Curriculum Map: Science 7 - Dickson Nanci (Converted)

Course: Science 7
Grade(s): None specified

RESOURCES
Converted_daily_plans_-_chapter_1f_Science 7 - Dickson Nanci (Converted)

Unit: Introduction to Earth Science

Description: This unit introduces Earth Science. Students will learn about the branches of Earth Science, and careers available in Earth science. Then, students will explore scientific methods and follow David Gillette's discovery of Seismosaurus. Students also learn about the use of models in Earth science. This unit concludes with a discussion of measurement and safety.

Skills:
Describe the four major branches of Earth science.
Identify four example of Earth science that are linked to other areas of science.
Explain how scientists begin to learn about the natural world.
Explain what scientific methods are and how scientists use them.
Identify the importance of communicating the results of a scientific investigation.
Describe how scientific investigations often lead to new investigations.
Explain how models are used in science.
Describe the three types of models.
Identify which types of models are best for certain topics.
Describe the climate model as an example of a mathematical model.
Explain the importance of the International System of Units.
Determine appropriate units to use for particular measurements.
Identify lab safety symbols. and determine what they mean.

Benchmark Assessments:
Other written assessments
Teacher generated worksheets for each section and chapter
Written Test
Test is based on PSSA format including multiple choice and open-ended questions.
Cooling WaterLab Assignment
Students conduct a controlled experiment uing the scientific method.

Instructional Procedures:
Generating & Testing Hypotheses
Introducing New Content & Vocabulary
Providing Practice
Using Classroom Organisation
Using Summary & Taking Notes

STANDARDS

STATE: Pennsylvania State Standards (2002)

3.1.7.B (Introduced)	Describe the use of models as an application of scientific or technological concepts.
3.1.7.C (Introduced)	Identify patterns as repeated processes or recurring elements in science and technology.
3.1.7.D (Introduced)	Explain scale as a way of relating concepts and ideas to one another by some measure.
3.1.7.E (Introduced)	Identify change as a variable in describing natural and physical systems.
3.2.7.A (Introduced)	Explain and apply scientific and technological knowledge.
3.2.7.B (Introduced)	Apply process knowledge to make and interpret observations.
3.2.7.C (Introduced)	Identify and use the elements of scientific inquiry to solve problems.

This Curriculum Map Unit has no Topics to display

Unit: Scientific Method

Description: The students will use the understanding of the scientific method to develop a science fair project.

Skills:
Develop an understanding of the process of the scientific method.
Determine the appropriate design of a controlled experiment.
Use information in tables and graphs to analyze experimental results.
Explain how scientific knowledge can change.

Benchmark Assessments:
Personal Project
Students will complete a science fair project based on the scientific method that includes a written report and a presentation.
Other written assessments
Teacher generated worksheets for each section and chapter
Written Test
Test is based on PSSA format including multiple choice and open-ended questions.
Raisin LabLab Assignment
Students investigate the importance of making good observations when conducting experiments using the scientific method.
HelicoptersLab Assignment
Students make paper helicopters to investigate independent and dependent variables.
Splatter LabLab Assignment
Students use water to conduct a controlled experiment.

Instructional Procedures:
Generating & Testing Hypotheses
Introducing New Content & Vocabulary
Students make a foldable of the pertinent vocabulary words of the unit.
Providing Practice

Using Classroom Organisation
Using Computer Technology
Using Summary & Taking Notes

STANDARDS

STATE: Pennsylvania State Standards (2002)

3.1.7.A (Introduced)	Explain the parts of a simple system and their relationship to each other.
3.1.7.E (Introduced)	Identify change as a variable in describing natural and physical systems.
3.2.7.A (Introduced)	Explain and apply scientific and technological knowledge.
3.2.7.B (Introduced)	Apply process knowledge to make and interpret observations.
3.2.7.C (Introduced)	Identify and use the elements of scientific inquiry to solve problems.
3.2.7.D (Introduced)	Know and use the technological design process to solve problems.

This Curriculum Map Unit has no Topics to display

Unit: Minerals of the Earth's Crust

Description: This chapter will help the students learn about the minerals found in the rocks of the Earth's crust. The chapter describes the structure of minerals, mineral identification, environments in which minerals form, the mining of minerals, and mineral uses.
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Skills:
Describe the structure of minerals.
Describe the two major groups of minerals.
Identify seven ways to determine the identity of minerals.
Explain special properties of minerals.
Describe the environments in which minerals form.
Compare the two types of mining.
Describe two ways to reduce the effects of mining.
Describe different uses for metallic and nonmetallic minerals.

Benchmark Assessments:
Other written assessments
Teacher generated worksheets for each section and chapter
Written Test
Test is based on PSSA format including multiple choice and open-ended questions.
Mineral LabLab Assignment
Students use the characteristics of minerals to identify numerous samples.

Instructional Procedures:
Generating & Testing Hypotheses
Introducing New Content & Vocabulary
Providing Practice
Using Classroom Organisation
Using Summary & Taking Notes
Using Computer Technology

STANDARDS

STATE: Pennsylvania State Standards (2002)

3.1.7.A (Introduced)	Explain the parts of a simple system and their relationship to each other.
3.1.7.B (Introduced)	Describe the use of models as an application of scientific or technological concepts.
3.1.7.C (Introduced)	Identify patterns as repeated processes or recurring elements in science and technology.
3.2.7.A (Introduced)	Explain and apply scientific and technological knowledge.
3.2.7.B (Introduced)	Apply process knowledge to make and interpret observations.
3.2.7.C (Introduced)	Identify and use the elements of scientific inquiry to solve problems.
3.5.7.B (Introduced)	Recognize earth resources and how they affect everyday life.

