

Heat & Energy



LEVEL E-3 • Written by Elfrieda H. Hiebert



Riding a bike can
generate heat in
your body.

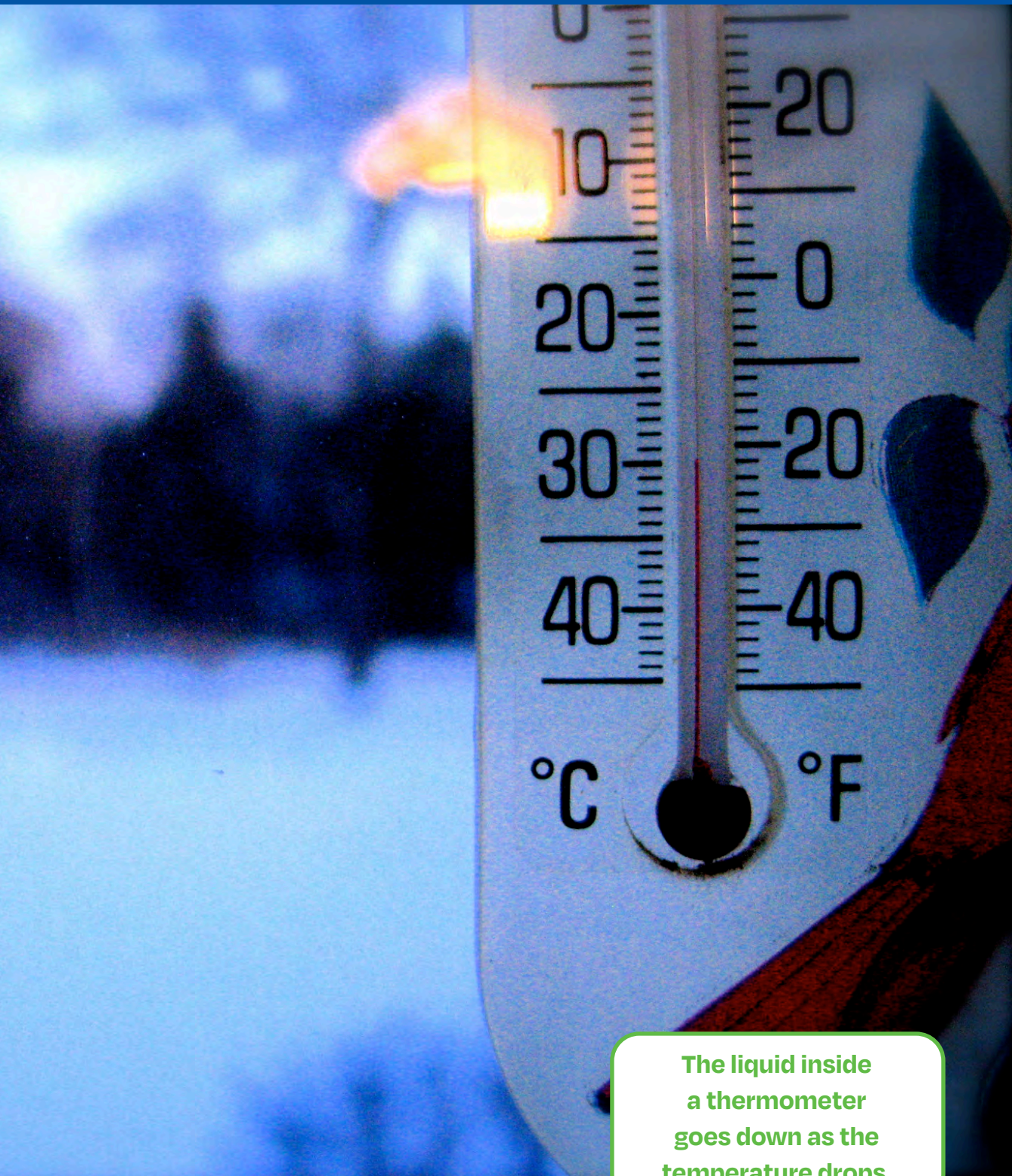
Generating Heat

When your hands feel cold, you rub them together to warm them. The faster you rub your hands, the warmer they feel. Rubbing your hands together moves the particles in your hands. The faster you rub your hands, the faster the particles move. As the particles move against one another, they create a force called friction. Friction causes heat.

Whenever there is heat, energy is being generated. When you rub your hands together, walk, run, ride a bicycle, or climb stairs, your body changes the food you eat into energy. The heat that you feel in your body after doing these activities comes from the energy your body has generated. Your body generates and uses energy all the time.

Key Notes:

How does rubbing your hands together make them warm?



The liquid inside
a thermometer
goes down as the
temperature drops.

Temperature

Temperature is a measure of how hot or cold something is. Tools that measure temperature are called thermometers. Thermometers can measure the temperature of many things such as our bodies, the air, and food.

Some thermometers have a thin tube with liquid inside. When the temperature around the thermometer gets warmer, the liquid expands and rises in the tube. That's because heat causes the molecules, or small parts of liquid, to move farther apart. When the temperature gets colder, the liquid moves down in the tube. That's because cooler temperatures cause the molecules in the liquid to contract, or move closer together.

Marks on a thermometer show the temperature in degrees on a scale. The degree at which the liquid stops shows the temperature.

Key Notes:

What is a thermometer?



**Wearing white clothing
in hot weather can help
you feel cooler.**

Color and Heat

People who live in hot climates often wear white or light colored clothes. People who live in cold climates often wear dark colored clothes. This is because white clothes make you feel cooler, while black clothes make you feel warmer.

White and black materials work with light in different ways. Light bounces off white material so it is not absorbed. Because white clothes do not absorb light, you feel cooler when you wear white in hot weather. In contrast, black clothes absorb light. That's why you feel hotter when you wear black on a hot day.

Key Notes:

**Underline the most important sentence in the passage.
Explain your choice.**



Insulation inside the walls keeps buildings cool in summer and warm in winter.

How Heat Moves

It's cold outside. To stay warm, you put on boots, a heavy coat, a hat, and gloves. Your clothes become insulators against the cold. Insulators trap your body heat and keep the cold air away from you. Insulators keep homes warm, too. Home insulation keeps the cold air outside in winter and the hot air outside in summer.

Material that lets heat move from place to place is called a conductor. Metal can be a good conductor. If you put a metal spoon in warm water, the metal conducts the heat from the water to the spoon, which gets warm. A wooden spoon does not conduct as much heat. That's why it's safer to stir something warm with a wooden spoon.

Key Notes:

How does a coat keep you warm?

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