

Lesson 1: Heat Causes Change

Getting Started

? Big Ideas

- What causes change?
- How do changes in the environment affect people?



Facts and Definitions

- Heat is warmth.
- Heat causes change.
- The sun and fire give off heat.
- **Molecules** are the tiny building blocks that make up solids, liquids, and gases.
- **Conduction** is the transfer of heat from one molecule to another.

⦿ Skills

- Identify that heat causes change, such as ice melting or the sun warming the air, and compare objects according to temperature (S)
- Observe, describe, and record changes in size, mass, color, position, quantity, time, temperature, sound, and movement. (S)

✂ Materials

- ✓ colored pencils or markers
- ✓ science journal
- ✓ construction paper
- ✓ scissors and glue

Introduction

Tell your child that he is going to spend the next couple of months learning about change. Ask if he can give some examples of change that he has seen in the world or learned about through books. Discuss that changes can happen naturally or can be caused by humans. For example, weather and growth are examples of natural changes. Changes caused by humans may include changing the environment, changing your location, or changing your attitude or someone else's. Explain that this unit will focus on changes in the environment and how these changes affect people.

Activities

Activity 1: Heat

Explain to your child that there are many changes that come from heat. Heat is warmth. Heat causes things to expand, or become larger. Heat can turn solids to liquids and liquids to gas, and heat from the sun causes changes in the environment. When light from the sun reaches the earth, it becomes heat. The sun can turn water into water vapor. Fire also gives off heat that can cause changes.

Ask your child to draw three sources of heat in his science journal. Remind him that heat comes from light or fire. Some heat sources might include candles, a fireplace, the sun, a heater, a stove, or a volcano.

Activity 2: Heat Transfer (Conduction)

Explain to your child that heat is transferred from hot objects to cool objects. This is why when you touch something that is hot it can burn your finger. The heat transfers from the hot object to your finger. This causes a change in your finger; your finger gets hot and burns. Review that **molecules** are the building blocks of solids, liquids, and gases. These tiny molecules come together to form matter (solids, liquids, and gases). *Conduction* is the transfer of heat from one molecule to

another.

Choose one of the following options for your child to complete.

Option 1

On the page called "Heat Transfer" (Option 1), ask your child to cut out the pictures and order the objects according to the heat source, following the transfer of heat through the chain of events. For example, the stovetop heats the pan, which heats the food, which is hot to the touch. Or the sun heats the slide, which is hot when the child slides on it. Once he has ordered the objects, he can glue them on a piece of construction paper.

Option 2

For this more challenging option, ask your child to draw a sequence of events on a blank sheet of paper that shows how heat is transferred from one object to another. His chain should include at least three steps. Remind him that the source of heat will be the first link in the chain of heat transfer. (Refer to the "Heat Transfer" sheet from Option 1 if you need examples.)

Activity 3: Changes in Properties

Ask your child to explain the different changes that heat can cause. Give him the sheet, "Changes in Properties." Let him look at the first object and the heat source and then illustrate how the object or environment will change as a result of the heat.

Answers: Lake that is frozen but melting, melted butter in a pan, drying puddle on a sidewalk.

Wrapping Up

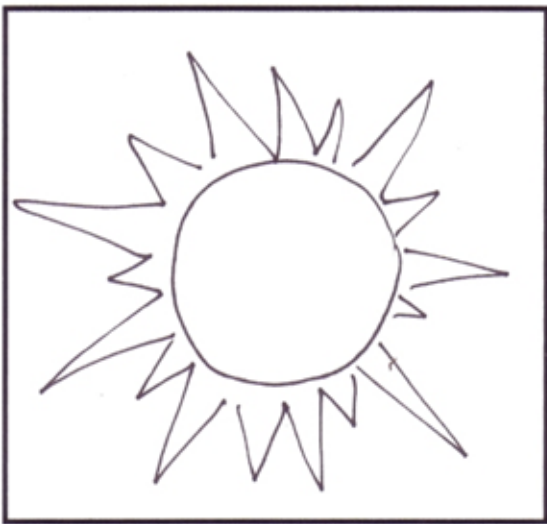
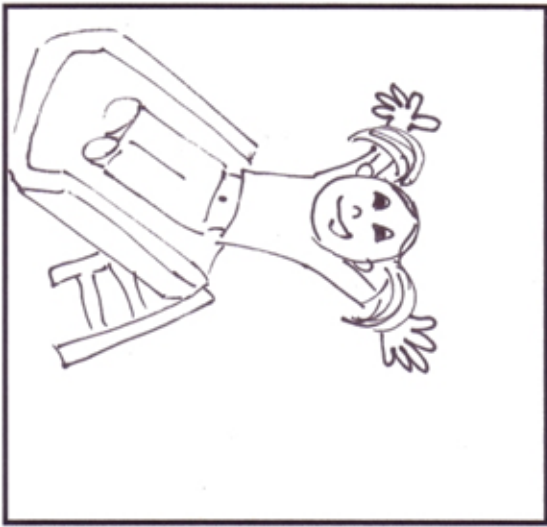
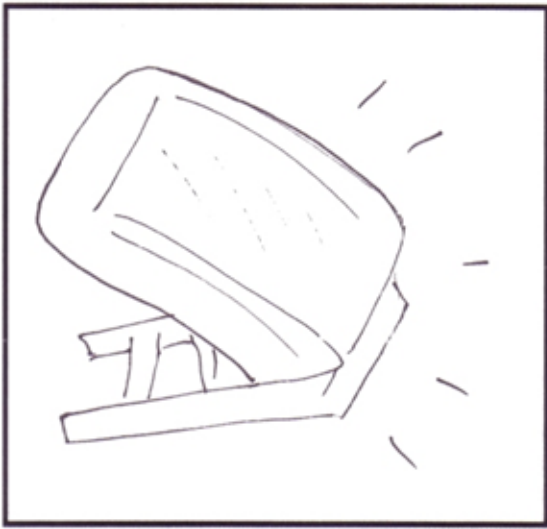
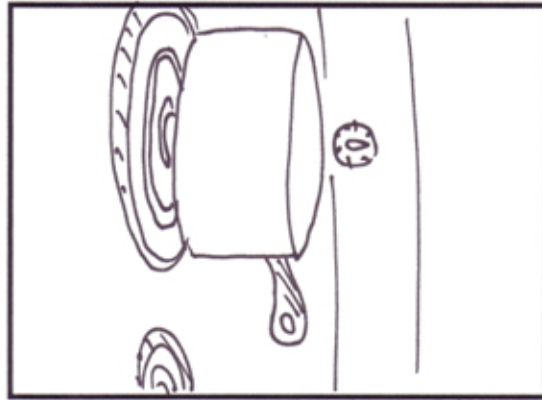
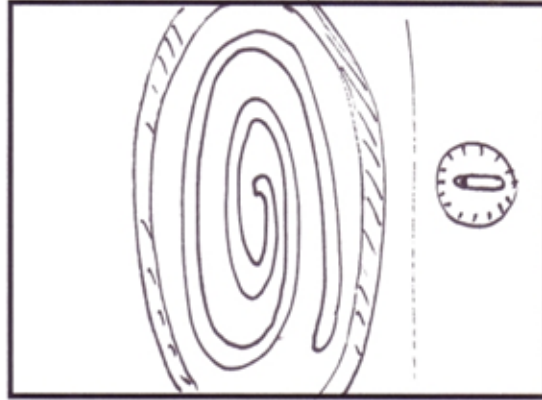
Ask your child to explain how heat can cause change. Let him share specific examples of how things change when heat is applied.