This Curriculum Map Unit has no Topics to display

Unit: Rocks: Mineral Mixtures

Description: This chapter will teach the students about the rock cycle. They will learn about igneous, sedimentary, and metamorphic rocks. Students will find out how each rock type is formed and how each rock type is classified.

Skills:
Describe two ways rocks have been used by humans.
Describe four processes that shape Earth's features.
Describe how each type of rock changes into another type as it moves through the rock cycle.
List two characteristics of rock that are used to help classify it.
Describe three ways that igneous rock forms.
Explain how the cooling rate of magma affects the texture of igneous rock.
Distinguish between igneous rock that cools within Earth's crust and igneous rock that cools at Earth's surface.
Describe the origin of sedimentary rock.
Describe the three main categories of sedimentary rock.
Describe three types of sedimentary structures.
Describe two ways a rock can undergo metamorphism.
Explain how the mineral composition of rock changes as the rocks undergo metamorphism.
Describe the difference between foliated and nonfoliated metamorphic rock.
Explain how metamorphic rock structure are related to deformation.

Benchmark Assessments:
Other written assessments
Teacher generated worksheets for each section and chapter
Written Test
Test is based on PSSA format including multiple choice and open-ended questions.
Igneous Rock LabLab Assignment
Students investigate the effect of the rate of cooling of magma/lava on the size of the

crystals in the igneous rock.
Sedimentary Rock LabLab Assignment
Students model the formation of a sedimentary rock.
Rock LabLab Assignment
Students use a dichotomous key to identify numerous samples of rocks.

Instructional Procedures:
Generating & Testing Hypotheses
Introducing New Content & Vocabulary
Providing Practice
Using Classroom Organisation
Using Computer Technology
Using Cooperative Learning & Active Engagement
Using Summary & Taking Notes

STANDARDS

STATE: Pennsylvania State Standards (2002)

3.1.7.A (Introduced)	Explain the parts of a simple system and their relationship to each other.
3.1.7.C (Introduced)	Identify patterns as repeated processes or recurring elements in science and technology.
3.2.7.A (Introduced)	Explain and apply scientific and technological knowledge.
3.2.7.B (Introduced)	Apply process knowledge to make and interpret observations.
3.2.7.C (Introduced)	Identify and use the elements of scientific inquiry to solve problems.

This Curriculum Map Unit has no Topics to display

Unit: Energy Resources

Description: This chapter introduces renewable and nonrenewable energy resources. Students will learn about how fossil fuels form and how they are obtained. The chapter also discusses the environmental effects of fossils fuel use. Finally students will explore alternatives to fossil fuels. They will compare advantages and disadvantages of using alternative energy resources.

Skills:
Describe how humans use natural resources.
Compare renewable resources with nonrenewable resources.
Explain three ways that humans can conserve natural resources.
Describe what energy resources are.
Identify three different forms of fossil fuels.
Explain how fossil fuels form.
Describe how fossil fuels are found and obtained.
Identify four problems with fossil fuels.
Describe alternatives to the use of fossil fuels.
List advantages and disadvantages of using alternative energy resources.

Benchmark Other written assessments

Assessments: Teacher generated worksheets for each section and chapter
Written Test
Test is based on PSSA format including multiple choice and open-ended questions.

Instructional Procedures: Generating & Testing Hypotheses
Introducing New Content & Vocabulary
Providing Practice
Using Classroom Organisation
Using Summary & Taking Notes

STANDARDS

STATE: Pennsylvania State Standards (2002)

3.1.7.B (Introduced) Describe the use of models as an application of scientific or technological concepts.
3.1.7.E (Introduced) Identify change as a variable in describing natural and physical systems.
3.2.7.A (Introduced) Explain and apply scientific and technological knowledge.
3.2.7.B (Introduced) Apply process knowledge to make and interpret observations.
3.2.7.C (Introduced) Identify and use the elements of scientific inquiry to solve problems.
3.5.7.B (Introduced) Recognize earth resources and how they affect everyday life.

This Curriculum Map Unit has no Topics to display

Unit: The Rock and Fossil Record

Description: This chapter will help the students learn about the history of the Earth. The chapter describes ways in which scientists use the rock and fossil record to decipher Earth's history.

Skills: Compare uniformitarianism and catastrophism.
Describe how the science of geology has changed over the past 200 years.
Explain the role of paleontology in the study of Earth's history.
Explain how relative dating is used in geology.
Explain the principle of superposition.
Describe how the geologic column is used in relative dating.
Identify two events and two features that disrupt rock layers.
Explain how physical features are used to determine relative ages.
Describe how radioactive decay occurs.
Explain how radioactive decay related to radiometric dating.
Identify four types of radiometric dating.
Determine the best type of radiometric dating to be used to date an object.
Describe five ways that different types of fossils form.
List three types of fossils that are not part of organisms.
Explain how fossils can be used to determine the history of changes in environments and organisms.
Explain how index fossils can be used to date rock layers.

Explain how geological time is recorded in rock layers.
Identify important dates on the geological time scale.
Explain how environmental changes resulted in the extinction of some species.

