

# BE A METEOROLOGIST!



## BENCHMARKS AND TASKS

**SC.B.2.1.1** The student recognizes systems of matter and energy.

**SC.D.1.1.3** The student recognizes patterns in weather.

- The student graphs temperature and precipitation during the year to observe patterns that tend to be high, medium, or low in certain months.
- The student measures the effects of energy from the sun upon air, land, and water by using a thermometer.

## KEY QUESTION

Does weather occur in patterns?

## BACKGROUND INFORMATION

A **meteorologist** is a weather scientist. Meteorologists study and record weather data. They make predictions about weather based on weather patterns and measurements of temperature, wind, and the moisture in the air.

The sun warms the surface of the earth which heats the air. The surface cools at night and cools the air.

## MATERIALS

### Teacher

weather chart  
weather symbols wall chart  
weather maps (from local newspapers)  
transparencies of weather maps  
*Think About the Weather* (Newbridge)  
Benchmark Education Co. books:  
*Changing Weather*  
*Clouds*  
*The Big Snow*

### Per student

1 Fahrenheit thermometer  
worksheets 1-3  
crayons  
copies of Sunday's weather map (optional)  
construction paper strips (orange, yellow, green, blue)  
1 index card  
scissors  
glue

## TEACHING TIPS

1. Make two wall charts: one to look like the "Weather Symbols" worksheet, and the other to look like the "Weather Chart" worksheet.
2. Weather graphing should begin on Monday and continue daily for **at least** 1 week, but if possible, continue over a period of months to show a definite weather pattern.
3. Cut out the weather page from Sunday's paper (prior to the starting of the activity on Monday) and make a transparency or make copies for each student.
4. Identify a specific time for daily observation of weather conditions.
5. Allow ample time for introducing weather symbols and coding prior to the first observation session.

6. Students' understanding of both Celsius **and** Fahrenheit is essential. Students will need to explore with both types of measurement but not simultaneously. Conversion is not appropriate at this age.

### **ENGAGE**

Ask students if they have ever watched the daily weather report on television. Have several students describe the report.

Show a transparency or give the students a copy of the local newspaper weather map for Sunday.

Focus on the information recorded in symbols on the map.

Ask the students to tell what the map tells us about Sunday's weather (temperatures, cloud cover, precipitation, etc.).

Tell the students that they will be meteorologists for the next few days and at other times during the year.
































### **EXPLORE**

1. Tell the students that they will use special symbols to record weather conditions. Indicate these symbols on the Weather Symbols wall chart and on the Weather Chart.
2. Distribute worksheet 1 and crayons to each student. Point out that this is a copy of the large weather symbols chart. Instruct the students to color the circles in the temperature ranges with the appropriate colors. Color in the code on the large weather symbols wall chart. Discuss the four weather components on the worksheet and be sure students understand each symbol.
3. Distribute worksheet 2. Point out that this is a copy of the large Weather Chart. Tell the students to write Sunday's date on their worksheet weather chart. Write the date on the wall chart.
4. Ask: *What was the temperature for Sunday?* Ask them to record this temperature in degrees Fahrenheit at the top of the *Temperature* space. Record the temperature on the wall chart.
5. Then ask students to look on their Weather Symbols chart under the word *temperature* to decide which color will represent the Sunday temperature. Have them color the circle in the Sunday *Temperature* space on their chart. Color the circle on the wall chart.
6. Repeat this procedure for cloud cover, wind, and other weather conditions you observed on Sunday. In each instance record the appropriate data on the individual charts and on the wall chart.
7. Point out that the *Other* space on the chart includes fog, smog, frost, snow, rain, and a thunderstorm. Write these vocabulary words and the word *overcast* on the chalkboard and discuss the new terms.
8. When the students are aware of how to classify and code weather conditions, tell them to use their weather symbols chart (worksheet 1) to help them describe today's weather.
9. Distribute an index card and a thermometer to each student. The students should also bring worksheet 1 and a pencil. Proceed outdoors. Allow them to observe the weather conditions and jot down their observations on the index cards. (Observations can be recorded on a class chart if the students have limited language or writing skills.)
10. After returning to the classroom, instruct the students to use weather symbols to code Monday's weather conditions on worksheet 2. Continue daily with this procedure.

