



Table of Contents

Introduction	3
Lesson: Watching the Weather	4
Weather Symbols	5
Student Weather Calendar	6
Lesson: How Do Thermometers Work?	7
Reading a Thermometer	9
Lesson: Graphing the Weather	10
Weather Graph	11
Lesson: Building a Weather Vane	12
Weather Vane Patterns	14
Lesson: Let's Go Fly a Kite	15
Observation Record	16
Lesson: What Is a Cloud?	17
Lesson: Where Is the Water Vapor?	18
Lesson: Dew Point	19
Lesson: Sling Psychrometer	20
Using a Sling Psychrometer	21
Percent of Relative Humidity Table	22
Lesson: Where Does Water Vapor Come From?	23
Water Vapor Data Sheet	24
Lesson: What Are Those Clouds?	25
Types of Clouds	26
Clouds in the Atmosphere	27
Lesson: How Are Clouds Formed?	28
Cloud Formation	29
Lesson: What Are Weather Fronts?	30
Weather Fronts	31
Lesson: Air Pressure	32
Air Pressure and Elevation	33
Air Pressure Demonstration	34
Atmospheric Layers	35
Lesson: Investigating Density of Air	36
Does Air Have Weight?	37
Making a Parachute	38
Lesson: Hurricanes	39
How Do Hurricanes Get Their Names	40
Lesson: Winds and Hurricanes (Coriolis Effect)	41
Lesson: Tracking a Hurricane (Class Project)	42
Map of Hurricane Site	43
Hurricane Sam Data	44
Lesson: Weather On the Internet	46
Lesson: Our Weather Report	47
Teacher and Student Resources	48

Investigating Density of Air *(cont.)*

Does Air Have Weight?

Teacher Information

This demonstration will show that air behaves just as the water did in the previous lesson. Thus, the students will develop a better understanding of how warm air rises and cold air sinks.

Overview: *Students will learn that air has weight that changes with temperature.*

Materials

- two paper bags exactly the same size (lunch bags work well)
- electric socket with 60-watt bulb (a “trouble” light may be used)
- simple balance beam
- two paper clips

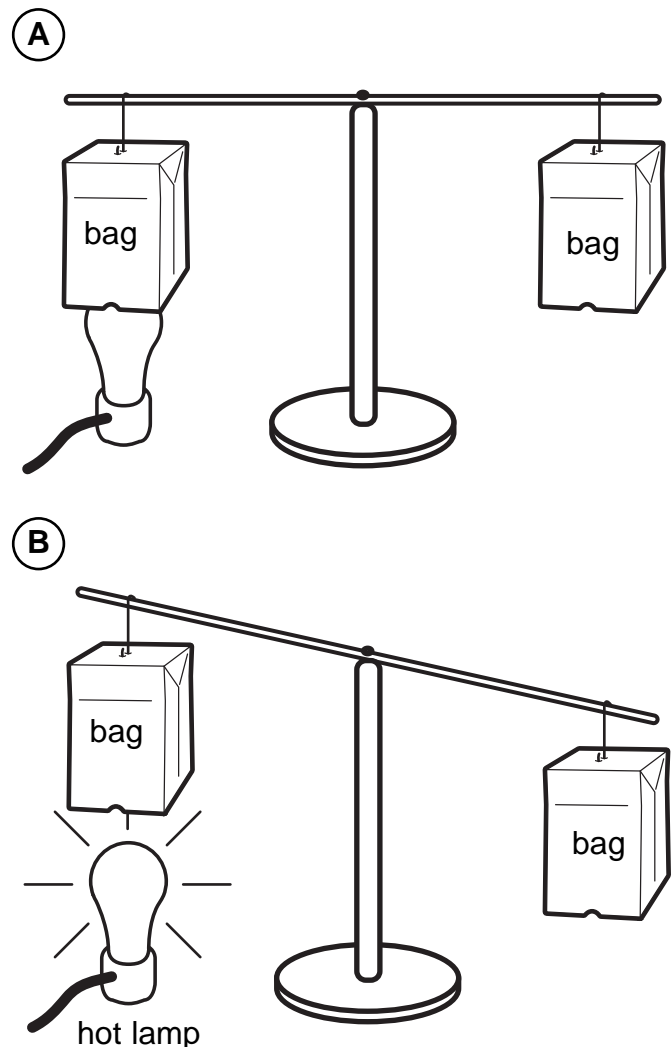
Procedure

1. Place a paper clip on the bottom of each bag and bend it so that it becomes a hanger.
2. Hang each bag at the end of the balance beam, as shown in illustration A. Show that the beam hangs straight, demonstrating that the bags have equal weight.
3. Discuss what is filling the bags (air). Explain that the air inside the bags is the same temperature as all the rest of the air in the classroom.
4. Place the light under one of the bags and turn it on. (See illustration B.) Let the students watch what happens.