Benchmark Assessments: Other written assessments
Teacher generated worksheets for each section and chapter
Written Test
Test is based on PSSA format including multiple choice and open-ended questions.
Fossil LabLab Assignment
Students use plaster to model the formation of a mold and a cast fossil.

Instructional Procedures: Generating & Testing Hypotheses
Introducing New Content & Vocabulary
Providing Practice
Using Classroom Organisation
Using Summary & Taking Notes

STANDARDS

STATE: Pennsylvania State Standards (2002)

3.1.7.A (Introduced) Explain the parts of a simple system and their relationship to each other.
3.1.7.B (Introduced) Describe the use of models as an application of scientific or technological concepts.
3.1.7.D (Introduced) Explain scale as a way of relating concepts and ideas to one another by some measure.
3.2.7.A (Introduced) Explain and apply scientific and technological knowledge.
3.2.7.B (Introduced) Apply process knowledge to make and interpret observations.
3.2.7.C (Introduced) Identify and use the elements of scientific inquiry to solve problems.

This Curriculum Map Unit has no Topics to display

Unit: Plate Tectonics

Description: This chapter will help the students learn about the structure of the Earth and the forces that continually reshape the crust of our planet.

Skills: Identify the layers of the Earth by their chemical composition.
Identify the layers of the Earth by the their physical properties.
Describe a tectonic plate.
Explain how scientists know about the structure of Earth's interior.
Describe Wegener's hypothesis of continental drift.
Explain how sea-floor spreading provides a way for continents to move.
Describe how new oceanic lithosphere forms at mid-ocean ridges.
Explain how magnetic reversals proved evidence for sea-floor spreading.
Describe the three types of tectonic plate boundaries.
Describe the three forces thought to move tectonic plates.

Explain how scientists measure the rate at which tectonic plates move.
Describe two types of stress that deforms rocks.
Describe three major types of folds.
Explain the differences between the three major types of faults.
Identify the most common types of mountains.
Explain the difference between uplift and subsidence.

Benchmark Assessments: Other written assessments
Teacher generated worksheets for each section and chapter
Written Test
Test is based on PSSA format including multiple choice and open-ended questions.
Clay Models of the EarthLab Assignment
Students use clay to build a model of the layers of the earth.
Seafloor SpreadingLab Assignment
Students model seaflooring spreading.
Edible TectonicsLab Assignment
Students use a small Milky Way candy bar to investigate the different types of plate boundaries on the earth.

Instructional Procedures: Generating & Testing Hypotheses
Introducing New Content & Vocabulary
Providing Practice
Using Classroom Organisation
Using Summary & Taking Notes

STANDARDS

STATE: Pennsylvania State Standards (2002)

3.1.7.A (Introduced)	Explain the parts of a simple system and their relationship to each other.
3.1.7.B (Introduced)	Describe the use of models as an application of scientific or technological concepts.
3.2.7.A (Introduced)	Explain and apply scientific and technological knowledge.
3.2.7.B (Introduced)	Apply process knowledge to make and interpret observations.
3.2.7.C (Introduced)	Identify and use the elements of scientific inquiry to solve problems.
3.5.7.A (Introduced)	Describe earth features and processes.

This Curriculum Map Unit has no Topics to display

Unit: Earthquakes

Description: This chapter will help the students learn about earthquakes. The chapter is an introduction to the geophysical concepts that semsologists use in the study of earthquakes.

Skills: Explain where earthquakes take place.
Explain what causes earthquakes.

Identify three different types of faults that occur at plate boundaries.
Describe how energy from earthquakes travels through the Earth.
Explain how earthquakes are detected.
Describe how to locate an earthquake's epicenter.
Explain how the strength of an earthquake is measured.
Explain how the intensity of an earthquake is measured.
Explain how earthquake-hazard level is determined.
Compare methods of earthquake forecasting.
Describe five ways to safeguard buildings against earthquakes.
Outline earthquake safety procedures.

Benchmark Assessments: Other written assessments
Teacher generated worksheets for each section and chapter
Written Test
Test is based on PSSA format including multiple choice and open-ended questions.
Locating an EarthquakeLab Assignment
Students use triangulation to locate an earthquake.

Instructional Procedures: Generating & Testing Hypotheses
Introducing New Content & Vocabulary
Providing Practice
Using Classroom Organisation
Using Summary & Taking Notes
Using Computer Technology

STANDARDS

STATE: Pennsylvania State Standards (2002)

3.1.7.A (Introduced)	Explain the parts of a simple system and their relationship to each other.
3.1.7.B (Introduced)	Describe the use of models as an application of scientific or technological concepts.
3.2.7.A (Introduced)	Explain and apply scientific and technological knowledge.
3.2.7.B (Introduced)	Apply process knowledge to make and interpret observations.
3.2.7.C (Introduced)	Identify and use the elements of scientific inquiry to solve problems.
3.2.7.D (Introduced)	Know and use the technological design process to solve problems.
3.5.7.A (Introduced)	Describe earth features and processes.

This Curriculum Map Unit has no Topics to display

Unit: Volcanoes

Description: This chapter discusses volcanoes, the effects of eruptions, and how eruptions are preditcted. About 500 million people live near active volcanoes. Volcanoes are carefully studied so that eruptions may be predicted.