**EXPLAIN**

1. Show the weather map for last Sunday. Ask: *Why is there such a difference in the two temperatures for the same day?* Point out the effects of the sun’s energy in the form of heat. See background information.
2. Have students study the large weather chart to look for temperature changes.  
Ask:  
*How did Monday’s weather compare with Saturday’s?*  
*Did you notice any weather conditions that seem to go together?* (Wind and dark clouds seem to go with rain; sunshine usually means warmer temperatures.)
3. Distribute worksheet #3 “Meteorologist Worksheet” and the paper strips. Have students pick out a strip of the appropriate color (e.g., yellow for 75° F - 84° F) to match the circle for Sunday’s temperature reading. Have the students place the bottom of the strip on the base line on the graph and cut the strip off at the point opposite that day’s temperature. (For temperatures below 35°F, a blue strip would extend below the 35° F line.) Have them paste the strip down and repeat for the other days.
4. Have students interpret their graph to find significant weather patterns. Discuss combinations of weather conditions. (The more weather data recorded on the Weather Chart, the more patterns will emerge.)  
Ask:  
*How does the sky look when the temperature rises?* (clear and hazy)  
*Was the wind stronger or lighter when the temperature was lower?* (usually stronger)  
*How do you think people on television use weather patterns to predict the weather?*  
(Changing temperatures may mean storms; high wind may mean thunderstorms, etc.)

**Weather Chart:**

Day	Sun.	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.
Date	8	9	10	11	12	13	14
 Temperature	73°F 	74°F 	75°F 	75°F 	77°F 	80°F 	81°F 
 Clouds							
 Wind							
Other							

**EXTEND/APPLY**

1. Have students describe in written response how their graphs clearly show weather patterns, trends, and generalizations.
2. Choose and share from the suggested books listed in the Materials for Teachers.

## **EXTENSIONS**

1. Have students make graphs of wind, clouds, and other chart data.
2. Have a team of students measure and record outdoor temperatures at recess time for several months. Have them graph the data to identify possible trends.

## **ASSESSMENT**

Have students write in their journal answering the key question: *Does weather occur in patterns?*

It is important that students understand what they will be evaluated on during this activity.

Tell them that you are interested in finding out:

- how they go about seeing weather changes and/or patterns.
- how clearly they describe their observations.
- what conclusions they draw from their observations.

### **Scoring Rubric (from worksheets 2 & 3 and written response)**

#### **Low Response:**

Some data about weather changes may have been collected, but not presented clearly in their journal. Conclusions drawn, if any, may not follow from the data, and the report may reveal some significant misconceptions.

#### **Medium Response:**

Some data about weather changes have been collected, and the observations are clearly presented in the report. Conclusions drawn are fairly basic and may reveal some misconceptions.










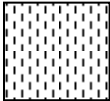
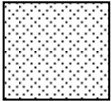




#### **High Response:**

Detailed data have been collected, and the observations are presented clearly in the chart. Conclusions drawn deal with patterns, trends or generalizations in the data or offer cause-and-effect explanations for the patterns observed.

Name \_\_\_\_\_

Worksheet 1




# Weather Symbols

<u>TEMPERATURE F°</u>			<u>WIND</u>			
<b>HOT</b>		85°F - 100°F	<b>CALM</b>		No air motion	
<b>WARM</b>		75° F - 84°F	<b>BREEZY</b>		Leaves in motion, water rippled	
<b>COOL</b>		33°F - 74°F	<b>WINDY</b>		Tree limbs moving, whitecaps on water	
<b>FREEZING</b>		Below 0°F - 32°F	<b>VERY WINDY</b>		Tree trunks bend, water rough	
<u>CLOUDS</u>			<u>OTHER</u>			
<b>CLEAR</b>		No clouds	<b>FOG</b>		<b>SMOG</b>	
<b>PARTLY CLOUDY</b>		Less than half of the sky covered	<b>RAIN</b>		<b>FROST</b>	
<b>MOSTLY CLOUDY</b>		More than half of the sky covered	<b>THUNDER-STORM</b>		<b>SNOW</b>	
<b>OVERCAST</b>		No blue sky can be seen				

