



GRADE 4 SUPPLEMENT

Set D8 Measurement: Temperature

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Skills & Concepts

- ★ use a thermometer to measure temperature
- ★ use a thermometer to measure changes in temperature

Bridges in Mathematics Grade 4 Supplement

Set D8 Measurement: Temperature

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Bridges in Mathematics is a standards-based K–5 curriculum that provides a unique blend of concept development and skills practice in the context of problem solving. It incorporates the Number Corner, a collection of daily skill-building activities for students.

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Set D8 ★ Activity 1



ACTIVITY

What's the Temperature?

Overview

Students read the temperature on an outdoor thermometer 3 times during the same week, record the results, and compare the readings at the end of the week. This activity will be most interesting if you conduct it at a time of the year when your local temperatures fluctuate by at least a few degrees from one day to the next.

Skills & Concepts

- ★ use a thermometer to measure temperature
- ★ use a thermometer to measure changes in the temperature

Recommended Timing

During a month when the temperature in your area is most variable.

You'll need

- ★ What's the Temperature? (page D8.3, class set)
- ★ an outdoor thermometer (see note)
- ★ red crayons or colored pencils

Note If the rest of the teachers in your school are using Bridges, the first, third, and fifth grade teachers all have outdoor thermometers. In fact, it's possible that there are already several posted in various outdoor locations around the school. If not, borrow one from one of your colleagues or from a science kit and place it outdoors for at least an hour before this activity.

Instructions for What's the Temperature?

1. Talk with students about today's outdoor temperature. Does it seem cold, hot, or somewhere in between? Does anyone know what the predicted temperature for the day is? How do people measure temperature, anyway?
2. Give each student a copy of the What's the Temperature? worksheet. Give them a minute to examine the sheet and pair-share their observations. Then call on volunteers to share their observations with the class.
3. Some students may notice that there are two different scales on each thermometer, one marked with an F and the other with a C. Explain that people measure temperature in degrees, and there are two different scales, Fahrenheit and Celsius. On the Fahrenheit scale, the freezing point of water is 32° . On the Celsius scale, the freezing point of water is 0° . In the United States, temperature is generally measured in degrees Fahrenheit. Most other countries measure temperature on the Celsius scale, so it's increasingly common to see both measures in weather reports, especially online, where they're read by people the world around. For this reason, you're going to ask students to read and report the temperature in both Fahrenheit and Celsius.
4. If possible, go outside with your class to read the outdoor thermometer so students can feel the temperature as they take the reading. If this isn't possible, ask a volunteer to bring the thermometer inside and have students quickly read it. (Some are sure to note how fast the mercury (alcohol) changes to match the indoor temperature.)

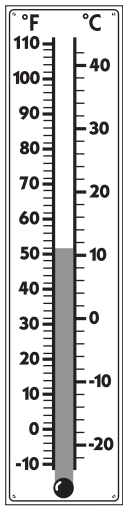
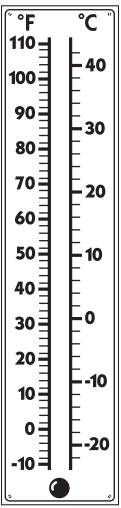
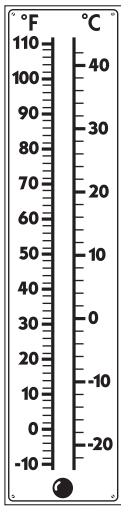
Activity 1 What's the Temperature? (cont.)

5. Once the class agrees on the outside temperature, have each student record the date and the Fahrenheit temperature, and then color in the first thermometer to match. Encourage them to mark the temperature level on the thermometer with their pencil and check it with a partner before they color it in. Once they've colored in the thermometer with degrees Fahrenheit, have them read and record the temperature in degrees Celsius as well.

Set D8 Measurement: Temperature Blackline Run a class set

NAME Branden DATE _____

What's the Temperature?