Skills: Distinguish between nonexplosive and explosive volcanic eruptions.
Identify the features of a volcano.
Explain how the composition of magma affects the type of volcanic eruption that will occur.
Describe four types of lava and types of pyroclastic material.
Explain how volcanic eruptions can affect climate.
Compare the three types of volcanoes.
Compare craters, calderas, and lava plateaus.
Describe the formation and movement of magma.
Explain the relationship between volcanoes and plate tectonics.
Summarize the methods scientists use to predict volcanic eruptions.

Benchmark Assessments: Other written assessments
Teacher generated worksheets for each section and chapter
Written Test
Test is based on PSSA format including multiple choice and open-ended questions.

Instructional Procedures: Generating & Testing Hypotheses
Introducing New Content & Vocabulary
Providing Practice
Using Classroom Organisation
Using Summary & Taking Notes

STANDARDS

STATE: Pennsylvania State Standards (2002)

3.1.7.A (Introduced) Explain the parts of a simple system and their relationship to each other.
3.1.7.B (Introduced) Describe the use of models as an application of scientific or technological concepts.
3.2.7.A (Introduced) Explain and apply scientific and technological knowledge.
3.2.7.B (Introduced) Apply process knowledge to make and interpret observations.
3.2.7.C (Introduced) Identify and use the elements of scientific inquiry to solve problems.
3.5.7.A (Introduced) Describe earth features and processes.

This Curriculum Map Unit has no Topics to display

Unit: Weathering and Soil Formation

Description: This chapter will help the students learn about the process of weathering, including factors that cause weathering and factors that effect the rate of weathering. Students will learn about how soil is formed and how the properties of soil affect plant growth. They will also learn about the effect of climate on soil. Finally students will learn about soil conservation.

Skills: Describe how ice, water, wind, gravity, plants, and animals cause mechanical

weathering.
Describe how water, acids, and air cause chemical weathering of rocks.
Explain how the composition of rock affects the rate of weathering.
Describe how a rock's total surface area affects the rate at which the rock weathers.
Describe how differences in elevation and climate affect the rate of weathering.
Describe the source of soil.
Explain how the different properties of soil affect plant growth.
Describe how various climates affect soil.
Describe three important benefits that soil provided.
Describe four methods of preventing soil damage and loss.

Benchmark Assessments: Other written assessments
Teacher generated worksheets for each section and chapter
Written Test
Test is based on PSSA format including multiple choice and open-ended questions.
Plaster LabLab Assignment
Students model frost action.
Leaching LabLab Assignment
Students model the leaching of minerals out of soil.
Chalk It Up to ExperienceLab Assignment
Students model the chemical weathering of limestone.

Instructional Procedures: Generating & Testing Hypotheses
Introducing New Content & Vocabulary
Providing Practice
Using Classroom Organisation
Using Summary & Taking Notes

STANDARDS

STATE: Pennsylvania State Standards (2002)

3.1.7.B (Introduced)	Describe the use of models as an application of scientific or technological concepts.
3.2.7.A (Introduced)	Explain and apply scientific and technological knowledge.
3.2.7.B (Introduced)	Apply process knowledge to make and interpret observations.
3.2.7.C (Introduced)	Identify and use the elements of scientific inquiry to solve problems.
3.5.7.A (Introduced)	Describe earth features and processes.

This Curriculum Map Unit has no Topics to display

Unit: The Flow of Fresh Water

Description: The students will learn about the movement of fresh water on the Earth's surface and underground. The chapter describes the water cycle, erosion and deposition by rivers, and the characteristics of water underground. The chapter also discusses water pollution, wastewater treatment, and water conservation.

Skills:
Describe how moving water shapes the surface of the Earth by the process of erosion.
Explain how water moves through the water cycle.
Describe a watershed.
Explain three factors that affect the rate of stream erosion.
Identify four ways that rivers are described.
Describe the four different types of stream deposits.
Describe how the deposition of sediment affects the land.
Identify and describe the location of the water table.
Describe an aquifer.
Explain the difference between a spring and a well.
Explain how caves and sinkholes form as a result of erosion and deposition.
Identify tow forms of water pollution.
Explain how the properties of water influence the health of a water system.
Describe two ways that wastewater can be treated.
Describe how water is used and how water can be conserved in industry, in agriculture, and at home.

Benchmark Assessments:
Other written assessments
Teacher generated worksheets for each section and chapter
Written Test
Test is based on PSSA format including multiple choice and open-ended questions.
What Goes Up...Lab Assignment
Students simulate the water cycle.
RiversLab Assignment
Students model various features of a river system.

Instructional Procedures:
Generating & Testing Hypotheses
Introducing New Content & Vocabulary
Providing Practice
Using Computer Technology
Using Classroom Organisation
Using Summary & Taking Notes

STANDARDS

STATE: Pennsylvania State Standards (2002)

3.1.7.A (Introduced)	Explain the parts of a simple system and their relationship to each other.
3.1.7.B (Introduced)	Describe the use of models as an application of scientific or technological concepts.
3.1.7.E (Introduced)	Identify change as a variable in describing natural and physical systems.
3.2.7.A (Introduced)	Explain and apply scientific and technological knowledge.
3.2.7.B (Introduced)	Apply process knowledge to make and interpret observations.
3.2.7.C (Introduced)	Identify and use the elements of scientific inquiry to solve problems.
3.5.7.A (Introduced)	Describe earth features and processes.
3.5.7.D (Introduced)	Explain the behavior and impact of the earth's water systems.

This Curriculum Map Unit has no Topics to display

Unit: Agents of Erosion and Deposition

Description: This chapter will help the students learn about the processes of erosions and deposition by water, wind, ice, and gravity.

