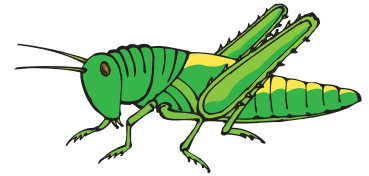
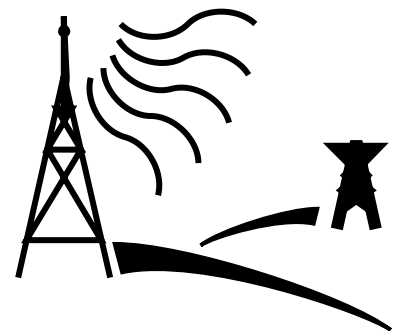
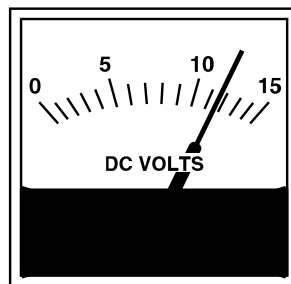


Energy Strand B



5th Grade Science Daily Lessons



TEACHER'S GUIDE

This binder contains science lesson plans for 5th grade teachers. All lesson plans correlated to the Sunshine State Science Standards, Strands, Benchmarks and the Harcourt Science series. All activities, demonstrations, centers and FCAT Dailies are included in the lesson plans.

When using these plans please keep in mind that not all students learn at the same rate. Some students may need more time in mastering a benchmark than the time allotted for each one. Also, students may master a benchmark in less time than is allotted. Please make the necessary changes as you proceed through the benchmarks.

Each lesson lists the benchmark to be covered. Those benchmarks that are indicated Annually Assessed will be on the science FCAT every year. Those benchmarks that are indicated Content Sampled will be randomly selected each year for the science FCAT.

Each lesson lists essential questions. Students need to acquire the knowledge needed to answer these questions not only to do well on the science FCAT but also to develop science literacy skills.

The vocabulary words listed are from the glossary provided by the Department of Education. It is essential that students understand these vocabulary words. These specific words will not be defined in the stem of the FCAT science question.

Science content will include demonstrations, activities, and reading from Harcourt Science. When Harcourt Science does not have material to cover a benchmark other reading material is indicated. If the suggested supplemental materials are not in your schools you may substitute books related to the content that are in your Media Center or type in key words to access Internet information. Since it is not possible for teachers to cover every single page and do every activity in the Harcourt Science series only those chapters, lessons, and activities that correlate to the benchmarks are indicated on the lesson plans.

Each lesson and activity includes an assessment. Keep in mind that assessment drives instruction. The more you assess and evaluate students understanding of the concepts presented the more you ensure that your students are acquiring the necessary science skills to master the benchmarks.

Please read the lessons for the entire week. Teacher preparation may be necessary for some of the activities. When this occurs, you will see a section labeled Teacher Preparation the day before the activity occurs. This will give you some time to gather the materials you need.

ACKNOWLEDGEMENTS

The Science Department would like to thank the following for their assistance in providing these science lesson plans to 5th grade teachers:

| | |
|----------------------------|--------------------------------------|
| Nancy Barba | Director, Program Development |
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| Carolyn Sant Angelo | Indian Trace Elementary |

These 5th grade science lesson plans were developed and written under the direction of Rose-Marie Botting, Science Curriculum Specialist. It is hoped that these science lesson plans will assist you in delivering science curriculum. If you have any questions please contact Rose-Marie Botting at 954.767.8407.



REQUIRED TEXTS

REQUIRED VIDEO

NECESSARY MATERIALS

**BENCHMARK SC.B.1.2.1 (Annually Assessed):**

The student knows how to trace the flow of energy in a system (e.g., as in an ecosystem).

ESSENTIAL QUESTION:**How does energy flow in a food chain?**

answer: Animals need energy in order to survive. Animals get energy from the food that they eat. Animals also get energy from the stored energy in the animals they eat. As a result, all energy comes from plants. A cow gets its energy from grass. Grass got its energy from the sun and converted the energy to make food through a process called photosynthesis. Humans eat cows and get energy from the cow and from the plants the cow ate.

VOCABULARY FOR WORD WALL:

ecosystem - an integrated unit of a biological community, its physical environment, and interactions area (e.g. living things that rely on each other for food and shelter like a forest or a pond)

habitat - a place in the ecosystem where an organism normally lives

FCAT SCIENCE DAILY: None

CONTENT:**Procedure**

1. Ask students to tell you everything they know about how energy flows in an ecosystem or habitat.
2. Write everything the students tell you.
3. Hang the chart and refer to the chart as you proceed through this unit.
4. Note any misconceptions and change them as needed.

VIDEO:

View the “Soaring with FCAT Science” Video for Strand B – Energy. It is highly recommended that you review the sections throughout the video that relate to the benchmark you are teaching. All benchmarks are covered in this video. throughout the video that relate to the benchmark you are teaching. All benchmarks are covered in this video.

ASSESSMENT:

Have students write one or two facts that they learned from the video in their science journal. Ask them if there is anything that needs to be added to the chart or changed.

**BENCHMARK SC. B.1.2.1 (Annually Assessed):**

The student knows how to trace the flow of energy in a system (e.g., as in an ecosystem).

ESSENTIAL QUESTIONS:

How does energy flow in a food chain?