Date <u>Jan. 6</u>	Date _____	Date _____
		
Outdoor Temperature <u>52</u> °F <u>11</u> °C	Outdoor Temperature _____ °F _____ °C	Outdoor Temperature _____ °F _____ °C

6. Repeat steps 4 and 5 at about the same time two other days during the same week if possible. Have students use the same record sheet each time so the 3 readings are side-by-side.

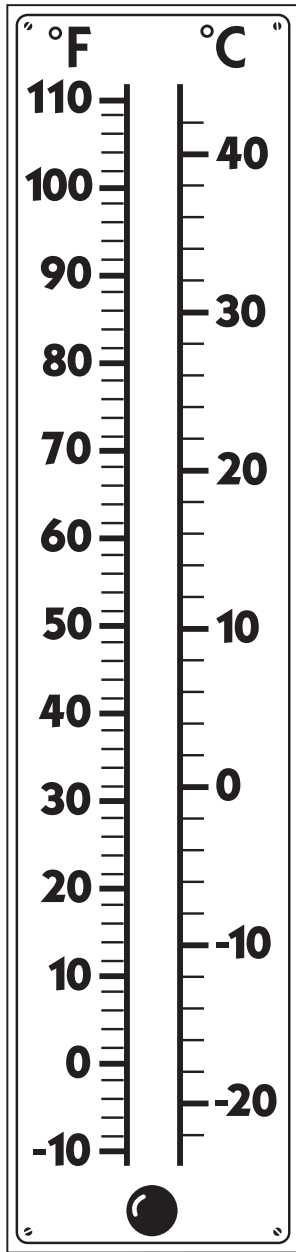
7. Ask students to compare the three readings at the end of the week. How has the temperature changed? Which day has been the warmest? The coldest? What's the difference between the temperatures?

NAME _____

DATE _____

What's the Temperature?

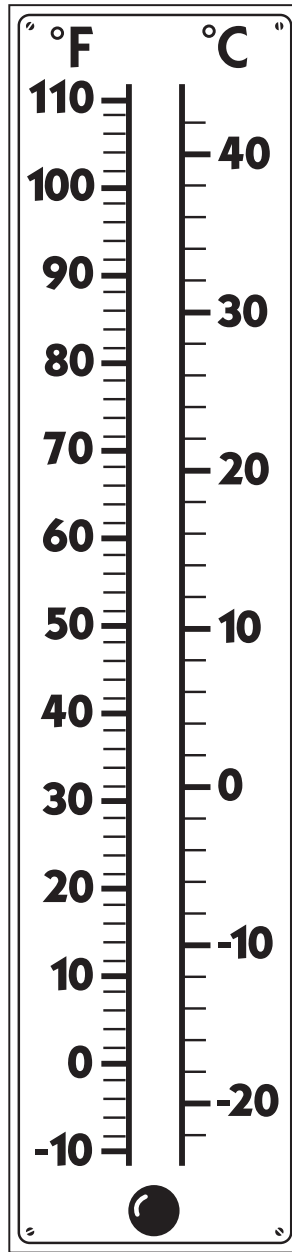
Date _____



Outdoor Temperature

_____ °F
 _____ °C

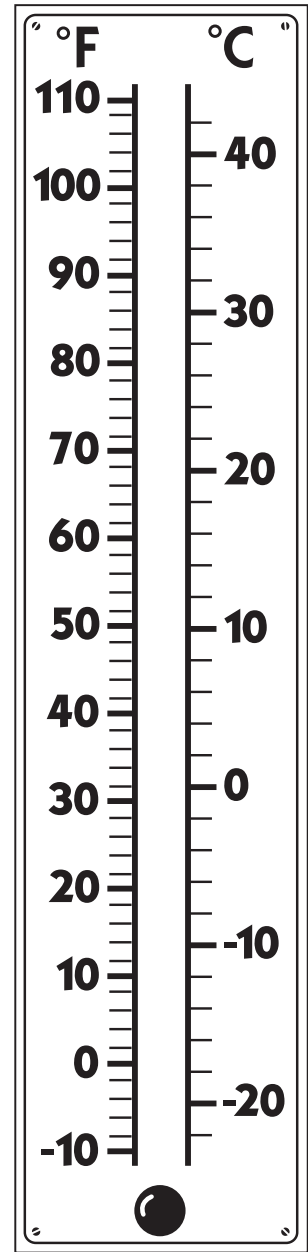
Date _____



Outdoor Temperature

_____ °F
 _____ °C

Date _____



Outdoor Temperature

_____ °F
 _____ °C

Set D8 ★ Activity 2



ACTIVITY

How Does the Temperature Change During the Day?