Skills:
Explain how energy from waves affects a shoreline.
Identify six shoreline features created by wave erosion.
Explain how wave deposits form beaches.
Describe how sand moves along a beach.
Explain why some areas are more affected by wind erosion than other areas are.
Describe the process of saltation.
Identify three landforms that result from wind erosion and deposition.
Explain how dunes move.
Explain the difference between alpine glaciers and continental glaciers.
Describe two ways in which glaciers move.
Identify five landscape features formed by alpine glaciers.
Identify four types of moraines.
Explain the role of gravity as an agent of erosion and deposition.
Explain how angle of repose is related to mass movement.
Describe four types of rapid mass movement.
Describe three factors that affect creep.

Benchmark Assessments:
Other written assessments
Teacher generated worksheets for each section and chapter
Written Test
Test is based on PSSA format including multiple choice and open-ended questions.
Gliding GlaciersLab Assignment
Students build a model of a glacier and demonstrate the effects of gliacial erosion by various materials.
Creating a KettleLab Assignment
Students will model the formation of a kettle.

Instructional Procedures:
Generating & Testing Hypotheses
Introducing New Content & Vocabulary
Providing Practice
Using Classroom Organisation
Using Summary & Taking Notes

STANDARDS

STATE: Pennsylvania State Standards (2002)

3.1.7.B (Introduced) Describe the use of models as an application of scientific or technological concepts.
3.2.7.A (Introduced) Explain and apply scientific and technological knowledge.
3.2.7.B (Introduced) Apply process knowledge to make and interpret observations.
3.2.7.C (Introduced) Identify and use the elements of scientific inquiry to solve problems.

3.5.7.A (Introduced) Describe earth features and processes.
3.5.7.D (Introduced) Explain the behavior and impact of the earth's water systems.

This Curriculum Map Unit has no Topics to display

Unit: Exploring the Oceans

Description: This chapter will help the students learn about the Earth's oceans. The chapter describes ocean characteristics, the ocean floor, resources from the ocean, and ocean pollution.

Skills:
List the major division of the global ocean.
Describe the history of Earth's oceans.
Identify the properties of ocean water.
Describe the interactions between the ocean and the atmosphere.
Describe technologies for studying the ocean floor.
Identify the two major regions of the ocean floor.
Classify subdivisions and features of the two major regions of the ocean floor.
List two ways of harvesting the ocean's living resources.
Identify three nonliving resources in the ocean.
Describe the ocean's energy resources.
Explain the difference between point-source pollution and nonpoint-source pollution.
Identify three different types of point-source ocean pollution.
Describe what is being done to control ocean pollution.

Benchmark Assessments:
Other written assessments
Teacher generated worksheets for each section and chapter
Written Test
Test is based on PSSA format including multiple choice and open-ended questions.
Mapping the Dramatization
Students simulate ECHO location and investigate the effect of salt on water density.
Mapping the Ocean FloorLab Assignment
Students simulate ECHO location and investigate the effect of salt on water density.

Instructional Procedures:
Generating & Testing Hypotheses
Introducing New Content & Vocabulary
Providing Practice
Using Classroom Organisation
Using Summary & Taking Notes

STANDARDS

STATE: Pennsylvania State Standards (2002)

3.1.7.A (Introduced) Explain the parts of a simple system and their relationship to each other.
3.1.7.B (Introduced) Describe the use of models as an application of scientific or technological concepts.

3.1.7.E (Introduced) Identify change as a variable in describing natural and physical systems.
3.2.7.A (Introduced) Explain and apply scientific and technological knowledge.
3.2.7.B (Introduced) Apply process knowledge to make and interpret observations.
3.2.7.C (Introduced) Identify and use the elements of scientific inquiry to solve problems.
3.5.7.B (Introduced) Recognize earth resources and how they affect everyday life.
3.5.7.D (Introduced) Explain the behavior and impact of the earth's water systems.

This Curriculum Map Unit has no Topics to display

Unit: The Movement of Ocean Water

Description: This chapter will help the students learn about the different factors that affect the movement of ocean water. The chapter describes the different movements of ocean water, including currents, waves, and tides. It also describes how these movements affect land, climate, and organisms.

Skills:
Describe surface currents.
List the three factors that control surface currents.
Describe deep currents.
Identify the three factors that form deep currents.
Explain how currents affect climate.
Describe the effects of El Nino.
Explain how scientists study and predict the pattern of El Nino.
Identify the parts of a wave.
Explain how the parts of a wave relate to wave movement.
Describe how ocean waves form and move.
Classify types of waves.
Explain tides and their relationship with the Earth, sun, and moon.
Describe four different types of tides.
Analyze the relationship between tides and coastal land.
Explain how the parts of a wave relate to wave movement.
Describe how ocean waves form and move.
Classify types of waves.
Explain tides and their relationship with the Earth, sun, and moon.
Describe four different types of tides.
Analyze the relationship between tides and coastal land.

Benchmark Assessments:
Other written assessments
Teacher generated worksheets for each section and chapter
Written Test
Test is based on PSSA format including multiple choice and open-ended questions.
Track a YOTO DrifterTechnology Project
Students use real time online data to track drifters in the ocean to recognize currents.
Catch a WaveTechnology Project
Students collect and plot current tide data for 2 locations in the United States.
The Gulf Stream VoyageTechnology Project

Students use current data from the interent to investigate ocean currents.

