

# Freetown Lakeville Public Schools

Grade 4 Science and Technology/Engineering  
Unit Guide

8/20/2002

## Grade 4 Science and Technology/Engineering Curriculum Guideline

### Unit: Animals

#### Topic:

#### Student Learning Objectives

- 50216** Classify animals according to the characteristics that they share.
- 50220** Differentiate between characteristics of animals that the environment can and cannot change.
- 50222** Explain how the structures of living things (e.g., shape of beak or "feet", placement of eyes on head, length of neck) are adaptations to their environment that help them survive.
- Give examples of how change in the environment has caused some plants and animals to die or move to new locations.

#### Textbook References, Resources and Materials

Chapter 2 pp. C32-C63  
See animals C32a-32b for activities, materials and assessments

Textbook - Discovery Works by Silver Burdett Ginn Science  
see Animals Clc for Standards and Benchmarks  
see Animals Cld - Curriculum INtegration for thematic connections

Chapter 2 pp. C32-C63  
See animals C32a-32b for activities, materials and assessments

Textbook - Discovery Works by Silver Burdett Ginn Science  
see Animals Clc for Standards and Benchmarks  
see Animals Cld - Curriculum INtegration for thematic connections

Chapter 1 - pp. C4-C31  
See Animals C4a-4b for activities, materials and assessment

Textbook - Discovery Works by Silver Burdett Ginn Science  
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**50223** Describe how organisms meet some of their needs in an environment by using behaviors (patterns of activities) in response to information (stimuli) received from the environment.

Recognize that some animal behaviors are instinctive (e.g., turtles burying their eggs), and others are learned (e.g., humans building fires for warmth).

Chapter 1 - pp. C4-C31  
See Animals C4a-4b for activities, materials and assessment

Textbook - Discovery Works by Silver Burdett Ginn Science  
see Animals Clc for Standards and Benchmarks  
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**50224** Recognize that many animals can survive harsh environments because of seasonal behaviors, e.g., in winter, some animals hibernate, and other animals migrate.

Chapter 1 - pp. C4-C31  
See Animals C4a-4b for activities, materials and assessment

Textbook - Discovery Works by Silver Burdett Ginn Science  
see Animals Clc for Standards and Benchmarks  
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**50225** Give examples of how organisms can cause changes in their environment to ensure survival.

Chapter 1 - pp. C4-C31  
See Animals C4a-4b for activities, materials and assessment

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## Grade 4 Science and Technology/Engineering Curriculum Guideline

### **Suggested Instructional Strategies**

Research local projects where people are changing the environment

Sketch things from home that are designed to help humans survive

Read and discuss related textbook pages

Perform appropriate Investigations related to text

Complete appropriate text related workbook pages

Class discussion

Use related Internet sites

Read aloud related literature selections

See Grade 3 text - Roles of Living Things

### **Assessment**

Evaluate student research

Evaluate student sketches

Observation

Pencil and paper

## Grade 4 Science and Technology/Engineering Curriculum Guideline

### Unit: Designing Investigations

#### Topic:

#### Student Learning Objectives

- 50122** Identify tools and simple machines used for a specific purpose, e.g., ramp, wheel, hammer.
- 50239** Identify materials used to accomplish a design task based on a specific property, i.e. weight, strength, hardness, and flexibility.
- 50240** Identify and explain the appropriate materials and tools (hammer, screwdriver, pliers, tape measure, screws, nails and other mechanical fasteners).

#### Textbook References, Resources and Materials

Holt Science - Holt, Rinehart and Winston Publishers  
Chapter 11  
Unit 4 pp. 174-225  
Chap. 11 pp. 174-192 et al.

Decide and Design: Inventive Ideas by Doris Spivack

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Decide and Design: Inventive Ideas by Doris Spivack

See Properties of Matter Discovery Works Unit B  
Chapter 1 pp. B2-B23.