Overview

Students read the temperature on an outdoor thermometer in the morning, around noon, and later in the afternoon; record the results; and compare the readings at the end of the day.

Skills & Concepts

- ★ use a thermometer to measure temperature
- ★ use a thermometer to measure changes in the temperature

Recommended Timing

Anytime after Set D8 Activity 1

You'll need

- ★ Time & Temperature Record Sheet (page D8.7, run a class set)
- ★ an outdoor thermometer
- ★ red crayons or colored pencils

Instructions for How Does the Temperature Change During the Day?

1. As early in the school day as possible, talk with students about the outdoor temperature right now. Does it seem cold, hot, or somewhere in between? What do students predict the temperature is at the moment? Have them pair-share their conjectures and then invite volunteers to share their thinking with the class.

Students *It's really cold out there right now!*

I was freezing while we were waiting for the bus.

The weather guy on TV said that it was colder than usual for Austin this week.

I think it's about 30 or 40 degrees.

I heard it was 32 degrees last night.

Wow! That would be down to 0 on the Celsius side.

2. Then explain that the class will be taking 3 temperature readings today, one right now, one around noon, and one in the afternoon. Do they think the temperature will change from one time to the next? Why or why not?

3. If possible, go outside with your class to read the outdoor thermometer so students can feel the temperature as they take the reading. If this isn't possible, ask a volunteer to bring the thermometer inside and have students quickly read it.

4. Once the class agrees on the outside temperature, distribute copies of the Time & Temperature Record Sheet. Have each student record the date, the time the first reading was taken, and the Fahrenheit temperature, and then color in the first thermometer to match. Encourage them to mark the temperature level on the thermometer with their pencil and check it with a partner before they color it in. Once they've colored in the thermometer with degrees Fahrenheit, have them read and record the temperature in degrees Celsius as well.

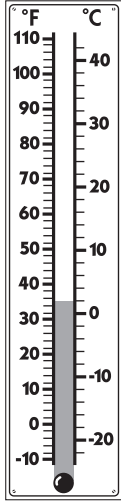
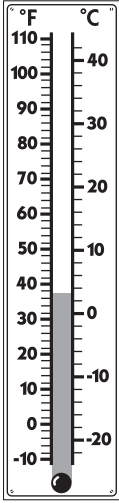
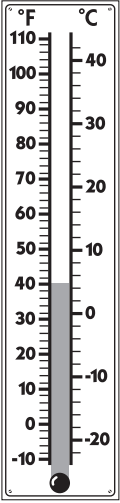
Activity 2 How Does the Temperature Change During the Day? (cont.)

5. Repeat steps 3 and 4 sometime around noon and again later in the school day. Have students use the same record sheet each time so the 3 readings are side-by-side.

Set D8 Measurement: Temperature Blackline Run a class set

NAME Imani DATE _____

Time & Temperature Record Sheet

Time <u>9:00</u>	Time <u>11:50</u>	Time <u>2:30</u>
		
Outdoor Temperature <u>35</u> °F <u>1.5</u> °C	Outdoor Temperature <u>37</u> °F <u>2.5</u> °C	Outdoor Temperature <u>40</u> °F <u>4.5</u> °C

6. Ask students to discuss the data they've collected at the end of the day, or the following day. Here are some questions to pose:

- Did the temperature change over the course of the day? If so, what's the difference between the 3 readings?
- At what time of the school day was it coldest? warmest?
- What might account for the temperature changes if there were any?
- Do students think they'd see a similar pattern of change on other days? Why? Why not?
- What time of the day or night do they think would be the coldest of all? the warmest? Why?