Instructional Procedures:
Generating & Testing Hypotheses
Introducing New Content & Vocabulary
Providing Practice
Using Classroom Organisation
Using Computer Technology
Using Summary & Taking Notes

STANDARDS

STATE: Pennsylvania State Standards (2002)

3.1.7.A (Introduced)	Explain the parts of a simple system and their relationship to each other.
3.1.7.B (Introduced)	Describe the use of models as an application of scientific or technological concepts.
3.1.7.E (Introduced)	Identify change as a variable in describing natural and physical systems.
3.2.7.A (Introduced)	Explain and apply scientific and technological knowledge.
3.2.7.C (Introduced)	Identify and use the elements of scientific inquiry to solve problems.
3.5.7.C (Introduced)	Describe basic elements of meteorology.

This Curriculum Map Unit has no Topics to display

Unit: The Atmosphere

Description: The students will learn about the atmosphere. They will study the circulation of energy in the atmosphere and the greenhouse effect. They will also learn about global winds and air pollution.

Skills:
Describe the composition of Earth's atmosphere.
Explain why air pressure changes with altitude.
Explain how air temeprature changes with atmospheric compostion.
Describe the layers of the atmosphere.
Describe waht happens to solar energy that reaches the Earth.
Summarize the processes of radiation, conduction, and convection.
Explain the relationship between the greenhouse effect and global warming.
Explain the relationship between air pressure and wind direction.
Describe the causes of local wind patterns.
Compare primary and secondary air pollution.
Identify the major sources of air pollution.
Explain the effects of an ozone hole.
List five effects of air pollution on the human body.
Identify ways to reduce air pollution.

Benchmark Assessments:
Other written assessments
Teacher generated worksheets for each section and chapter

Written Test
Test is based on PSSA format including multiple choice and open-ended questions.
Atmospheric PressureLab Assignment
Students investigate the atmospheric pressure present in the classroom.
Demonstrating That Air Has MassLab Assignment
Students investigate that air has mass.
Rise or Fall?Lab Assignment
Students investigate that temperature effects the density of liquids.
Soil vs. Water LabLab Assignment
Students investigate the difference in heating of soil and water.

Instructional Procedures:
Generating & Testing Hypotheses
Introducing New Content & Vocabulary
Providing Practice
Using Computer Technology
Using Summary & Taking Notes
Using Classroom Organisation

STANDARDS

STATE: Pennsylvania State Standards (2002)

3.1.7.A (Introduced)	Explain the parts of a simple system and their relationship to each other.
3.1.7.B (Introduced)	Describe the use of models as an application of scientific or technological concepts.
3.1.7.E (Introduced)	Identify change as a variable in describing natural and physical systems.
3.2.7.A (Introduced)	Explain and apply scientific and technological knowledge.
3.2.7.B (Introduced)	Apply process knowledge to make and interpret observations.
3.2.7.C (Introduced)	Identify and use the elements of scientific inquiry to solve problems.
3.5.7.C (Introduced)	Describe basic elements of meteorology.

This Curriculum Map Unit has no Topics to display

Unit: Understanding Weather

Description: This chapter introduces some fundamental principles of meterology and weather forecasting. Students will learn about relative humidity, clouds, air masses and fronts, severe weather, and weather forecasting.

Skills:
Explain how water moves through the water cycle.
Describe how relative humidity is affected by temperature and levels of water vapor.
Describe the relationship between dew point and condensation.
List three types of cloud forms.
Identify four kinds of precipitation.
Identify the four kinds of air masses that influence weather in the United States.
Describe the four major types of fronts.

Explain how fronts cause weather changes.
Explain how cyclones and anticyclones affect the weather.
Describe how lightning forms.
Describe the formation of thunderstorms, torndaoes, and hurricanes.
Describe the characteristics of thunderstorms, tornadoes, and hurricanes.
Explain how to stay safe during severe weather.
Describe the different types of instruments used to take weather measurements.
Explain how radar and weather satellites help meterologists forecast the weather.
Explain how to interpret a weather map.

Benchmark Assessments: Other written assessments
Teacher generated worksheets for each section and chapter
Written Test
Test is based on PSSA format including multiple choice and open-ended questions.
Tracking HurricanesLab Assignment
Students track two hurricances and analyze the damage done.

Instructional Procedures: Generating & Testing Hypotheses
Introducing New Content & Vocabulary
Providing Practice
Using Classroom Organisation
Using Summary & Taking Notes

STANDARDS

STATE: Pennsylvania State Standards (2002)

3.1.7.A (Introduced)	Explain the parts of a simple system and their relationship to each other.
3.1.7.B (Introduced)	Describe the use of models as an application of scientific or technological concepts.
3.2.7.B (Introduced)	Apply process knowledge to make and interpret observations.
3.2.7.C (Introduced)	Identify and use the elements of scientific inquiry to solve problems.
3.2.7.D (Introduced)	Know and use the technological design process to solve problems.
3.5.7.C (Introduced)	Describe basic elements of meteorology.
3.5.7.D (Introduced)	Explain the behavior and impact of the earth's water systems.

This Curriculum Map Unit has no Topics to display

Unit: The Climate

Description: The students will describe different climates around the world and the factors that influence climate. Also, the students will be able to explain how climate can change over time.

Skills: Explain the difference between weather and climate.
Identify five factors that determine climates.
Identify the three climate zones of the world.