Holt Science - Holt, Rinehart and Winston Publishers  
Chapter 11  
Unit 4 pp. 174-225  
Chap. 11 pp. 174-192 et al.

Decide and Design: Inventive Ideas by Doris Spivack



## Grade 4 Science and Technology/Engineering Curriculum Guideline

**50243** Describe different ways in which a problem can be represented, e.g., sketches, diagrams, graphic organizers, and lists.

Holt Science - Holt, Rinehart and Winston Publishers  
Chapter 11  
Unit 4 pp. 174-225  
Chap. 11 pp. 174-192 et al.

Decide and Design: Inventive Ideas by Doris Spivack

See Properties of Matter Discovery Works Unit B  
Chapter 1 pp. B2-B23.

### Suggested Instructional Strategies

### Assessment

Draw at least 3 ways to represent a given set of data.

## Grade 4 Science and Technology/Engineering Curriculum Guideline

### Unit: Forms of Energy

#### Topic:

#### Student Learning Objectives

- 50230** Identify the basic forms of energy (light, sound, heat, electrical, and magnetic).  
Recognize that energy is the ability to cause motion or create change.

- 50231** Give examples of how energy can be transferred from one form to another.

#### Textbook References, Resources and Materials

Text - Discovery Works Chapter 1  
See Forms of Energy p. C1c for Benchmarks and Standards  
See Forms of Energy p. C1d for Curriculum Integration for thematic connections  
Chap. 1 pp. C4-C21  
see p. 4a-4b for activities, materials, and assessment

Text - Discovery Works Chapter 2  
See Forms of Energy p. C1c for Benchmarks and Standards  
See Forms of Energy p. C1d for Curriculum Integration for thematic connections  
Chapter 2 pp. C22-C45  
see pp. C22a-22b for activities, materials, and assessment.

## Grade 4 Science and Technology/Engineering Curriculum Guideline

### **Suggested Instructional Strategies**

Use Divided Page to define appropriate terms (chemical and physical changes and mixtures, convection, conduction)

Perform Solar Cell Activity and record results in science notebooks.

Perform Sand Shake Thermometer Activity

Class discussion

Read and discuss related text pages

\*Energy Module is from Grade 3 \*

Perform appropriate Investigations related to text

Complete appropriate text related workbook pages

Use related AIMS activities and internet sites

### **Assessment**

Evaluate completed Divided Pages.

Evaluate activity procedures and results in science notebooks.

Observation.

Paper and pencil.

## Grade 4 Science and Technology/Engineering Curriculum Guideline

### Unit: Properties of Matter

#### Topic:

#### Student Learning Objectives

**50117** Demonstrate that the way to change the motion of an object is to apply a force (give it a push or a pull). The greater the force, the greater the change in the motion of the object.

**50227** Differentiate between properties of objects (e.g., size, shape, weight) and properties of materials (e.g., color, texture, hardness).

**50228** Compare and contrast solids, liquids, and gases based on the basic properties of each state of matter.

**50229** Recognize that heat is responsible for making changes in state of matter.

#### Textbook References, Resources and Materials

Text: Properties of Matter  
Unit B pp. 1c-1d for Benchmark Standards and Curriculum Integration

Chap. 1 see pp. 4a and 4b for Activities, Materials and Assessment.

Text: Properties of Matter  
Chap. 1 pp. B4-B23

Text: Properties of Matter  
Chap. 2 B24a-24b  
Materials, Activities and Assessment  
Student pp. B24-B43

Text: Properties of Matter  
Chap. 3 B44a-B45b  
Materials, Activities, Assessment  
Student pp. B44-B63



## Grade 4 Science and Technology/Engineering Curriculum Guideline

### **Suggested Instructional Strategies**

Students visit stations on each state of matter, ie. water table, balloon and fan, sand and block table. They will design one container for each of the states of matter.

C6 - Act out changes in states of matter using movement to show the rate at which molecules move from state to state.

Forecasting - What would be the effects on the world if there were no changes in states of matter?