VOCABULARY FOR WORD WALL:

population - a group of organisms of the same species living in a specific geographical area

community - all populations of organisms belonging to different species and sharing the same geographical area

FCAT SCIENCE DAILY: None

CONTENT /READING:

HARCOURT SCIENCE Unit B Chapter 2 Lesson 2 pg. B28-31

Procedure

1. Teacher reads pages B28-29 orally to students as they follow or have students read out loud with a buddy, or as a 4 -student group or on their own.
2. Question students' understanding as you proceed through the pages.
3. Discuss the bar graph on B30 with students.

What information can you read from this graph?

- What does the x axis represent? The y axis?
 - What is precipitation? What is temperature?
 - During what months does it rain the **greatest** in Vermont?
 - During what months does it rain the **least** in Vermont?
 - During what months does it rain the **greatest** in Arizona?
4. During what months does it rain the **least** in Arizona?

ASSESSMENT:

Have students write in their journals at least two things they learned from the reading passages.

**BENCHMARK SC. B. 1.2.1 (Annually Assessed)**

The student knows how to trace the flow of energy in a system (e.g., as in an ecosystem).

ESSENTIAL QUESTIONS:

How does energy flow in a food chain?.

VOCABULARY FOR WORD WALL:

producer - an organism that makes its own food from the environment; usually a green plant

consumer - an organism that feeds on other organisms for food

energy pyramid - this shows the amount of energy available to pass from one level of a food chain to the next

food chain - shows how the consumers in an ecosystem are connected to one another according to what they eat

decomposer - any organism that feeds or obtains nutrients by breaking down organic matter from dead organisms

food web - (cycle) the interconnected feeding relationships in a food chain found in a particular place and time

FCAT SCIENCE DAILY: None

CONTENT/READING:

HARCOURT SCIENCE Unit B - Chapter 2 Lesson 2 pg. B34-B37
(How Energy is Transferred in an Ecosystem)

Procedure:

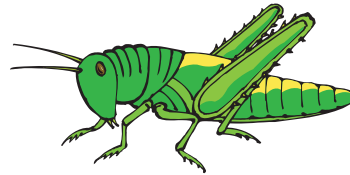
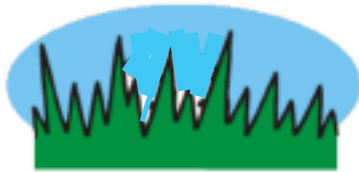
1. Teacher reads pages B34-35 orally to students as they follow or have students read out loud with a buddy, or as a 4 -student group or on their own. Focus on vocabulary words. Discuss ÷ question with students.
2. Discuss B36 with students:
 - a. What are some producers you see in the picture? (grass and clover etc)
 - b. What are some first level consumers? (bison, butterfly, cricket)
 - c. What are some second level consumers? (hawk)
 - d. Do you see any decomposers in the picture? (mushrooms)
 - e. What are three food chains that begin with the needle-and-thread grass?
 - Grass-grasshopper-snake
 - Grass-mouse-snake
 - Grass-ground squirrel-hawk
 - f. Where does all this energy in the picture originate? (sun)

Continued next page

**ASSESSMENT:**

Have students illustrate a multi-level food web in a community that has snakes, rats, hawks, rabbits, foxes and grasshoppers.

A food web is when different food chains in a community link together. For example in a forest community there are snakes, grasshoppers, rats, hawks, rabbits and foxes. The snake will eat the rat, and the rat will eat plants. This is one food chain in the forest community. The grasshopper will eat plants, a bird will eat the grasshopper and the hawk will eat the bird. This is another food chain in the forest community. The fox will eat the rat, which is another food chain. The hawk will also eat a rat and a grasshopper. The fox will also eat the rat. These two predators will eat foods from other food chains in the community.



**BENCHMARK SC. B. 1.2.1 (Annually Assessed)**

The student knows how to trace the flow of energy in a system (e.g., as in an ecosystem).

ESSENTIAL QUESTIONS:

How does energy flow in a food chain?

VOCABULARY FOR WORD WALL:

Review all vocabulary

FCAT SCIENCE DAILIES:

None

CONTENT READING:

HARCOURT SCIENCE Unit B - Chapter 2 Lesson 2 pg. B38-B39
Energy Pyramid

Procedure

1. Teacher reads pages B38 orally to students as they follow or have students read out loud with a buddy, or as a 4 -student group or on their own.
2. Focus on vocabulary words. Discuss question with students.
3. Discuss B38 with students:
 - a. Main idea: Within an ecosystem, producers are far numerous than consumers.
 - b. Why does an ecosystem need more producers in order to have a balanced energy flow?
 - c. In Africa there are hundreds of antelope for every lion. How can you explain this ratio?
4. Teacher reads and discusses B39 Summary with students

ASSESSMENT:

Assign Review Questions on B39 as class work or homework to be completed in students' science journals.

TEACHER PREPARATION FOR NEXT DAY'S LESSON

Read the lesson for tomorrow as you will need materials to set up a science center. You will need:

- | | |
|----------------------------------|------------------|
| 1 battery | 1 battery holder |
| 1 socket | 1 light bulb |
| 2 bell wires – 12-18 inches long | |

**BENCHMARK SC. B. 1.2.1 (Annually Assessed)**

The student knows how to trace the flow of energy in a system (e.g., as in an ecosystem).

ESSENTIAL QUESTION:**How does energy flow in an electrical system?**

answer: A continuing flow of electric charges is produced by a device that changes other forms of energy into electrical energy. Wires are connected to a battery and to the socket causing the light bulb to light up.