Locate and describe the tropical zone.
Describe the biomes found in the tropical zone.
Locate and describe the temperate zone and the polar zone.
Describe the different biomes found in the temperate zone and the polar zone.
Explain what a microclimate is.
Describe how the Earth's climate has changed over time.
Summarize four different theories that attempt to explain why the Earth's climate has changed.
Explain the greenhouse effect and its role in global warming.

Benchmark Assessments: Other written assessments
Teacher generated worksheets for each section and chapter
Written Test
Test is based on PSSA format including multiple choice and open-ended questions.

Instructional Procedures: Generating & Testing Hypotheses
Introducing New Content & Vocabulary
Providing Practice
Using Classroom Organisation
Using Summary & Taking Notes

STANDARDS

STATE: Pennsylvania State Standards (2002)

3.1.7.A (Introduced)	Explain the parts of a simple system and their relationship to each other.
3.2.7.A (Introduced)	Explain and apply scientific and technological knowledge.
3.2.7.B (Introduced)	Apply process knowledge to make and interpret observations.
3.2.7.C (Introduced)	Identify and use the elements of scientific inquiry to solve problems.
3.5.7.A (Introduced)	Describe earth features and processes.
3.5.7.C (Introduced)	Describe basic elements of meteorology.

This Curriculum Map Unit has no Topics to display

Unit: Studying Space

Description: The students will develop a understanding of some fundamental concepts in astronomy. They will learn about the early history of astronomy and early theories about the structure of the universe.

Skills: Identify the units of a calendar.
Describe two early ideas about the structure of the universe.
Describe the contributions of Brahe, Kepler, Galileo, Newton, and Hubble to modern astronomy.
Compare refracting telescopes with reflecting telescopes.
Explain how the atmosphere limits atronomical observations, and explain how astronomers overcome these limitations.

List the types of electromagnetic radiation that astronomers use to study objects in space.
Explain how constellations are used to organize the night sky.
Describe how the altitude of a star is measured.
Explain how the celestial sphere is used to describe the locations of objects in the sky.
Compare size and scale in the universe, and explain how red shift indicates that the universe is expanding.

Benchmark Assessments: Other written assessments
Teacher generated worksheets for each section and chapter
Written Test
Test is based on PSSA format including multiple choice and open-ended questions.

Instructional Procedures: Generating & Testing Hypotheses
Introducing New Content & Vocabulary
Providing Practice
Using Classroom Organisation
Using Summary & Taking Notes

STANDARDS

STATE: Pennsylvania State Standards (2002)

3.1.7.A (Introduced) Explain the parts of a simple system and their relationship to each other.
3.1.7.C (Introduced) Identify patterns as repeated processes or recurring elements in science and technology.
3.1.7.D (Introduced) Explain scale as a way of relating concepts and ideas to one another by some measure.
3.2.7.A (Introduced) Explain and apply scientific and technological knowledge.
3.2.7.B (Introduced) Apply process knowledge to make and interpret observations.
3.2.7.C (Introduced) Identify and use the elements of scientific inquiry to solve problems.
3.4.7.D (Introduced) Describe essential ideas about the composition and structure of the universe and the earth's place in it.

This Curriculum Map Unit has no Topics to display

Unit: Stars, Galaxies, and the Universe

Description: This section will describe the characteristics and life cycles of stars, types of galaxies, and the structure of the universe.

Skills: Describe how color indicates the temperature of a star.
Explain how a scientist can identify a star's composition.
Describe how scientists classify stars.
Compare absolute magnitude with apparent magnitude.
Identify how astronomers measure distances from Earth to stars.
Describe the difference between the apparent motion and the actual motion of stars.

Describe different types of stars.
Describe the quantities that are plotted in the H-R diagram.
Explain how stars of different stages in their life cycle on the H-R diagram.
Identify three types of galaxies.
Describe the contents and characteristics of galaxies.
Explain why looking at distant galaxies reveals what young galaxies looked like.
Explain the big bang theory.
Explain evidence used to support the big bang theory.
Describe the structure of the universe.
Describe two ways scientists calculate the age of the universe.
Explain what will happen if the universe expands forever.

Benchmark Assessments: Other written assessments
Teacher generated worksheets for each section and chapter
Written Test
Test is based on PSSA format including multiple choice and open-ended questions.

Instructional Procedures: Generating & Testing Hypotheses
Introducing New Content & Vocabulary
Providing Practice
Using Classroom Organisation
Using Summary & Taking Notes

STANDARDS

STATE: Pennsylvania State Standards (2002)

3.1.7.A (Introduced)	Explain the parts of a simple system and their relationship to each other.
3.1.7.B (Introduced)	Describe the use of models as an application of scientific or technological concepts.
3.1.7.C (Introduced)	Identify patterns as repeated processes or recurring elements in science and technology.
3.2.7.A (Introduced)	Explain and apply scientific and technological knowledge.
3.2.7.B (Introduced)	Apply process knowledge to make and interpret observations.
3.2.7.C (Introduced)	Identify and use the elements of scientific inquiry to solve problems.
3.4.7.D (Introduced)	Describe essential ideas about the composition and structure of the universe and the earth's place in it.

This Curriculum Map Unit has no Topics to display

Unit: Formation of the Solar System

Description: This section will explain how the solar system formed and also describe the processes that formed the sun and Earth. It also discusses the laws related to planetary motion.