Extensions

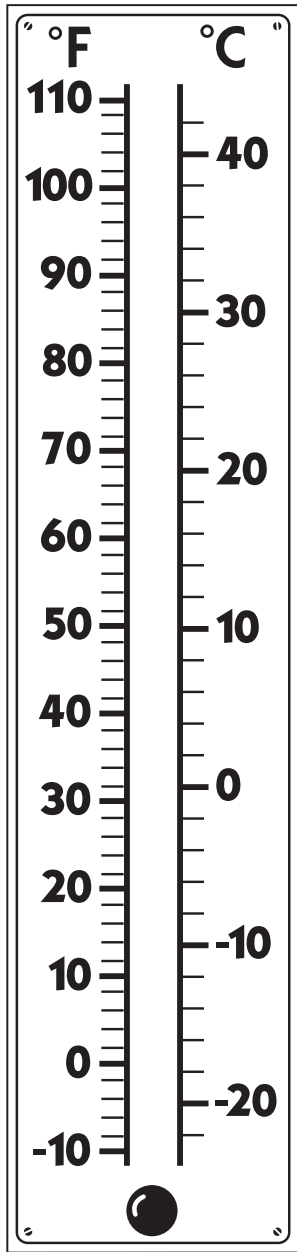
- You may have a few students who are interested in following the daily changes in temperature over a period of a week or longer. If so, provide additional copies of the record sheet, and encourage these students to share their findings with the class periodically. Display their completed record sheets so other students can look for patterns and trends.

NAME _____

DATE _____

Time & Temperature Record Sheet

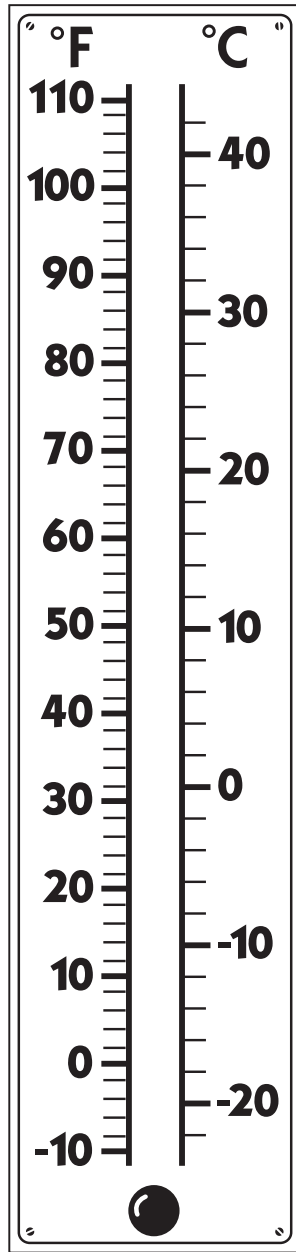
Time _____



Outdoor Temperature

_____ °F
_____ °C

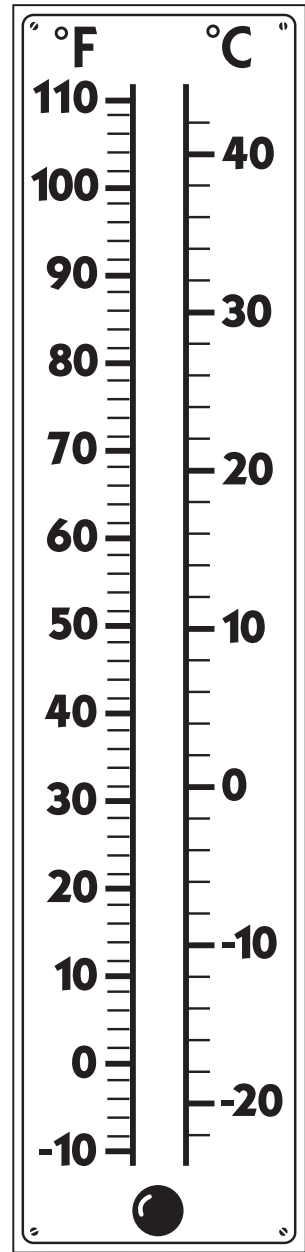
Time _____



Outdoor Temperature

_____ °F
_____ °C

Time _____



Outdoor Temperature

_____ °F
_____ °C

Set D8 ★ Activity 3



ACTIVITY

Forecast & Actual Temperatures on a Thermometer

Overview

How accurate are weather forecasts? In this activity, students look at the day's predicted high for your area and color a thermometer to match. Then they read the outdoor thermometer to see the actual high at your school, record the reading, and compare the two temperatures. You'll want to conduct this activity on 3 afternoons during the same week if possible.

