coordinate with Mrs. Ward)
Reading Textbook

Academic Vocabulary

- lever
- pulley
- inclined plane
- screw
- wheel and axel
- wedge
- energy
- conservation
- leverage
- force
- friction
- work
- physicist
- folcrum
- threads
- compound machine
- load
- effort
- perpetual motion

Summative Assessment

Options: Paper/pencil test and/or build a compound machine.

Topic: Forces, Motion, and Work **Duration:** 6 Week(s)

Topic Overview

A force applied to an object can change the object's motion.

Learning Targets

Change in Motion

A force applied to an object can change the object's motion.

Simple Machines

Simple machines allow you to do the same work more easily.

Compound/Complex Machines

Students will design a compound/complex machine using two or more simple machines.

Unit: Physical Science: Matter **Duration:** 6 Week(s)

Science (5)

Science

Grade(s) 5th, Duration 1 Year, 1 Credit
Required Course

Unit Overview

The students will review the three states of matter. They will learn about mixtures and solutions. Students will learn how matter changes states.

Materials and Resources

Bartholomew and the Oobleck
Bill Nye video
Magic School Bus

Houghton Mifflin Textbook:
Chapters 12,13,14
-pages E4-E95

Various demonstrated activites (teacher created, materials purchased every year)
Worksheets
KU Chemical Engineering Field Trip- Dr. Dahr

Academic Vocabulary

- solids
- liquids
- gases
- states of matter
- phases of matter
- temperature
- molecules
- plasma
- elements
- boiling point
- melting point
- freezing point
- mixtures
- solutions
- atoms
- evaporate
- condinsation
- vaporization
- expand
- contract
- particles

Summative Assessment

Teacher created test

Topic: Structure of Matter

Duration: 1 Week(s)

Topic Overview

Students will learn about atoms, elements and compounds.

Learning Targets

Introduce Elements
What are elements? Read and explore.

Periodic Table
Students will explore the organization and purpose of the periodic table of elements.

Compounds
What are compounds?

Topic: Characteristics of Matter

Duration: 3 Week(s)

Topic Overview

Students will learn about chemical change, physical change, mixtures, and solutions.

Learning Targets

Identifying Materials
How can materials be identified?

Changing Matter
How does matter change?

Solutions and Mixtures
What are solutions and mixtures?

Topic: Changes of States of Matter **Duration:** 2 Week(s)

Topic Overview
Students will learn that matter can change from one state to another when energy is added or removed.

Learning Targets
Reviewing the Three States of Matter.
Students will review the three states of matter.

Changing States of Matter
How does matter change state?

Unit: Life Science: Interactions Among Living Things **Duration:** 6 Week(s)

Unit Overview
Students will recognize humans' impact on the environment.

Materials and Resources
Houghton Mifflin Textbook
- chapters 4 and 5, pages B1-B72
- chapter 8, lesson 3, pages C90-C96
Brainpop
Various picture books
Numerous Magic School Bus
Bill Nye
National Geographic
Reading textbook

Academic Vocabulary
- adaptation
- endangered species
- exctinction
- habitat
- niche
- pollution
- population
- predator
- prey
- symbiosis
- threatened species
- biome
- climate
- community
- desert
- ecosystem
- energy pyramid
- food chain
- food web
- grasslands
- population
- taiga
- temperate forest
- tropical rain forest
- tundra

Summative Assessment
No formal summative assessment

Topic: Ecosystems, Communities, and Biomes **Duration:** 2 Week(s)

Topic Overview
Students will explore communities, biomes, and ecosystems.

Learning Targets
How Do Living Things Form Communities?
Explains what an ecosystem is and describes the types of interactions that occur in ecosystems.

What are Biomes?

Describes the six main types of land biomes as well as marine biomes and freshwater biomes.

What is a Food Web?

Explains food chains, food webs, and energy pyramids and describes how matter cycles through ecosystems.

Topic: Life in Ecosystems **Duration:** 4 Week(s)

Topic Overview

Students will learn that every species occupies a niche, changes in environment affect population, and human activity can alter an ecosystem.

Learning Targets

What are Habitats and Niches?

Discusses the adaptations that allow organisms to survive.

What Factors Affect Ecosystems?

Describes how living things respond to changes in ecosystems.

How Can Humans Change Ecosystems?

Explores how human activities affect ecosystems in both positive and negative ways.

Unit: Earth Science: Earth Systems **Duration:** 6 Week(s)

Science (5)

Science

Grade(s) 5th, Duration 1 Year, 1 Credit
Required Course

Unit Overview

Students will learn how constructive and destructive natural forces affect Earth's surface.

Materials and Resources

- Houghton Mifflin Textbook

-Chapters 6,7,8
-Pages C1-C103

- Bill Nye
- Magic School Bus
- BrainPop
- Kids Discover
- *Reading textbook*
- Atlas

Academic Vocabulary

- Constructive forces
- Destructive forces
- weathering
- chemical weathering
- physical weathering
- erosion
- wind
- water
- ice
- glaciers
- plate tectonics
- Pangaea
- volcano
- earthquake
- core
- crust
- dome mountains
- epicenter
- fault
- fault-block mountains
- focus
- fold mountains
- lithosphere
- magma
- mantle
- plate tectonics
- seismic waves
- conservation
- residual soil
- fossil fuel
- soil
- natural resource
- soil profile
- nonrenewable resource
- topsoil
- recyling
- transported soil
- renewable resource

Summative Assessment

Options- Teacher created test and/or demonstrate a process.

Topic: Earth's Structure **Duration:** 2 Week(s)

Topic Overview

Students will learn the layers of the earth, plate tectonics, and that earthquakes, volcanoes, and mountains occur near plate boundaries.

Learning Targets

Earth's Structure

What is the structure of the Earth?

Earthquakes and Volcanoes

Review of previous knowledge about volcanoes and earthquakes.

Formation of Mountains

How are mountains formed?

Topic: Earth's Changing Surface
Duration: 2 Week(s)

Topic Overview

Students will extend their knowledge that Earth's land features are shaped by destructive and constructive forces. They will design ways to lessen destructive forces.

Learning Targets

Surface of the Earth

What makes up the earth's surface?

Destructive Forces

How is Earth's surface worn down?

Constructive Forces

How is Earth's surface built up?

Topic: Using Resources Wisely
Duration: 2 Week(s)

Topic Overview

Students will learn about alternate energy sources, renewable resources, and ways for humans to conserve resources.

Learning Targets

How Do People Use Resources?

Describes some of Earth's important resources and distinguishes between *renewable* and *nonrenewable* resources.

How Do People Use Soil?

Discusses how soil is formed and how topsoil can be, and should be, preserved.

How Can People Use Resources Wisely?

Explains the importance of the 3 R's of conservation- recycling, reducing, and reusing.