



SCIENCE
Fusion Grade 3
HOUGHTON MIFFLIN HARCOURT

PowerNotes

Unit 7 Lesson 2 What Is Weather?

A World of Weather

- Earth is surrounded by a layer of gases. This layer of gases is Earth's **atmosphere**.
- **Oxygen** is one of the gases in Earth's atmosphere.
- Most living things need oxygen to survive.



A World of Weather



- Conditions in the atmosphere can change.
- **Weather** is the condition of the atmosphere at any one place and time.
- If the atmosphere over your school is warm and dry in the morning, your weather is warm and dry.



A World of Weather

- However, the atmosphere, and your weather, could change.
- The weather could be cool and rainy by the afternoon.





Types of Clouds

Cirrus [SIR•uhs] clouds are thin and feathery. Cirrus clouds form high up in the atmosphere, where temperatures are cold. They are often a sign that the weather is about to change.



Types of Clouds

Cumulus [kyoo•myuh•luhs] clouds have flat bottoms and are puffy on top. They look like piles of cotton. Cumulus clouds usually mean fair weather, but they can develop into cumulonimbus clouds.



Types of Clouds

Stratus clouds look like thin blankets. Often, they hang low in the atmosphere. Stratus clouds can mean that light rain or snow is coming.



Types of Clouds

Suppose the weather is fair.
What type of clouds might
you see in the atmosphere?
Draw and label them.





Measuring Weather

- **Temperature** is a measure of how hot or cold something is.
- The tool we use to measure temperature is a *thermometer*.
- Air temperature is measured in degrees Celsius ($^{\circ}$ C) or degrees Fahrenheit ($^{\circ}$ F).



Measuring Weather

- The temperature of the atmosphere affects the kind of precipitation that falls.
- Above 0°C , rain is likely.
- Below 0°C , the air is so cold that rain, sleet, or snow may fall.



Measuring Weather

- A *rain gauge* is a tool that collects rain and shows how much has fallen.
- If the wind is blowing, we can tell the direction it's coming from with a *wind vane*.
- A *wind meter* tells how fast the wind is blowing.

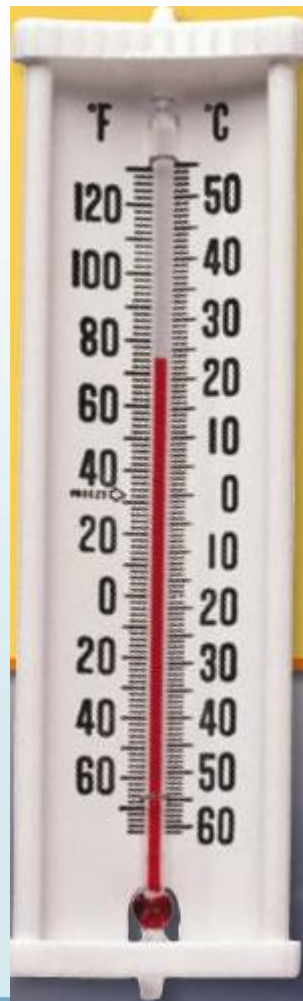


Measuring Weather



Thermometer

A thermometer is a tube filled with a liquid. When the air gets hotter, the liquid moves up the tube. When the air gets cooler, the liquid moves down the tube. To find the temperature, read the number next to the top of the liquid.



Rain gauge

A rain gauge measures rainfall. How do you read a rain gauge? Look at the water in the gauge. Read the number where the water lines up with the scale. Rain can be measured in centimeters or inches. A rain gauge is emptied after each use to measure more rainfall.

Read the instruments and record the temperature, rain amount, and wind direction on the lines provided.

