

Sample Body of Evidence

Science

Grade 3 – Second Reporting Period

**FOSS California Matter and Energy
Physical Science/Investigation & Experimentation**

This sample is intended to demonstrate the essential elements of a body of evidence. The evidence includes:

- Expected Student Responses to Grade Level Prompts (Science Notebook Sheets) identified in the Recommended Body of Evidence

This sample includes Expected Student Responses on Student Notebook Sheets identified in the Recommended Body of Evidence. This sample will be replaced with San Diego Unified School District proficient student work when it becomes available.

Important Note:

For the first two grading periods, students are evaluated based upon their progress toward end-of-year standards. Students who receive a mark of “proficient” for the first and second grading periods are making consistent and adequate progress toward achieving end-of-year expectations. In the final reporting period, the report card marks reflect a student’s actual achievement of the cumulated skills, strategies, and concepts identified in the California frameworks and content standards (SBRC, 2007).

Prompt #1

Name _____

Date _____

ENERGY SOURCES QUESTIONS

1. What is energy?

Energy makes things happen. All actions are the result of energy. Energy is the ability to do things.

2. What are some of the different kinds of energy?

electricity, heat, light, sound, motion, and chemical energy

3. What are some of the sources of stored energy that people use?

batteries, fuels (e.g., wood, coal, natural gas, oil), and food

4. How are food, fuel, and batteries alike?

They have energy stored as chemical energy. They are energy sources.

5. What is the source of most of the energy used by people? Explain.

The Sun. Plants capture the Sun's energy as chemical energy. That energy is in food and fossil fuels. Food and fuel are the energy sources we use most often.

Prompt #3

Name _____

Date _____

HOW DOES ENERGY TRAVEL? A

STATION 1: TONE GENERATOR

- What action did you observe? _____ rice vibrating
- Where did the energy come from? _____ battery
- Where did the energy go? _____ to the rice
- What carried the energy? _____ waves in the air
- The energy in _____ battery _____ moved through the _____ air
and ended up _____ in the moving rice grains.

STATION 2: SPRING TOY

- What action did you observe? _____ waves in the spring
- Where did the energy come from? _____ pulling the spring together
- Where did the energy go? _____ up and down the spring
- What carried the energy? _____ the metal spring
- The energy in _____ hand muscles _____ moved through the _____ spring
and ended up _____ moving the spring.

STATION 3: BOWLING

- What action did you observe? _____ ball knocking bottles
- Where did the energy come from? _____ hand
- Where did the energy go? _____ the bottles
- What carried the energy? _____ moving ball
- The energy in _____ arm _____ moved through the _____ with the ball
and ended up _____ in the bottles.

HOW DOES ENERGY TRAVEL? B.....

STATION 4: BATTERY AND MOTOR

- What action did you observe? _____ motor shaft moving
- Where did the energy come from? _____ battery
- Where did the energy go? _____ motor
- What carried the energy? _____ wires
- The energy in _____ battery _____ moved through the _____ wires
and ended up _____ turning the motor shaft.

DEMONSTRATION: WATER WAVES

- What action did you observe? _____ waves in the water
- Where did the energy come from? _____ muscles pushing
- Where did the energy go? _____ to the ball
- What carried the energy? _____ water waves
- The energy in _____ hand muscles _____ moved through the _____ water waves
and ended up _____ moving the ball.

Prompt #4

Name _____

Date _____

ALL ABOUT THE TRANSFER OF ENERGY

1. Where do people get energy?
from food

2. Why does a car need gasoline to run?
Gasoline is fuel that is burned to make the power to move the car.

3. What kinds of things have moving energy?
a skateboard moving downhill, a falling ball, and a person running

4. What are some examples of stored energy?
food, a battery, gasoline for cars, and wood for fires

5. How can stored energy change into active, moving energy?
rolling a bowling ball down an alley, rolling downhill on a skateboard, burning gasoline to power a car, and burning wood to make steam to drive a train

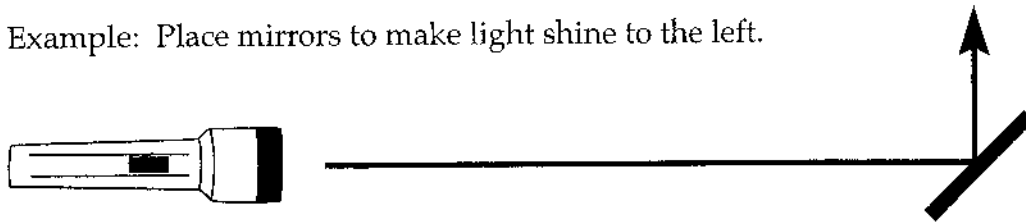
6. What is fuel used for?
Fuel is stored energy that is burned to make things happen.