Skills: Explain the relationship between gravity and pressure in a nebula.
Describe how the solar system formed.

Describe the basic structure and composition of the sun.
Explain how the sun generates energy.
Describe the surface activity of the sun, and identity how this activity affects Earth.
Describe the formation of the solid Earth.
Describe the structure of the Earth.
Explain the development of Earth's atmosphere and the influence of early life on the atmosphere.
Describe how the Earth's oceans and continents formed.
Explain the difference between rotation and revolution.
Describe three laws of planetary motion.
Describe how distance and mass affect gravitational attraction.

Benchmark Assessments: Other written assessments
Teacher generated worksheets for each section and chapter
Written Test
Test is based on PSSA format including multiple choice and open-ended questions.

Instructional Procedures: Generating & Testing Hypotheses
Introducing New Content & Vocabulary
Providing Practice
Using Classroom Organisation
Using Summary & Taking Notes

STANDARDS

STATE: Pennsylvania State Standards (2002)

3.1.7.A (Introduced)	Explain the parts of a simple system and their relationship to each other.
3.1.7.B (Introduced)	Describe the use of models as an application of scientific or technological concepts.
3.1.7.C (Introduced)	Identify patterns as repeated processes or recurring elements in science and technology.
3.2.7.A (Introduced)	Explain and apply scientific and technological knowledge.
3.2.7.B (Introduced)	Apply process knowledge to make and interpret observations.
3.2.7.C (Introduced)	Identify and use the elements of scientific inquiry to solve problems.
3.4.7.D (Introduced)	Describe essential ideas about the composition and structure of the universe and the earth's place in it.

This Curriculum Map Unit has no Topics to display

Unit: A Family of Planets

Description: This section in an introduction to the planets in the solar system. The students will learn about the differences between the inner planets and the outer planets. They will also learn about the moons and smaller bodies of the solar system, such, as comets, asteroids, and meteoroids.

Skills:
List the planets in the order in which they orbit the sun.
Explain how scientists measure distances in space.
Describe how the planets in our solar system were discovered.
Describe three ways in which the inner planets and outer planets differ.
Explain the differences between a planet's period of rotation and period of revolution.
Describe the difference between prograde and retrograde rotation.
Describe the individual characteristics of Mercury, Venus, Earth, and Mars.
Identify the characteristics that make Earth suitable for life.
Explain how gas giants are different from terrestrial planets.
Describe the individual characteristics of Jupiter, Saturn, Uranus, Neptune, and Pluto.
Describe the current theory of the origin of the Earth's moon.
Explain what causes the phases of the Earth's moons.
Describe the difference between a solar eclipse and a lunar eclipse.
Describe the individual characteristics of the moons of other planets.

Benchmark Assessments:
Other written assessments
Teacher generated worksheets for each section and chapter
Written Test
Test is based on PSSA format including multiple choice and open-ended questions.

Instructional Procedures:
Generating & Testing Hypotheses
Introducing New Content & Vocabulary
Using Classroom Organisation
Using Summary & Taking Notes

STANDARDS

STATE: Pennsylvania State Standards (2002)

3.1.7.A (Introduced)	Explain the parts of a simple system and their relationship to each other.
3.1.7.B (Introduced)	Describe the use of models as an application of scientific or technological concepts.
3.2.7.A (Introduced)	Explain and apply scientific and technological knowledge.
3.2.7.B (Introduced)	Apply process knowledge to make and interpret observations.
3.2.7.C (Introduced)	Identify and use the elements of scientific inquiry to solve problems.
3.2.7.D (Introduced)	Know and use the technological design process to solve problems.
3.4.7.D (Introduced)	Describe essential ideas about the composition and structure of the universe and the earth’s place in it.

This Curriculum Map Unit has no Topics to display

Unit: Exploring Space

Description:
The students will discuss the development of rocket science. They will learn about rockets, satellites, space probes, and space stations. There will also be discussion on how the political climate after WWII led to the space race.

Skills:
Outline the development of rocket technology.
Describe how a rocket accelerates.
Explain the difference between orbital velocity and escape velocity.
Identify the first satellites.
Compare low Earth orbits with geostationary orbits.
Explain the functions of military, communications, and weather satellites.
Explain how remote sensing from satellites has helped us study Earth as a global system.
Describe five discoveries made by space probes.
Explain how space-probe missions help us better understand the Earth.
Describe how NASA's new strategy of "faster, cheaper, and better" relates to space probes.
Summarize the history and future of human spaceflight.
Explain the benefits of crewed space programs.
Identify five "space-age spinoffs" that are used in everyday life.

Benchmark Assessments:
Other written assessments
Teacher generated worksheets for each section and chapter
Written Test
Test is based on PSSA format including multiple choice and open-ended questions.

Instructional Procedures:
Generating & Testing Hypotheses
Introducing New Content & Vocabulary
Providing Practice
Using Classroom Organisation
Using Summary & Taking Notes

STANDARDS

STATE: Pennsylvania State Standards (2002)

3.2.7.A (Introduced) Explain and apply scientific and technological knowledge.
3.2.7.B (Introduced) Apply process knowledge to make and interpret observations.
3.2.7.C (Introduced) Identify and use the elements of scientific inquiry to solve problems.
3.2.7.D (Introduced) Know and use the technological design process to solve problems.
3.4.7.D (Introduced) Describe essential ideas about the composition and structure of the universe and the earth’s place in it.

This Curriculum Map Unit has no Topics to display