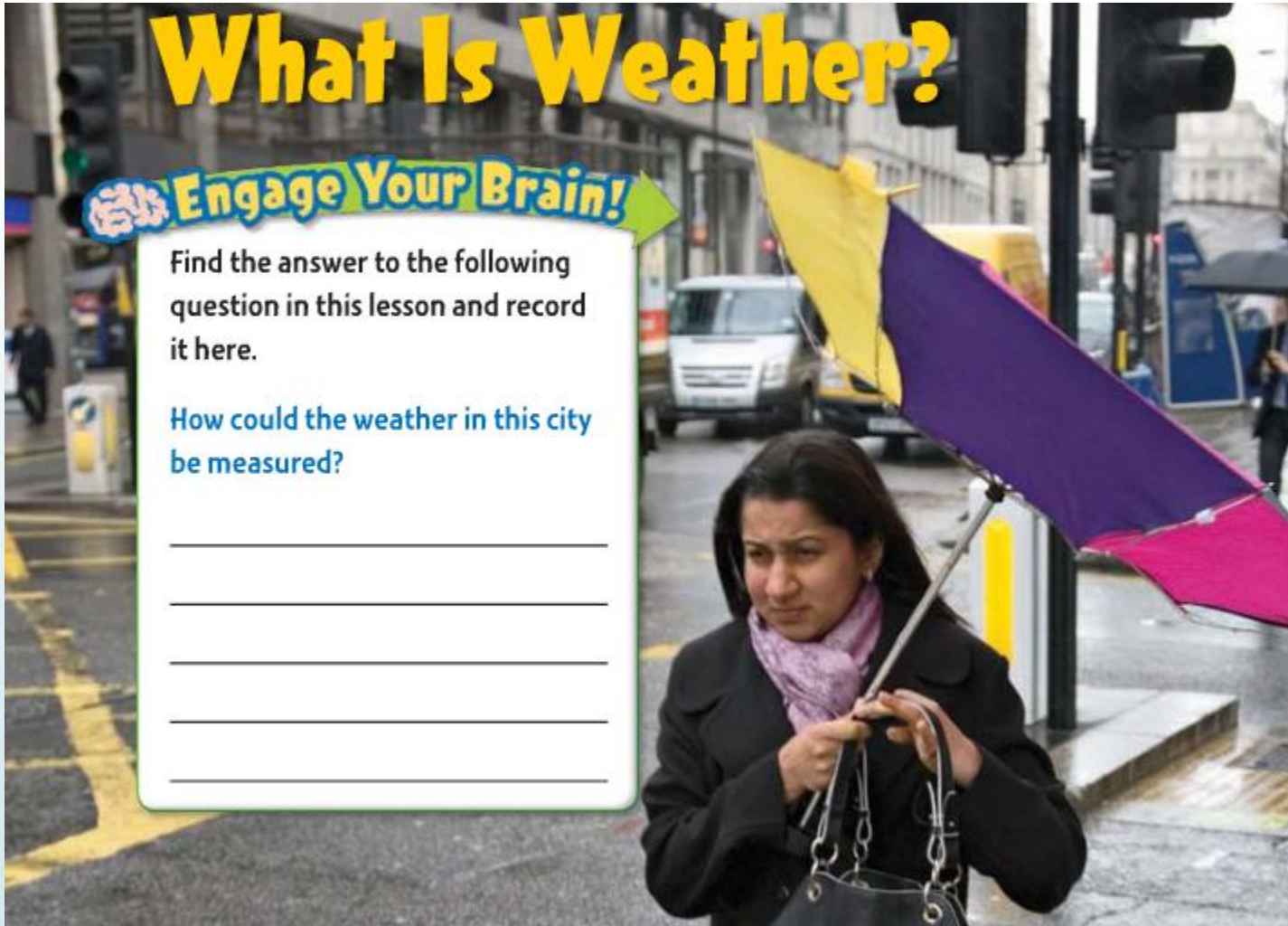


Wind vane

A wind vane shows the way the wind is blowing. The bird below looks in the direction the wind is coming from. The wind can come from the east, west, north, south, or somewhere in between.



A World of Weather



What Is Weather?

Engage Your Brain!

Find the answer to the following question in this lesson and record it here.

How could the weather in this city be measured?



Why It Matters

Being Ready For Weather

- To stay safe and comfortable, we wear clothing that is right for the weather.
- When it's raining, we stay dry with a raincoat, boots, and umbrella.
- The weather also affects the activities we can do. We can ski only when it's cold enough for snow.



Being Ready For Weather

- To help us, scientists try to predict the weather.
- When we know what kind of weather is coming, we can make plans to dress right, and we can choose the right kinds of activities.



Watch Out for Weather!



- Weather can be severe and even dangerous.
- A *hurricane* is a tropical storm with winds of 119 kilometers (74 miles) per hour or more.
- Hurricanes form over warm ocean water. Hurricanes can blow trees over and cause large areas of flooding.





Watch Out for Weather!

- *Thunderstorms* are strong storms that have thunder and lightning. Often thunderstorms bring heavy rain and strong wind, too.
- *Tornadoes* are small, spinning columns of very strong wind.



Watch Out for Weather!

Staying Safe In Severe Weather

Sara thinks that thunderstorms are exciting. She wants to go outside during one. Sara asks her mother to go with her. What should Sara's mother tell her?





Watch Out for Weather!

- A *blizzard* is a snowstorm with strong wind and a very low temperature.
- To be safe in severe weather, follow directions from a teacher, parent, or other adult who knows what to do.



Watch Out for Weather!

What to Wear

Look at each item. In what type of weather do you need each of these?
How does each item protect you from the weather?



winter hat



sunglasses



Watch Out for Weather!

Do the Math!

Solve a Word Problem

At 9:00 a.m., the air temperature was 18°C . By 4:00 p.m., it had risen to 32°C . How much warmer was it at 4:00 p.m. than at 9:00 a.m.?