7. How does energy from the Sun get converted into energy that can be used by humans and other animals?
Plants use solar energy along with carbon dioxide and water to grow. As they grow, they store energy. When we eat the plants, we change the stored energy into energy to help us move and grow.

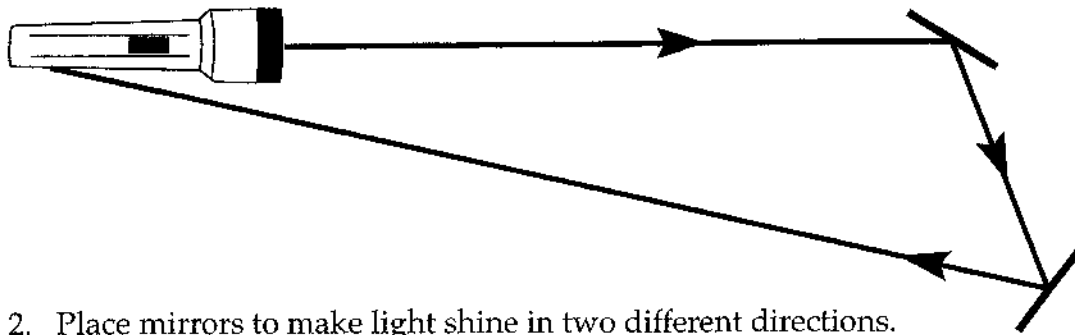
MIRROR CHALLENGES A

Draw the position of mirrors under each challenge. Draw lines to show how light reflects off the mirrors to solve the challenge.

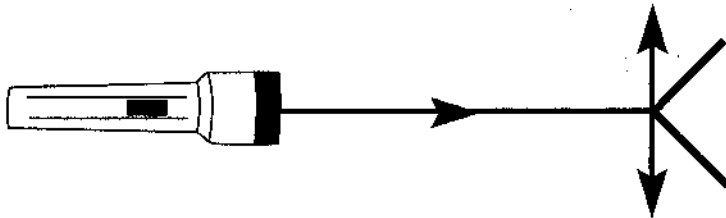
Example: Place mirrors to make light shine to the left.



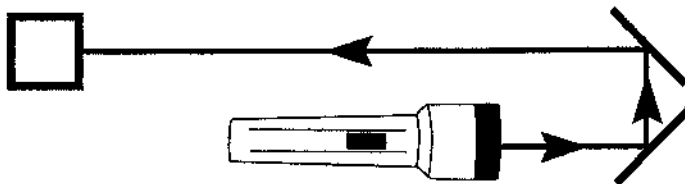
1. Place mirrors to make light shine on the side of the flashlight.



2. Place mirrors to make light shine in two different directions.

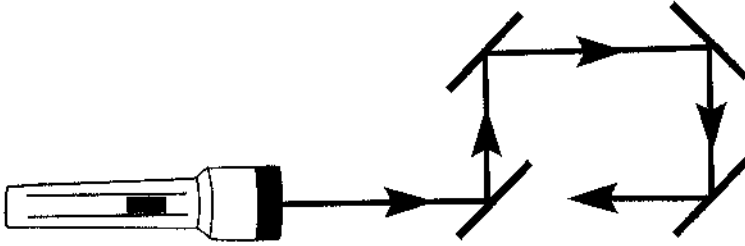


3. Place mirrors to make light shine on an object behind the flashlight.

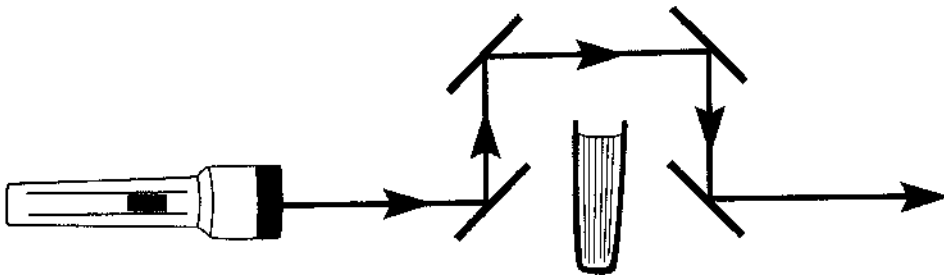


MIRROR CHALLENGES B

4. Place mirrors to shine light on the back of the first reflecting mirror.



5. Stand a book in front of the flashlight. Place mirrors to shine light "through" the book.



6. Make up your own challenge and show how to solve it.



READING IN SCIENCE RESOURCES

17. READ REFLECTION

Reflection tells about light, how light travels, and how light can be reflected.