Closure

- Ask the student to make a drawing and label it to explain what happened here. (The bag over the hot lamp will begin to rise as the air gets warmer and expands, causing the bag to rise.)
- Discuss how this affects the air which makes up our atmosphere. (When the air get warmer, it will rise, as it get cold, it will drop.) This is what causes winds and clouds to move.

Balance Beam



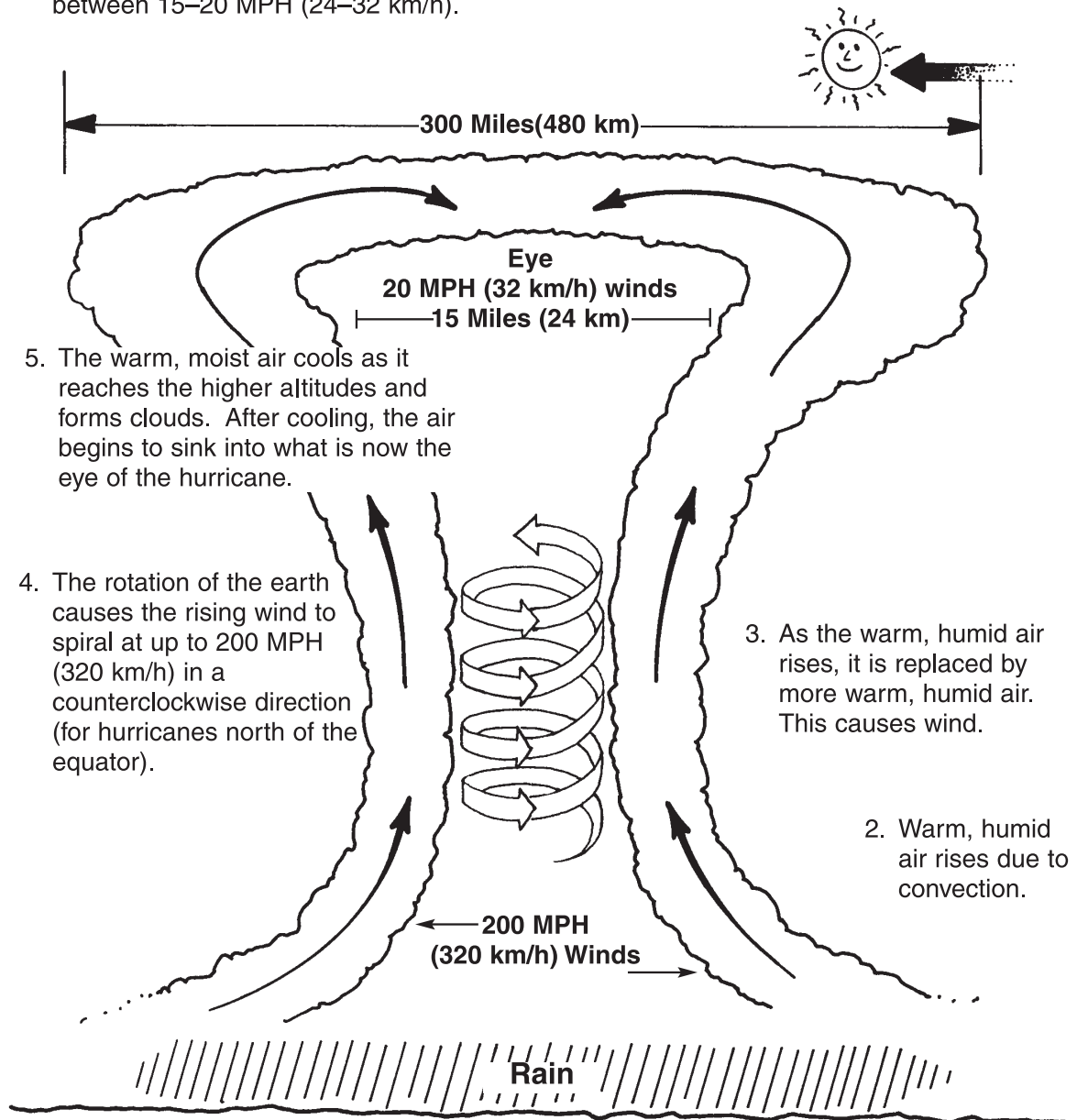
Hurricanes

Teacher Information

Hurricanes and their close relatives, typhoons and cyclones, are formed in the same way. They are not the normal storms created when cold and warm fronts collide. Use a transparency of this page to describe the process of how a hurricane forms. Continue the study with a transparency of the next page, followed by the lessons on the Coriolis effect and tracking a Hurricane project.

Overview: *Students will learn how hurricanes develop, and are named and tracked.*

6. Pre-existing winds push the hurricane (in the Atlantic Ocean) northwest at speeds between 15–20 MPH (24–32 km/h).



1. The ocean water must be at least 200 feet (61 m) deep and 80°F (27°C).