

# Swimming in 40° Weather

## Purpose

Students will compare temperatures in Celsius and Fahrenheit and know that the freezing point of water is 0°C and 32°F and that the boiling point is 100°C and 212°F.

## Materials

*For the teacher:* transparency of Black Line Master (BLM)

*Fahrenheit/Celsius Comparison*, overhead projector

*For each student:* copy of BLM *Fahrenheit/Celsius Comparison*, pen or pencil

## Activity

### A. Introduction

1. Ask students if they have ever gone swimming when it is 40° outside. Ask students why it is not a good idea to swim in 40° weather.
2. Tell students that you believe it is very hot outside in 40° weather and perfect for swimming, as long as you wear sunscreen.
3. Explain to students that, in the United States, weather temperatures are usually given in Fahrenheit units but temperatures may be given in another unit called Celsius. Compare the two units to English and metric units.
4. Write “40°C” and “40°F” on the chalkboard and ask students if they have ever seen temperatures given in this manner (e.g., bank signs). Explain that 40°F would probably be considered cold, but 40°C would be very hot.
5. Tell students that it would be convenient to be able to compare Celsius degrees to Fahrenheit degrees since most students relate more to Fahrenheit.

### B. Student Activity

1. Hand each student a copy of the BLM *Fahrenheit/Celsius Comparison*.
2. Have students find what 40°C would be in Fahrenheit units.
3. Ask students what temperature it needs to be (in Fahrenheit units) to freeze water. If none of the students know, have them consider a frozen puddle or icicle and estimate what temperature it is outside when those incidents occur.

(continued)

connecting  
across the  
curriculum



### English/ Language Arts

Have students write about an activity that they would want to do at 25°F, but not at 25°C. Have them compare the differences there would be between the two temperatures, such as clothing to wear, seasons of the year, trees and flowers.

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Have students visit the BBC Online Web site [www.bbc.co.uk/weather/](http://www.bbc.co.uk/weather/) to check the weather in London or check temperatures in Australia at [au.weather.yahoo.com](http://au.weather.yahoo.com). Discuss what clothing you would pack.

Standards Links  
5.3.7, 5.7.1

**Activity (continued)** 

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4. Tell students that  $32^{\circ}\text{F}$  is the exact freezing point for water. Have students write in that temperature in the appropriate place on the BLM.
5. Ask students what temperature it needs to be (in Fahrenheit units) for water to boil. If none of the students knows, have the class estimate the answer.
6. Explain to students that chemists and other scientists often use Celsius units to conduct experiments and research. Tell them that the boiling point for water is  $100^{\circ}\text{C}$ . Have them write that temperature in the appropriate spot on the BLM.
7. Have students find the boiling point of water in Fahrenheit units. Since the  $212^{\circ}\text{F}$  does not lie on an exact unit on the graph, discuss the correct answer before having students fill it in on the BLM.
8. Tell students that their normal body temperature is approximately  $98^{\circ}\text{F}$ . Instruct students to fill in that temperature in the appropriate space on the BLM. Have them find their approximate normal body temperature in Celsius and write it on the BLM.
9. Have students answer the questions on the bottom of the BLM and discuss their answers in class.


**Questions for Review** 


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**Basic Concepts and Processes**

During the activity, ask students the following questions:

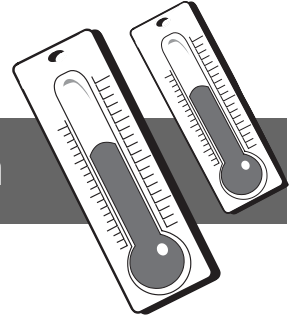
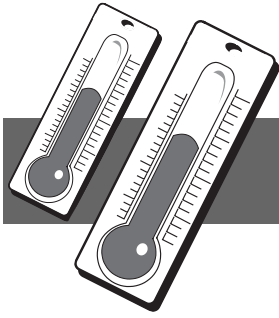
 Which would feel warmer:  $15^{\circ}\text{F}$  or  $15^{\circ}\text{C}$ ?

 How did you decide which was warmer?

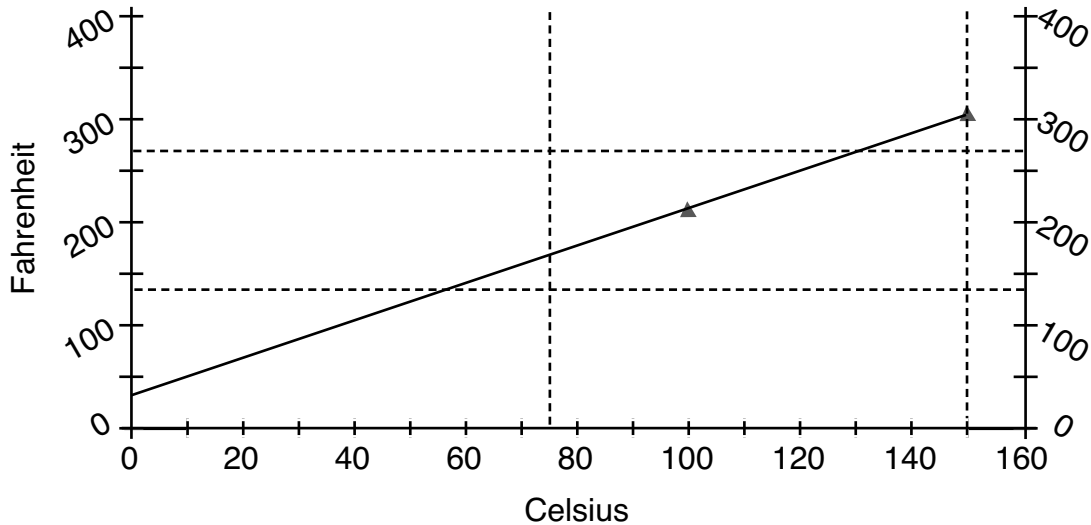
 How did you find the freezing point in Celsius units?

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Name: \_\_\_\_\_



## Fahrenheit/Celsius Comparison



Freezing Point of Water \_\_\_\_\_°F \_\_\_\_\_°C

Boiling Point of Water \_\_\_\_\_°F \_\_\_\_\_°C

Approximate Body Temperature \_\_\_\_\_°F \_\_\_\_\_°C

**Answer the questions below by referring to the graph and the information above.**

1. Ms. Goldstein told her class to put on their jackets before recess because it was only 30° outside. Was Ms. Goldstein giving the temperature in Fahrenheit units, Celsius units, or could it have been either unit?
2. "This water should be boiling, but it isn't!" Katy said. The kitchen thermometer read 160°. Was the thermometer likely in Fahrenheit units, Celsius units, or is it impossible to tell?

# Fahrenheit/Celsius Comparison

## Teacher Directions

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Distribute one copy of the BLM *Fahrenheit/Celsius Comparison* to each student. Have students complete the top half of the BLM as instructed in the activity. Instruct students to complete the two questions at the bottom of the BLM on their own. Discuss their answers as a class.

## Answer Key

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Freezing Point of Water	32°F	0°C
Boiling Point of Water	212°F	100°C
Approximate Body Temperature	98°F	37°C

1. Fahrenheit
2. Fahrenheit