VOCABULARY FOR WORD WALL:

electric circuit – when a wire is connected to the terminals of a source, such as a battery, a complete path called a circuit is formed

FCAT SCIENCE DAILIES:

Answer questions and discuss with students (the answer for question 1 is B and 2 is H).

CONTENT/SCIENCE CENTER:**Materials**

- 1 battery
- 2 wires
- 1 bulb
- 1 battery holder
- 1 socket

**Procedure**

1. Ask students to tell you what they know about how energy flows in a food chain.
2. Tell them that they are going to experiment with a different kind of energy flow- electricity.
3. Tell students that you have placed on a table all the materials they will need to create an electric circuit.
4. Students will know if their circuit is working if the light bulb lights up.
5. Tell them you are not going to show them how it works. They have to figure it out for themselves.
6. They may ask a friend to help them.
7. Give students time during the day to try to get the electric circuit to work. Maybe after they finish all of their seatwork they may use the center.

Continued next page

**ASSESSMENT:**

Have students draw a diagram in their science journals of how to set up the materials in the center to create an electric circuit. Tell them they will try their diagram when it is their turn to go to the center. Have them redraw the circuit if their original design did not work.

TEACHER PREPARATION FOR NEXT DAY'S LESSON**Materials**

- 8 sheets of graph paper**
- 1 tennis ball, racket ball or small rubber ball**
- 1 package colored markers**
- 1 roll of tape**
- 1 meter stick**

**Assessment**
Benchmark—SC.B. 1.2.1

1. Mary put an egg into some water in a pot and let the water boil until the egg was cooked. How was thermal energy (heat) transferred to the egg during this process?
- A. Insulation allowed the heat to transfer from the pot through the water to the egg.
 - B. Convection currents transferred heat from the pot through the water to the egg.
 - C. Radiation currents moved heat through the water, then through the pot to the egg.
 - D. Conduction transferred heat from the pot through the water to the egg.
2. Gloria is making a simple electrical circuit using materials that include a battery, two wires and a light bulb. She used all of the materials but the light bulb would not light up. Which is the best explanation of why the light bulb did not light up?
- F. The wire is not insulated.
 - G. She needs to create a series circuit.
 - H. The circuit is broken.
 - I. She needs to create a parallel circuit.



**BENCHMARK SC. B.1.2.2 (Annually Assessed):**

The student recognizes various forms of energy (e.g., heat, light, and electricity)(Also assesses B 1.2.4) .

ESSENTIAL QUESTION:**What are some forms of energy?**

answer: Electrical, mechanical, thermal, light, sound are some forms of energy. Heat, light and electricity are forms of energy. Energy from the sun, wind and water are also forms of energy. Sound is a form of energy. Mechanical energy is energy we use to move things. Magnets also produce energy.

VOCABULARY FOR WORD WALL:

energy - a quantity that describes the capacity to do work; a source of usable power

heat - a form of energy resulting from the temperature difference between a system and its surroundings

kinetic energy - the energy possessed by a body because of its motion

potential energy - the energy an object has because of its position or structure; stored energy

FCAT SCIENCE DAILIES:

none

CONTENT /ACTIVITY:**Materials**

- 8 sheets of graph paper
- 1 package colored markers
- 1 roll of tape
- 1 meter stick
- 1 tennis ball, racket ball or small rubber ball

Procedure

Follow the procedure on page F60 and F61

**ASSESSMENT:**

Have students write their own definitions for potential and kinetic energy.

**BENCHMARK SC. B.1.2.2 (Annually Assessed):**

The student recognizes various forms of energy (e.g., heat, light, and electricity) (Also assesses B 1.2.4) .

ESSENTIAL QUESTIONS:

What are some forms of energy?

VOCABULARY FOR WORD WALL:

Review all vocabulary

FCAT SCIENCE DAILIES:

Students answer questions and discuss (the answer for question 1 is A and 2 is F).

CONTENT READING:

HARCOURT SCIENCE Unit F, Chapter 3 Lesson 3 pg. F58 &F59
Chapter 3 Lesson 3 pg. F62-F63

Procedure

1. Teacher reads pages F58-F59 orally to students as they follow or have students read out loud with a buddy, or as a 4 -student group or on their own.
2. Discuss pictures with students and forms of energy illustrated. Relate types of energy to students' daily lives.
3. Read pages F62-F63 with students. Refer to "Guide the Learning (Science Ideas) on the left side of page F62 in the **Teacher's Edition Learn About**. Focus in on the main idea and details. These are excellent comprehension questions.
4. Discuss and answer & question

ASSESSMENT:

Have students illustrate an example of kinetic and potential energy in their science journals.



Assessment

Benchmark—SC.B. 1.2.2

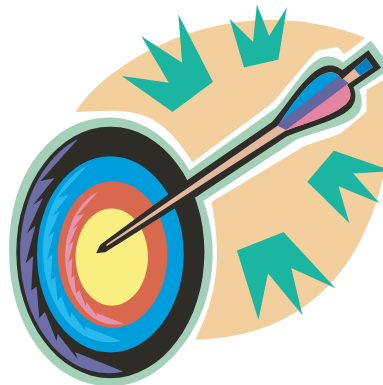
1. Gregory wanted to learn how to shoot a bow and arrow. He placed the arrow in the bow, stretched the bow, and then let the arrow go toward a safe target. What type of energy does a stretched bowstring have?