Students can read the article on their own at home or in class or you could read the article aloud while they follow in their books. For reading strategies to support English learners and below-grade-level readers, see the Reading and Writing in Science chapter in this teacher guide.

After reading the article, students should answer the questions at the end of the article. Have students write the answers can be formalized in writing in the science notebook, or discuss them informally in their groups.

18. DISCUSS THE READING

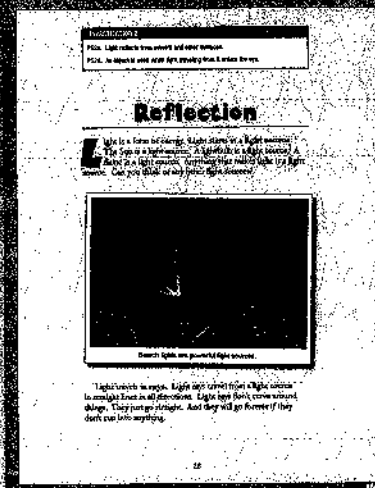
Ask students to review the questions at the end of the article. Call on an individual to share his or her answer to a question, and give others the opportunity to refine or add to the original question.

- *What must happen for you to see an object?* [Light from a light source or light reflected from an object must enter the eye.]
- *What is a light source? Give three examples.* [A light source makes light—the Sun, stars, flames, lightbulbs, lightning, hot materials.]
- *What happens when light reflects?* [Light hits an object and bounces off. The light continues in a straight line in a new direction.]
- *What kinds of surfaces reflect light?* [Shiny surfaces like mirrors, and most other objects that can be seen.]
- *What can you use a mirror for?* [To change the direction of rays of light, to direct light into your eyes to see things behind you, to reflect beams of light around corners.]

SCIENCE STANDARDS

PS2b. Students know light is reflected from mirrors and other surfaces.

PS2d. Students know an object is seen when light traveling from the object enters the eye.



EL STRATEGY: Bolded words in the article appear in the student glossary. Scan the reading and review questions for additional words that are new to EL students or words that might have dual meanings. Add them to the word bank. Examples:

- device
- direct
- straight
- strike
- surface

Prompt #7

Name _____

Date _____

ALL ABOUT LIGHT QUESTIONS

1. What is light?

a form of energy

2. What is the most important source of light for Earth?

the Sun

3. How can light energy change into heat energy?

When light is absorbed by matter, it can be converted into heat. Light can be absorbed by plants and converted into food and fuel, which can be converted into heat.

4. How is reflection different from absorption?

Reflected light bounces off matter and travels on as light. Light that is absorbed by matter is converted into another form of energy.

5. Describe an object that can block sunlight to create shadows.

An opaque object reflects or absorbs light, making a dark place (shadow) behind it.

6. Describe how light travels.

as rays, in straight lines

PROPERTIES OF SOLID, LIQUID, AND GAS

1. **Solid.** How can you tell if a sample of matter is solid?

Solid materials have definite shape and they do not flow. Solids make piles.

2. **Liquid.** How can you tell if a sample of matter is liquid?

Liquid materials flow, can be kept in open containers, and take the shape of their container. Liquids do not make piles.

3. **Gas.** How can you tell if a sample of matter is gas?

Gas fills all parts of a container and will escape from an open container.

READING IN SCIENCE RESOURCES

17. READ CHANGE OF STATE

The *Change of State* article discusses the process of melting solids and evaporating liquids. It extends these concepts to include interactions that are not possible to observe in the classroom.

Students can read the article on their own at home or in class. Or have them read along while you read the article aloud. For reading strategies to support English learners and below-grade-level readers, see the Reading and Writing in Science chapter in this teacher guide.