Class demonstration of changing water to each state of matter.

Use related AIMS activities

Class discussion

Read and discuss related textbook pages

Perform appropriate Investigations related to text

Complete appropriate text related workbook pages

### **Assessment**

Evaluate the appropriateness of students container designs

Observation

Paper and pencil

Assess students' drawings of class demonstration. Students write a sentence of each to explain C5.

Design containers that hold each state of matter. Create a plan.

## Grade 4 Science and Technology/Engineering Curriculum Guideline

### Unit: Weather

#### Topic:

#### Student Learning Objectives

- 50206** Explain how air temperature, moisture, wind speed and direction, and precipitation make up the weather in a particular place and time.
- 50207** Distinguish among the various forms of precipitation (rain, snow, sleet, and hail), making connections to the weather in a particular place and time.
- 50208** Describe how global patterns such as the jet stream and water currents influence local weather in measurable terms such as temperature, wind direction and speed, and precipitation.

#### Textbook References, Resources and Materials

Text - Discovery Works Chapter 1 & 2  
See Weather and Climate pp. E1c for standards and benchmarks  
See Weather and Climate pp. E1d for Curriculum Integration for thematic connections

Ch. 1 pp. E4-E23  
see pp. E4a-4b for activities, materials and assessment  
Ch. 2 pp. E24-E49  
see pp. E24a-24b for activities, materials and assesment

Text - Discovery Works Chapter 2  
See Weather and Climate pp. E1c for standards and benchmarks  
See Weather and Climate pp. E1d for Curriculum Integration for thematic connections

Ch. 2 pp. E24-E49  
see pp. E24a-24b for activities, materials and assesment

Text - Discovery Works Chapter 3  
See Weather and Climate pp. E1c for standards and benchmarks  
See Weather and Climate pp. E1d for Curriculum Integration for thematic connections

Ch. 3 pp. E450- E75  
see pp. E50a-50b for activities, materials and assessment



## Grade 4 Science and Technology/Engineering Curriculum Guideline

**50209** Differentiate between weather and climate.

Text - Discovery Works Chapter 4  
See Weather and Climate pp. E1c for standards and benchmarks  
See Weather and Climate pp. E1d for Curriculum Integration for thematic connections

Ch. 4 pp. E76-E96  
see pp. E76a-76b for activities, materials and assessment

**50211** Give examples of how the cycling of water in the atmosphere and underground has an effect on climate.

Text - Discovery Works Chapter 4  
See Weather and Climate pp. E1c for standards and benchmarks  
See Weather and Climate pp. E1d for Curriculum Integration for thematic connections

Ch. 4 pp. E76-E96  
see pp. E76a-76b for activities, materials and assessment.

## Grade 4 Science and Technology/Engineering Curriculum Guideline

### **Suggested Instructional Strategies**

Draw a labeled diagram of the water cycle  
Construct a labeled model of the water cycle  
Define appropriate terms (evaporation, condensation, precipitation, accumulation) using the Divided Page and Graphic Organizers  
Conduct AIMS activity (Water, Water Everywhere) relating to distribution of types of water on Earth  
Class discussions  
Read appropriate literature selections aloud  
Act out the stages of the water cycle  
Read and discuss appropriate textbook pages  
Complete appropriate text related workbook pages  
Perform appropriate Investigations related to text  
Use appropriate Internet sites  
Create a song using the terms ( condensation...).  
Plan and design an accordion book on the water cycle.  
Create a story from the perspective of a water droplet.  
F2 - What would be the effects without a water cycle or without one of the processes.

### **Assessment**

Evaluate student diagrams and/or models  
Evaluate Divided Page and/or Graphic Organizers  
Quick write to evaluate AIMS activity  
Observation  
Pencil and paper evaluation  
Transformation - students transform a water droplet into a related benefit of the cycle (i.e., water droplet becomes a flower)  
C5- Students write a sentence to explain their transformation.