- A. kinetic
- B. chemical
- C. potential
- D. electrical



2. What type of energy does the arrow have after it has been shot?

- F. kinetic
- G. chemical
- H. potential
- I. electrical



**BENCHMARK SC. B.1.2.2 (Annually Assessed):**

The student recognizes various forms of energy (e.g., heat, light, and electricity)(Also assesses B 1.2.4) .

ESSENTIAL QUESTIONS:

What are some forms of energy?

VOCABULARY FOR WORD WALL:

mechanical energy - the kinetic energy that moving objects have

thermal energy - heat energy

atom - the smallest particle of a chemical element that can still retain the properties of that element

FCAT SCIENCE DAILIES:

None

**CONTENT /READING:**

HARCOURT SCIENCE Unit F - Chapter 3 Lesson 3 pg. F64 & F65

Procedure

1. Teacher reads pages F64-F65 orally to students as they follow or have students read out loud with a buddy, or as a 4 -student group or on their own.
2. Discuss pictures with students and forms of energy illustrated. Relate types of energy students' use in their daily lives.
3. Read pages F64-F65 with students. Refer to the Science Ideas for main idea and supporting details on the left side of the page in the Teacher's Edition 2 Learning Guide F64.
4. Discuss and answer & questions

ASSESSMENT:

Review Questions on F65. Have students answer the questions during class time or for homework.

TEACHER PREPARATION FOR NEXT DAY'S LESSON**Materials**

- 1 small paper dish
- 1 teaspoon salt
- 1 balloon
- 5 small pieces of tissue paper or confetti
- 1 piece of wool or silk or try the clothes you are wearing

**BENCHMARK SC. B.1.2.2 (Annually Assessed):**

The student recognizes various forms of energy (e.g., heat, light, and electricity) (Also assesses B 1.2.4) .

ESSENTIAL QUESTIONS:

What is static electricity?

answer: Static electricity is a build-up electric charges on an object.

VOCABULARY FOR WORD WALL:

static electricity

FCAT SCIENCE DAILIES:

None

CONTENT READING:

HARCOURT SCIENCE: Pages F68-F69

**CONTENT /DEMONSTRATION:**

Teacher will do the following activity first before reading pages F68 and 69.

Materials

- 1 small paper dish
- 1 teaspoon salt
- 1 balloon
- 5 small pieces of tissue paper or confetti
- 1 piece of wool or silk or try the clothes you are wearing

Procedure

1. Put a teaspoon of salt in the paper dish.
2. Blow up the balloon (not all the way) and tie it so the air does not escape.
3. Tell students that you are going to pick up salt with the balloon.
4. Rub the balloon with a piece of wool, silk or your own clothes. If you are planning on just rubbing the balloon on your clothes, try it before you do it with the class. If it works, fine. If not, you will need to use a piece of silk or wool.
5. Place the balloon over the salt.
6. Have students observe what happened.

Continued next page



7. Explain the following. When the balloon was rubbed friction was created. The balloon takes on a negative charge. When it is held near the salt, the salt becomes positively charged and leaps up to the balloon and clings to it. As the salt remains in contact with the balloon, some of the negative charge will drain off the balloon and onto the salt. The salt now has a negative charge, the same as the balloon, and will leap from the comb.
8. Ask students if the balloon could attract small pieces of paper.
9. Try the same experiment using confetti or small pieces of tissue paper. You may also use rice, puffed rice, Styrofoam (cut up a Styrofoam cup into small pieces).
10. When do you notice static electricity the most? When you take clothes out of the dryer. That is why we sometimes put Bounce or other sheets into the dryer. It stops static electricity, the build up of electric charges.

READING:

Read the selection orally to students as they follow or have them read it on their own. Question to assess students understanding of static electricity. Refer back to the activity or repeat it again if students are having trouble understanding this concept.

ASSESSMENT:

Have students write in their journals what they learned about static electricity or illustrate what they learned.

**BENCHMARK SC. B.1.2.2 (Annually Assessed):**

The student recognizes various forms of energy (e.g., heat, light, and electricity) (Also assesses B 1.2.4) .

ESSENTIAL QUESTIONS:

What are some forms of energy?

VOCABULARY FOR WORD WALL:

Review previous vocabulary

FCAT SCIENCE DAILIES:

None

CONTENT READING:

HARCOURT SCIENCE: Unit F - Chapter 3 Lesson 2 pg. F70-F71, Electric Current

Procedure

1. Have students tell you about their experiences with setting up the electric circuit.
2. Continue to provide opportunities for those students who did not get a chance to work at the center.
3. Teacher reads pages F70-F71 orally to students as they follow or have students read out loud with a buddy, or as a 4 -student group or on their own.
4. Focus on highlighted words. Discuss & questions with students.
5. Use Guide the Learning: SCIENCE IDEAS for pg. F70.

Main Idea: An electric circuit is any path along which electrons can flow.

ASSESSMENT:

Use the electric circuit materials from the science center. This will be an inquiry type assessment or activity. Have students explore to see if they can use the materials in the center to design an experiment to show whether an object will conduct electricity. You will need to place some metal objects such as paper clips, plastic spoon, metal spoon, coins, corks, etc. If students are able to do this activity it will assess that they truly understand how an electric circuit works.

TEACHER PREPARATION FOR NEXT DAY'S LESSON**Materials**

2 magnets for each group of students

**BENCHMARK SC. B.1.2.2 (Annually Assessed):**

The student recognizes various forms of energy (e.g., heat, light, and electricity) (Also assesses B 1.2.4) .