Skills & Concepts

- ★ use a thermometer to measure temperature
- ★ use a thermometer to measure changes in the temperature

Recommended Timing

Anytime after Set D8 Activity 2

You'll need

- ★ Forecast & Actual Temperatures on a Thermometer (page D8.11, run a class set)
- ★ a copy of the local daily newspaper or access to the Internet
- ★ an outdoor thermometer
- ★ red crayons or colored pencils

Instructions for Forecast & Actual Temperatures on a Thermometer

1. Talk with students about today's outdoor temperature. Does it seem cold, hot, or somewhere in between? Does anyone know what the predicted temperature for the day is?
2. Show students the weather section of your local newspaper, or display an online web site that shows the local readings for the previous day and the predictions for today. What were the high and low temperatures yesterday? What is the predicted high for today? Do the children think it's accurate? Why or why not?
3. Give each student a copy of the Forecast & Actual Temperatures blackline. Give them a minute to examine the sheet and pair-share their observations. Then call on volunteers to share their observations with the class.
4. Have students record the date at the top of the sheet and color in the first thermometer to match the forecast high. Encourage them to mark the temperature level on the thermometer with their pencil and check it with a partner before they color it in. Once they've colored in the thermometer with degrees Fahrenheit, have them read and record the temperature in degrees Celsius as well.
5. Then go outside with your class to read the outdoor thermometer so students can feel the temperature as they take the reading. If this isn't possible, ask a volunteer to bring the thermometer inside and have students quickly read it. (This step will need to be done in the afternoon to capture the highest temperature for the day at your school.)

Activity 3 Forecast & Actual Temperatures on a Thermometer (cont.)

6. Once the class agrees on the outside temperature, have each student record the information on his or her sheet and color in the second thermometer to match.

NAME Daria DATE _____

Forecast & Actual Temperatures on a Thermometer

Date <u>Feb. 6</u>		Date _____		Date _____	
Today's Forecast High Temperature	Today's Actual High Temperature	Today's Forecast High Temperature	Today's Actual High Temperature	Today's Forecast High Temperature	Today's Actual High Temperature
<u>68</u> °F	<u>65</u> °F	°F	°F	°F	°F
<u>20</u> °C	<u>18.5</u> °C	°C	°C	°C	°C

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7. Discuss the two temperatures with the class. How do they compare? Was the forecast accurate? What might account for the difference, if there is one?

Students *It's 3 degrees cooler than they thought it would be.*

Maybe it'll get even warmer later on, like after school.

Yeah, I'm going to check the thermometer at our apartment when I get home.

Maybe our thermometer isn't in the warmest place. Maybe if we move it to the playground the temperature will be hotter there.

It's a little cloudy. Maybe they didn't know that there were going to be clouds today.

8. Repeat this activity twice more this week. At the end of the week, ask students to compare the three sets of forecasted and actual highs they've recorded. Have the forecasts been more accurate some days than others? If there are differences between the forecasted and actual temperatures, is there any pattern? (For instance, have your readings been consistently higher or lower than the forecasts?) How have the actual readings changed from one day to the next? Which day has been the warmest? The coldest? Do those results match the forecasts?