Life Application

Go outside with your child on a sunny day. Let him stand very still and ask him if he can feel the heat from the sun. Review the fact that his body is absorbing the heat from the sun. Now move to a shady place and ask him to explain the difference in how it feels. Review the fact that the heat caused his body to change.

Heat Transfer

Directions: Cut out the pictures and order the objects from the heat source and follow the transfer of heat through the chain of events on the page. Glue the objects on construction paper in order.

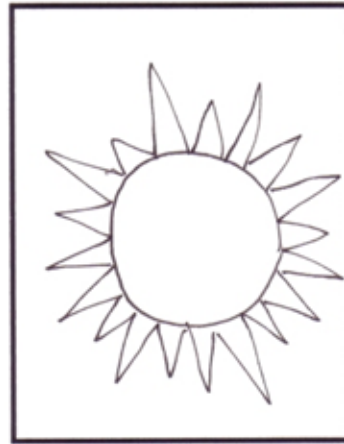


Changes in Properties

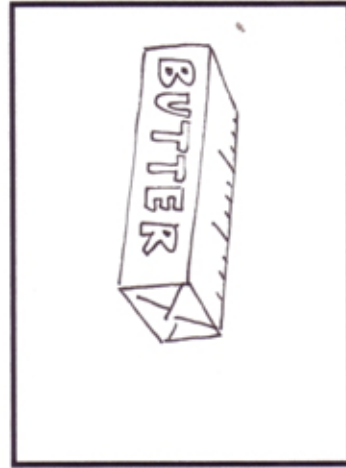
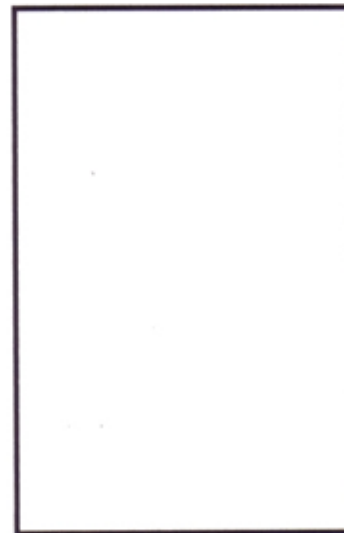
Directions: Look at the first object in each row, then the heat source, and illustrate how the object/environment will change as a result of the heat.



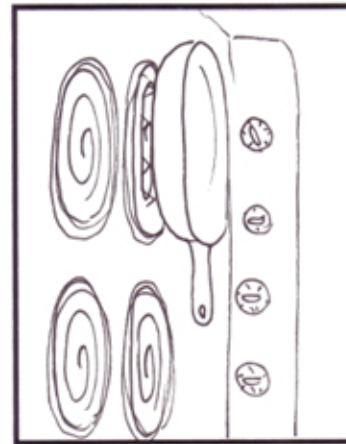
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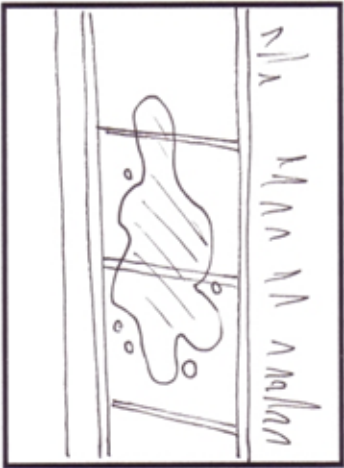
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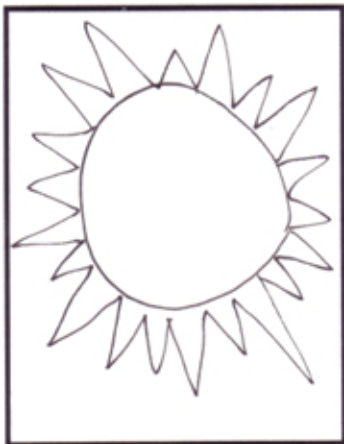
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