ESSENTIAL QUESTIONS:

What are some forms of energy?

VOCABULARY FOR WORD WALL:

magnetic - having the property of attracting iron and certain other materials by virtue of a surrounding field of force

FCAT SCIENCE DAILIES:

None

CONTENT /DEMONSTRATION AND READING:

HARCOURT SCIENCE Unit F -

Chapter 3 Lesson 2 pg. F72-F73 (Magnets & Electricity)

Materials

- 2 magnets for each group of 4 students
- 5 paper clips per group

Procedure

1. Have students experiment with magnets for about 5 minutes
2. Have them tell you what they discovered.
3. Have students turn to page F72-73 and read orally to students as they follow or have students read out loud with a buddy, or as a 4-student group, or on their own.
4. Focus on highlighted words. Discuss & questions with students.
5. Optional Ancillary Book: Discovering Electricity (Ranger Rick Series) read pgs. The set contains a big book and 5 smaller books. Students could share and follow along in the smaller books while the teacher reads the big book.

ASSESSMENT:

Have students write everything they have learned about magnets and electromagnets in their journals.

**BENCHMARK SC. B.1.2.2 (Annually Assessed):**

The student recognizes various forms of energy (e.g., heat, light, and electricity) (Also assesses B 1.2.4) .

ESSENTIAL QUESTIONS:

What are some forms of energy?

VOCABULARY FOR WORD WALL:

reflection - the bouncing off or tuning back of light, sound, or heat from a surface

refraction - a change in the direction of a wave that occurs as it passes from one medium to another of different density

volume - the loudness of a sound or signal; †also a measure of the amount of space an object takes up

light - electromagnetic radiation that lies within the visible range; light is a form of energy that can travel freely through space.

FCAT SCIENCE DAILIES:

None

CONTENT READING:

HARCOURT SCIENCE Unit F

Chapter 3 Lesson 3 pg. F76-F78 (Light & Sound Energy)

Procedure

1. Teacher reads pages F76-F78 orally to students as they follow or have students read out loud with a buddy, or as a 4 -student group or on their own.
2. Focus on highlighted words. Discuss ÷ questions with students.
3. Use Guide the Learning: SCIENCE IDEAS for pg. F76.
Main Idea: Light energy can travel through space and some kinds of matter; it can be absorbed, reflected, or refracted.
4. Use Guide the Learning: SCIENCE IDEAS for pg. F78.
Main Idea: Light energy and sound energy move in waves. Use first two questions only.

ASSESSMENT:

Have students illustrate the above vocabulary words in their journals. Have them write everything they know about light and how it travels

**BENCHMARK SC. B.1.2.2 (Annually Assessed):**

The student recognizes various forms of energy (e.g., heat, light, and electricity) (Also assesses B 1.2.4) .

ESSENTIAL QUESTIONS:

What are some forms of energy?

VOCABULARY FOR WORD WALL:

Review vocabulary

FCAT SCIENCE DAILIES:

NONE

CONTENT READING:

HARCOURT SCIENCE Unit F
Chapter 3 Lesson 3 pg. F79-F81 (Sound Waves & Sound Energy)

Procedure

1. Teacher reads pages F79-F81 orally to students as they follow or have students read out loud with a buddy, or as a 4 -student group or on their own.
2. Focus on highlighted words. Discuss ÷ questions with students.
3. Use Guide the Learning: SCIENCE IDEAS for pg. F78.
 - a.) Main Idea: Light energy and sound energy move in waves. Use last five questions only
4. Optional Ancillary Book: A World of Sound (Ranger Rick Series) read pgs. 4-5 &pg.13. The set contains a big book and 5 smaller books. Students could share and follow along in the smaller books while the teacher reads the big book to the class.

ASSESSMENT:

Assign F81 Review for class work or homework.

Home Investigation: Have students sit in their room that evening. Have them close their eyes and think about the sounds that they hear while they are sitting in their room or quiet place for about 5 minutes. Have them identify sounds that they hear. Next have them classify those sounds as being high, low or medium pitched. Have students complete this in their science journal.

TEACHER PREPARATION FOR NEXT DAY'S LESSON

See attached lesson



Light and Heat

Task: Determine if a flashlight also emits heat

Materials:

- One flashlight
- One thermometer



Procedure:

1. Predict if the flashlight will raise the temperature of the thermometer. Write your prediction in your science journal.
2. Look at the thermometer. Record the temperature.
3. Turn on the flashlight and place it close to the bulb of the thermometer.
4. Check the temperature after 3 minutes.
5. Record the temperature.
6. Write a conclusion in your science journal.



**BENCHMARK SC. B.1.2.3 (Content Sampled):**

The student knows that most things that emit light also emit heat.

ESSENTIAL QUESTION:

What two types of energy does candlelight produce?

answer: Candlelight produces both light and heat.

VOCABULARY FOR WORD WALL:

Review all vocabulary words

FCAT SCIENCE DAILIES:

Answer questions and discuss with students (the answer for question 1 is C and 2 is G).

CONTENT /SCIENCE ACTIVITY:

Task: To determine if a flashlight bulb also emits heat. Use science activity attached to yesterday's lesson.

Materials per group of 4 students

- One flashlight
- One thermometer

**Procedure**

1. Give students the following directions for doing this activity.
2. Tell them that they are going to find out if light in fact always emits heat.
3. They will first write their prediction in their science journal as to whether or not the flashlight will raise the temperature of the thermometer.
4. Students will then look at the temperature of the thermometer and record the temperature.
5. They will turn on the flashlight and place it close to the bulb of the thermometer for 3 minutes.
6. Have them record the temperature .