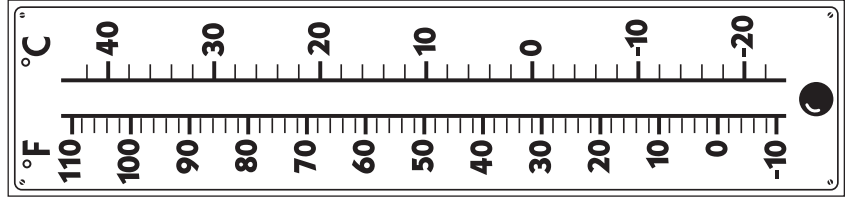
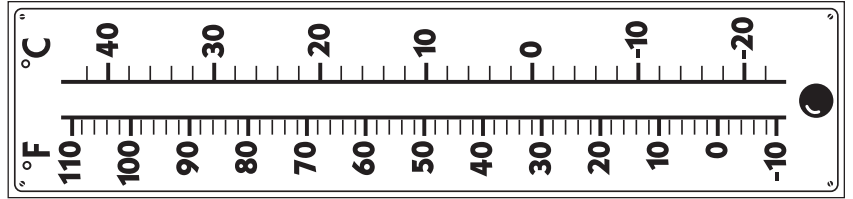
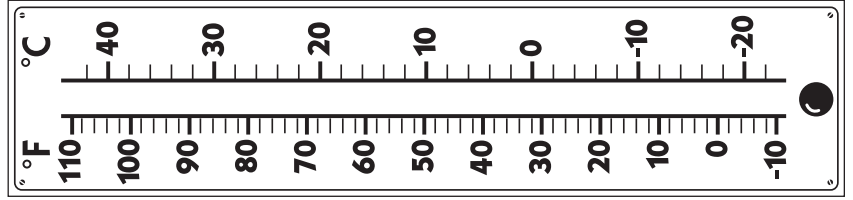
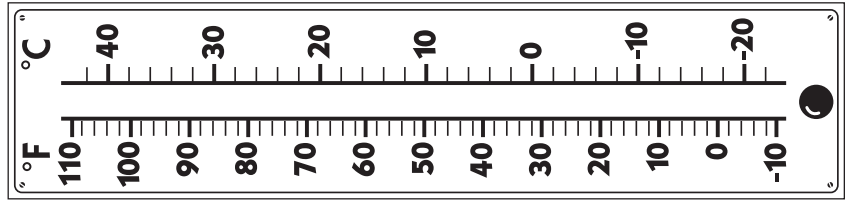
Extensions

- You may have a few students who are interested in following the forecasted highs and actual readings over a period of several weeks or longer. If so, provide additional copies of the record sheet, and encourage these students to share their findings with the class periodically. Display their completed record sheets so other students can look for patterns and trends.

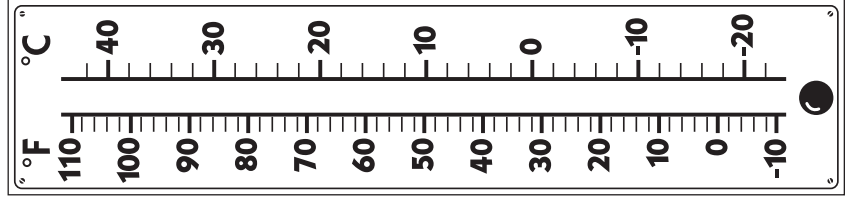
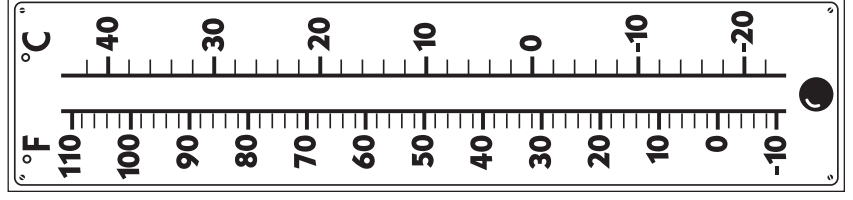
NAME _____ DATE _____

Forecast & Actual Temperatures on a Thermometer

Date	
Today's Forecast High Temperature	Today's Actual High Temperature
°F	°F
°C	°C



Date	
Today's Forecast High Temperature	Today's Actual High Temperature
°F	°F
°C	°C



Date	
Today's Forecast High Temperature	Today's Actual High Temperature
°F	°F
°C	°C

