

## SECTION

## THE SUN SUPPLIES THE ATMOSPHERE'S ENERGY

**1.2 Challenge and Extension**

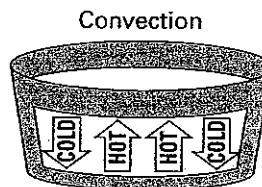
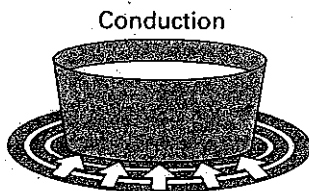
**BIG IDEA** Earth's atmosphere is a blanket of gases that supports and protects life.

**KEY CONCEPT** The sun supplies the atmosphere's energy.

**ENERGY TRANSFER** Energy moves in different ways. Radiation is energy in the form of electromagnetic waves. For example, if you were to shine a flashlight onto a piece of black paper, the paper would become warm because of the visible light and infrared radiation being absorbed by it.

When you heat a pot of water on a gas stove, you use conduction and convection. The burner flames heat the pan's bottom through conduction. The particles in the pan are always moving and bumping into each other. Heat from the stove causes these particles to move faster. They collide more and transfer their energy throughout the pan.

Convection helps in heating water. As the water at the bottom of the pan is heated, it becomes less dense. It rises to the top of the pan, and the denser, colder water sinks to the bottom. As this water is heated, it too rises. In this way, all of the water is heated.



- How does conduction come into play when heating water on a stove?  
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- If you were going to heat a swimming pool, would the heat energy be spread more quickly if the water were heated at the top of the pool or at the bottom? Why?  
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- Why does convection take place in a liquid or gas, but not usually in a solid?  
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- If you put a few drops of red dye into the water at the very bottom of the pan before it was heated, what do you think would happen to the dye as the water heated?  
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THE SUN SUPPLIES THE ATMOSPHERE'S ENERGY.

**1.2 Reinforcing Key Concepts****BIG IDEA** Earth's atmosphere is a blanket of gases that supports and protects life.**KEY CONCEPT** The Sun supplies the atmosphere's energy.

- 1. Energy from the Sun heats the atmosphere.** Radiation from the Sun is either absorbed or reflected by Earth's atmosphere, clouds, and surface. Explain what happens to the radiation that is absorbed.

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- 2. The atmosphere moves energy.** Energy moves through the atmosphere in several ways. Read each example of energy moving through the atmosphere. On the line, write radiation, conduction, or convection.

**a.** You pick up the rock that has been warmed by the Sun. The rock warms your hand.

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**b.** The blacktop on the playground is warmed by the Sun.

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**c.** A person on a stepladder notices an updraft and that the air up near the ceiling is warmer than the air near the floor.

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