ASSESSMENT:

Have students write a conclusion in their science journals.



Assessment

Benchmark—SC.B. 1.2.3

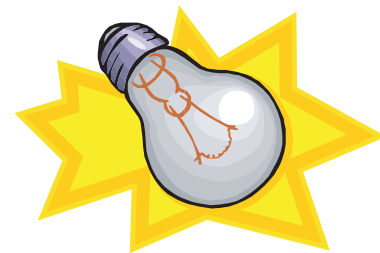
1. Josh wanted to know how hot the bulb on his desk lamp got. When he put his hand near the light bulb he could feel some heat. What could Josh do to measure how hot the lamp on his desk really got?

- A. He could place a cloth under the lamp and then feel the cloth.
- B. He could put a crayon under the lamp to see if it would melt.
- C. He could place a thermometer under the lamp.
- D. He could place a glass of ice under the lamp.



2. Electricity is needed in order for a light bulb to light up. When a lamp is plugged into the socket and turned on it will light up. Which of the following explains the energy changes that took place when the light bulb lit up?

- F. electrical > mechanical > light
- G. electrical > heat > light
- H. heat > light > electrical
- I. electrical > mechanical > chemical





BENCHMARK SC. B.1.2.3 (Content Sampled):

The student knows that most things that emit light also emit heat.

ESSENTIAL QUESTION:

What two types of energy does candlelight produce?

VOCABULARY FOR WORD WALL:

Review energy

FCAT SCIENCE DAILIES:

None

CONTENT READING:

HARCOURT SCIENCE Unit F
Chapter 4 Lesson 3 pg. F111-112 (Solar Energy)



Procedure

1. Teacher reads pages F111-F112 orally to students as they follow or have students read out loud with a buddy, or as a 4 -student group or on their own.
2. Focus on highlighted word. Discuss & question with students.
3. Optional Ancillary Big Book: Exploring Energy by Rigby. Read and discuss pages 2-5 with students.

ASSESSMENT:

Materials

- crayons
- science textbooks
- white construction paper for each student

Procedure

1. Have students fold paper into fourths.
2. Have them illustrate examples of solar energy and wind energy in their science journals. If students need assistance have them look at the illustration on page F111.
3. Have them illustrate examples of kinetic and potential energy. Refer to pg. F62.
4. Post illustrations around the classroom.

**BENCHMARK SC. B.1.2.3 (Content Sampled):**

The student knows that most things that emit light also emit heat.

ESSENTIAL QUESTION:

What two types of energy does candlelight produce?

VOCABULARY FOR WORD WALL:

None

FCAT SCIENCE DAILIES:

None

CONTENT READING:**HARCOURT SCIENCE Unit C**

Chapter 3 Lesson 2 pg. C72 (The Causes of Wind)

HARCOURT SCIENCE Unit D

Chapter 2 Lesson 1 D30-31 (Energy from the Sun)

Procedure

1. Teacher reads pages C72 orally to students as they follow or have students read out loud with a buddy, or as a 4 -student group or on their own.
2. Focus on highlighted word(s). Discuss ÷ question with students.
Main Idea: Uneven heating of the Earth's surface causes the air to be in constant motion.
3. Teacher reads pages D30-D31 orally to students as they follow or have students read orally with a buddy, or as a 4 -student group or on their own.
4. Focus on highlighted word(s). Discuss question with students.
Main Idea: The sun is the source of almost all energy on earth.

ASSESSMENT:

Have students write what they learned about the wind and sun in their science journals.

TEACHER PREPARATION FOR NEXT DAY'S LESSON**Materials**

- 1 meter of insulated wire
- 1 long iron nail
- wire cutters (optional but easier to use than scissors or a knife)
- 6 volt battery
- paper clips

**BENCHMARK SC. B.1.2.4:**

The student knows the many ways in which energy can be transformed from one type to another. (Assessed as SC.B. 1.2.2)

ESSENTIAL QUESTION:

Can one form of energy be transformed to another form of energy?

answer: Yes. Energy can be transformed in many ways. For example solar energy can be transformed to electric energy. Mechanical energy can be transformed to electric energy.

VOCABULARY FOR WORD WALL:

energy transformation - a change of energy from one form to another (e.g. mechanical to electrical, solar to electrical, magnetic to electric)

FCAT SCIENCE DAILIES:

Answer questions and discuss with students (**the answer for question 1 is C and 2 is H**).

CONTENT/DEMONSTRATION: Measuring Magnetic Force (see attached)**Materials**

- 1 meter of insulated wire
- 6 volt battery
- wire cutters (optional but easier to use than scissors or a knife)
- 1 long iron nail
- paper clips

**Procedure**

1. Tell children that they will see how electrical energy can create magnetic energy. You are going to create an electromagnet.
2. Wrap the insulated wire tightly around the iron nail 10 times, being careful not to overlap the wires.
3. Strip about 1 inch of insulation from both ends of the wire.
4. Secure one end of the wire to one end of the battery (-side)
5. Secure the other end of the wire to the other end of the battery (+side)
6. Take the nail and try to lift a paper clip.
7. You can measure how strong an electromagnet is by how many clips it can pick up at one time. The stronger the electromagnet the more clips you can pick up. This part of the lesson is a segway to tomorrow's lesson.
8. You can make the electromagnet stronger by coiling more wire around the nail.
9. You can turn this lesson into an inquiry based lesson by giving students the materials and challenging them to make the strongest electromagnet.

