

# HOT AND COLD

THE AMAZING WORLD  
OF TEMPERATURE

STUDENT WORKBOOK



## TESTING TIME

Find out what happens to the colored liquid when you place the thermometer in:

- The freezer
- Ice water
- Hot water
- Sunlight
- Between your hands



## THINK ABOUT IT!



1. Write two things you noticed when exploring with the thermometer.



2. Write two questions you have about the thermometer.

## HOW DOES A THERMOMETER WORK?

Now that you've done some exploring with your thermometer, let's look more closely at how it works.

In this activity, you will learn some new words that will help you understand your DIY thermometer even better.

### LEARNING GOALS:



I can design an investigation to find out how temperature can change in different situations.

## TEMPERATURE

You have probably noticed that some things are warmer or colder than others. Ice is cold, soup is hot, and the air in the room is in-between.

The measurements that *tells* us if something is warm or cold is called **temperature**. Temperature is measured in **degrees**. In the United States, temperature is usually measured in degrees Fahrenheit or °F. In many other parts of the world, temperature is in degrees Celsius or °C.

A **thermometer** is a tool that measures temperature. You have probably seen many different kinds of thermometers. People use thermometers for many reasons. Look at the examples in the pictures below.



A doctor uses a thermometer to find out if their patient has a fever.



A grocery store employee uses a thermometer to make sure the freezers are cold.



A cook uses a thermometer to know when meat is fully cooked.



## REFLECT



1. How is your thermometer the same as a thermometer you could buy in a store? How is it different?



2. Using your understanding of warmer and cooler, draw an arrow from each picture to the thermometer to show the temperature of each picture.

A warm bath



A hot day



In the fridge



Fresh pizza



A snowy day



When you're done, ask your teacher to check your answers.

ACTIVITY  
3REVERSIBLE AND IRREVERSIBLE  
TEMPERATURE CHANGES

You have already observed how temperature can change, and how to measure it.

In this activity, you will learn the difference between reversible and irreversible temperature changes.

## LEARNING GOALS:



I can use evidence to show that temperature changes can be reversible or irreversible.



I can observe what happens when sunlight reaches Earth's surface.

## CHANGE

When you brought your thermometer to a warmer or cooler place, did the liquid level go back to where it started? It sure did!

The liquid in the thermometer went up when it got warmer and down when it got colder. But, if you left it at room temperature for a while, it went back to where it started. A temperature change like that is a **reversible change**. It means it can change back to how it was before. One reversible change you've probably seen is freezing water to make ice. You can melt the ice to change it back to water. Here are some other reversible temperature changes.



Butter melting in a pan on the stove



Playground slide heating up in the sun



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