Name \_\_\_\_\_

Worksheet 2

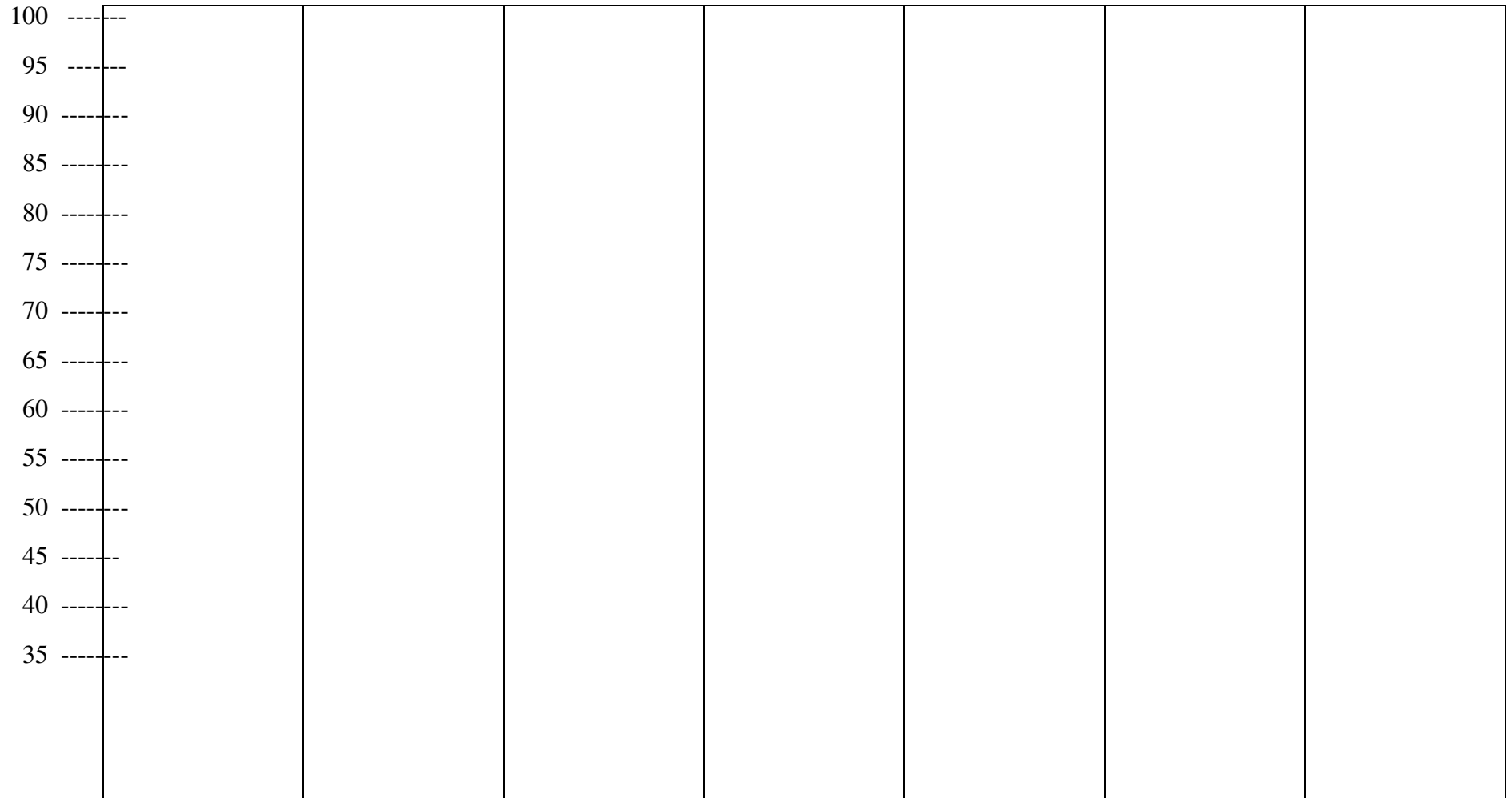
# Weather Chart

Day	Sun.	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.
Date							
 Temperature	○	○	○	○	○	○	○
 Clouds	○	○	○	○	○	○	○
 Wind							
Other	□	□	□	□	□	□	□

# Meteorologist Worksheet

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

Worksheet #3



Sunday

Monday

Tuesday

Wednesday

Thursday

Friday

Saturday