ASSESSMENT:

Have students write an explanation in their science journals of how the nail became a magnet. Also, use the two questions attached.

**Assessment****Benchmark—SC.B. 1.2.4**

1. Joann made some hot chocolate to drink. She stirred the hot chocolate milk with a metal spoon and noticed that the spoon handle felt warmer after resting in the hot chocolate for a few minutes. What type of energy transfer was she observing?
 - A. solar power transfer
 - B. electrical current transfer
 - C. heat transfer
 - D. fossil fuel transfer

2. Peter's brother put gas in the car so she could drive to the library. Gas is fuel that powers the car. What type of energy change takes place when the car is started and moves forward?
 - F. kinetic energy to mechanical energy
 - G. electrical energy to potential energy
 - H. chemical potential energy to kinetic energy
 - I. hydroelectric energy to kinetic energy



**BENCHMARK SC. B.1.2.5 (Content Sampled):**

The student knows that various forms of energy (e.g., mechanical, chemical, electrical, magnetic, nuclear, and radiant) can be measured in ways that make it possible to determine the amount of energy that is transformed. (Assessed as SC.B. 1.2.6 Knows ways that heat can move from one object to another)

ESSENTIAL QUESTION:

When one form of energy is transformed to another can the amount of the change be measured?

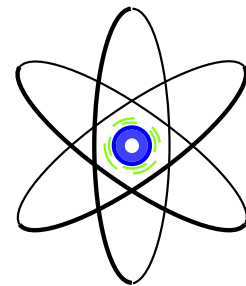
answer: Yes. for example, the amount of electricity you use in all of your appliances and to light your home can be measured. The power of a light bulb is measured in watts. The amount of gas your car uses, the amount of electricity you use can all be measured.

VOCABULARY FOR WORD WALL:

Review all vocabulary words

FCAT SCIENCE DAILIES:

None

**CONTENT/DISCUSSION**

1. Ask students to tell you how they think electricity gets to their home.
2. Tell students that Florida Power and Light has power stations that create electricity. Generators are used to transform mechanical energy to electrical energy. Generators in power plants are responsible for producing 99 percent of the electricity used in the United States.
3. How does FPL know how much electricity you use each month.
4. Electricity is measured in kilowatts. There is a meter in or around their homes that show the amount of kilowatts their families use. They are charged so much per kilowatt of electricity used.
5. Ask them to tell you all the ways in which they consume electricity.
6. Ask them how they can conserve the amount of electricity they use to lower their electric bill.the materials and challenging them to make the strongest electromagnet.

ASSESSMENT:

Have students write a short paragraph in their journals explaining how electricity gets to their houses.

**BENCHMARK SC. B.1.2.5 (Content Sampled):**

The student knows that various forms of energy (e.g., mechanical, chemical, electrical, magnetic, nuclear, and radiant) can be measured in ways that make it possible to determine the amount of energy that is transformed. (Assessed as SC.B. 1.2.6 Knows ways that heat can move from one object to another)

ESSENTIAL QUESTION:**How does energy move?**

answer: When you place a pot on the stove and turn on the heat the pot becomes hot which heats the water. When you sit in the sun the energy from the sun heats you, makes you tan, and warms the water.

VOCABULARY FOR WORD WALL:

conduction - direct transfer of heat between objects that touch

convection - transfer of heat as a result of the mixing of a liquid or a gas

radiation - the transfer of heat energy to electromagnetic waves

FCAT SCIENCE DAILIES:

Read and discuss with students (**the answer for question 1 is D and 2 is G**).

CONTENT READING

HARCOURT SCIENCE Unit F

Chapter 3 Lesson 4 pgs. F84-87

Procedure

1. Teacher reads pages F84-F87 orally to students as they follow or have students read out loud with a buddy, or as a 4 -student group or on their own.
2. Focus on highlighted word(s). Discuss ÷ questions with students.
Main Idea: Thermal energy, temperature, and heat are three different measures of kinetic energy.
3. Use questions on F84 GUIDE TO LEARNING: Science Ideas in the TE. Ed.

ASSESSMENT:

Assign Review F87 for students to do in their science journals.

TEACHER PREPARATION FOR NEXT DAY'S LESSON**Materials**

| | |
|--|-----------------|
| 1 6volt dry cell | 1 socket |
| 1light bulb | 1 cork |
| 1 nail or other metal object | 1 plastic ruler |
| 1 5X5 square piece of aluminum foil | 1 paper clip |
| 40cm pieces of bell wire with 3cm of insulation removed from the ends of the wires | |

**Assessment****Benchmark—SC.B. 1.2.5**

1. The newspaper had an article that stated that there are many more white cars than darker cars that travel the highways in Florida. This is because white cars reflect the sun's rays and darker cars absorb them. Which of the following would be the **best** way to prove that this statement is right?