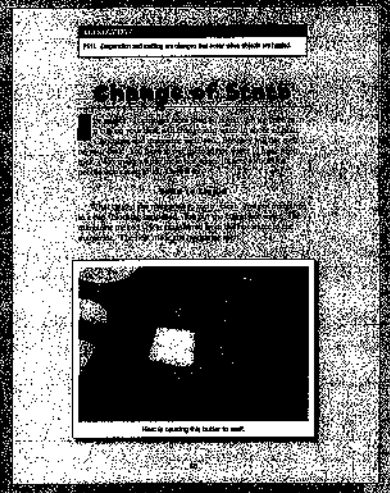
Students should answer the questions at the end of the article by writing in their science notebook or discussing them informally in their groups.

18. DISCUSS CHANGE OF STATE

Ask students to review the questions at the end of the article. Call on an individual to share his or her answer to a question, and give others the opportunity to refine or add to the original answer.

- *What is melting?* [Change of state from solid to liquid.]
- *What causes matter to melt?* [Heat.]
- *What is evaporation?* [Change of state from liquid to gas.]
- *What causes evaporation?* [Heat.]

CA STANDARD
PS1f. Students know evaporation and melting are changes that occur when the objects are heated.



EL STRATEGY: *Use a word bank in the article to help students discuss. Encourage students to review questions for keywords or words that are hard to discuss or words that might have dual meanings. Add them to the word bank. Examples:*
 freezer
 invisible
 lava
 puddle
 volcano

Prompt #11

ALL ABOUT SOLIDS, LIQUIDS, AND GASES

1. What is all matter made of?

tiny particles called atoms

2. How are atoms organized in solids and liquids?

In solids, atoms don't move around, they keep their shape; atoms in liquids slide around each other, so liquids pour and change shape to fit their containers.

3. If you transfer heat energy to a solid, what happens to the atoms?

They move faster and start to move out of place. The solid starts to melt (turn to liquid) and loses its shape.

4. If you transfer heat energy to a liquid, what happens to the atoms?

They move faster and escape into space (the air) from the surface of the liquid.
The liquid evaporates (changes into gas).

5. Do all solids have the same melting point? Explain.

No, different solids melt at different temperatures. You have to add a lot more heat to melt iron than water.

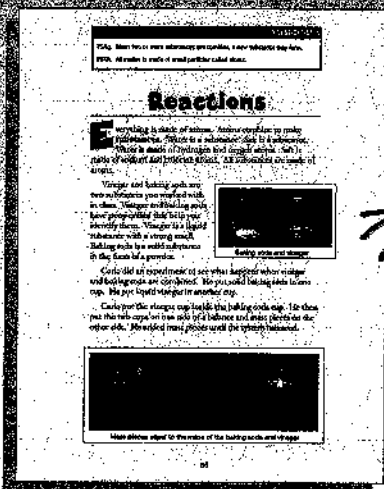


FOSS

CA STANDARDS

PS1g. Students know that when two or more substances are combined, a new substance may be formed with properties that are different from those of the original materials.

PS1h. Students know all matter is made of small particles called atoms, too small to see with the naked eye.



READING IN SCIENCE RESOURCES

17. READ REACTIONS

Reactions revisits the familiar baking soda/vinegar reaction, but in a little more depth. Students will think about the atoms in the substances involved in the reaction.

Students can read the article on their own at home or in class. Or have them read along while you read the article aloud. For reading strategies to support English learners and below-grade-level readers, see the Reading and Writing in Science chapter in this teacher guide. After reading the article, students should answer the questions at the end of the article.

18. DISCUSS THE READING

Ask students to review the questions at the end of the article. Call on an individual to share his or her answer to a question, and give others the opportunity to refine or add to the original answer.

- *What caused the bubbling and fizzing when Carlo combined baking soda and vinegar?* [The baking soda and vinegar reacted. A new substance formed. It was carbon dioxide gas, which appeared as bubbles.]
- *Why did Carlo's reaction cup have less mass after the fizzing stopped?* [Carbon dioxide is matter, so it has mass. When it escaped into the air, it took its mass with it.]
- *How do new substances form?* [New substances form when atoms reorganize (combine in new ways) during reactions.]

EL STRATEGY: *Bolded words in the article appear in the student glossary. Scan the reading and review questions for additional words that are new to EL students or words that might have dual meanings. Add them to the word bank. Examples:*
 arrange (arrangement, rearrange)
 combine (combined, combining)