- A. take a ride in each color car to see which is hotter
 - B. touch a white car after it has been in the sun to feel the heat
 - C. touch a black car after it has been in the sun to feel the heat
 - D. put a thermometer in each color car and record the temperature
2. Jasmine wanted to build a solar cooker to make a snack called "S'Mores." She covered a small box with aluminum foil. She placed a cookie sandwich that contained chocolate and marshmallows in the solar cooker. She placed the solar cooker in the sun. After thirty minutes the chocolate and marshmallows melted. Which of the following explains why they melted?
- F. because of the sun's magnetic energy
 - G. because of the sun's radiant energy
 - H. because of the sun's electrical energy
 - I. because of the sun's mechanical energy

**BENCHMARK SC. B.1.2.6 (Content Sampled):**

The student knows ways that heat can move from one object to another

ESSENTIAL QUESTION:

Can heat energy be transferred from one object to another?

answer: Heat energy can be transferred by conduction, convection, and radiation.

VOCABULARY FOR WORD WALL:

Review vocabulary for all lessons.

FCAT SCIENCE DAILIES:

Read and discuss with students (**the answer for question 1 is C, 2 is D AND 3 IS *The lightning rod attracts the lightning and protects houses and buildings from damage.***).

SCIENCE CONTENT TEACHER DEMO**Materials**

- 1 6volt dry cell
- 1 light bulb
- 1 5X5 square piece of aluminum foil
- 1 nail or other metal object
- 40cm pieces of bell wire with 3cm of insulation removed from the ends of the wires
- 1 socket
- 1 cork
- 1 paper clip

Procedure

1. Place the light bulb in the socket. Attach the socket with the light bulb to one terminal of the battery with on piece of wire
2. Attach the other wires to the second terminal of the battery and the other terminal of the socket with the light bulb, leaving the two free ends to use for experimentation
3. Experiment with the cork first. Place one free wire on one end of the cork and the other free wire on the other end of the cork.
4. Did the bulb light up?
5. Test each of the materials so the students can observe the results.

ASSESSMENT:

Have students make a list of items that conduct electricity and a list of those items that do not conduct electricity.



Assessment
Benchmark—SC.B. 1.2.6

Circle the correct answer.

1. Materials that allow an electric current to flow through them easily is known as which of the following:

- A. radiators
- B. convectors
- C. conductors
- D. insulators

2. Which material makes the best conductor?

- A. plastic
- B. glass
- C. wood
- D. metal

3. Lightning occurs very often in Florida. How does your knowledge of conductors help you explain why lightning rods are important?

**BENCHMARK SC. B.2.2.2 (Content Sampled):**

The student recognizes the costs and risks to society and the environment posed by the use of nonrenewable energy.

ESSENTIAL QUESTION:

What are some reasons to reduce the fossil fuels we use?

answer: Fossil fuels are nonrenewable resources. Once they are used up they are gone for millions of years.

VOCABULARY FOR WORD WALL:

resource - any material that can be used to satisfy a need

renewable resource - a resource that is replaced or restored, as it is used, by natural processes in a reasonable amount of time

nonrenewable resource - a resource that can only be replenished over millions of years

FCAT SCIENCE DAILIES:

None

CONTENT READING

HARCOURT SCIENCE Unit F
Chapter 4 Lesson 1 pgs. F94 & 98-101

Teacher reads pages F94 & 98-101 orally to students as they follow or have students read out loud with a buddy, or as a 4 -student group or on their own.

Procedure

1. Focus on highlighted word(s). Discuss ÷ questions with students.
Main Idea: Fossil fuels release thermal energy when burned and are the main source of energy for industrial nations.
2. Refer to questions on F98 & F100 GUIDE TO LEARNING; Science Ideas in the TE. Ed.
3. Focus on F98 bar graph. See F99 Analyze and Interpret Data for questions

ASSESSMENT:

Assign F101 Review and assign ESL activity on p. F99 in science journals. Model how the illustration should look.

**BENCHMARK SC. B.2.2.2 (Content Sampled):**

The student recognizes the costs and risks to society and the environment posed by the use of nonrenewable energy.

ESSENTIAL QUESTION:

What are some reasons to reduce the fossil fuels we use?

VOCABULARY FOR WORD WALL:

review vocabulary

FCAT SCIENCE DAILIES:

None

CONTENT READING

HARCOURT SCIENCE Unit F
Chapter 4 Lesson 2 pgs. F104-F107

Teacher reads pages F104 & F107 orally to students as they follow or have students read out loud with a buddy, or as a 4 -student group or on their own.

Procedure (Teacher)

1. Focus on highlighted word(s). Discuss ÷ questions with students.
Main Idea: Hydroelectric energy stations convert the energy of falling water to electricity.
2. Use questions on F104-F107 GUIDE TO LEARNING: Science Ideas in the TE. Ed.
3. Focus on F105 Use Process Skills; Communicate. Guide student through the answers.

ASSESSMENT:

Assign review F107 in science journals.

**BENCHMARK SC. B.2.2.2 (Content Sampled):**

The student recognizes the costs and risks to society and the environment posed by the use of nonrenewable energy.

ESSENTIAL QUESTION:

What are some reasons to reduce the fossil fuels we use?

VOCABULARY FOR WORD WALL:

review vocabulary

FCAT SCIENCE DAILIES:

None

CONTENT READING

HARCOURT SCIENCE Unit F
Chapter 4 Lesson 3 pgs. F110-F113

Teacher reads pages F110-F113 orally to students as they follow or have students read out loud with a buddy, or as a 4 -student group or on their own.

Procedure (Teacher)

1. Focus on highlighted word(s). Discuss & questions with students.
Main Idea: Sources of energy other than fossil fuels and hydroelectric energy are also important
2. Use questions on F110 GUIDE TO LEARNING: Science Ideas in the TE. Ed.

ASSESSMENT:

Assign review F113 in science journals