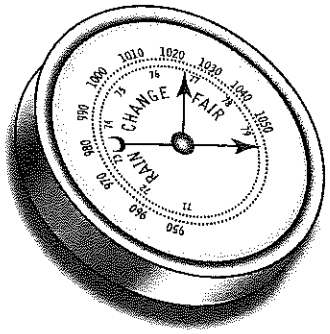
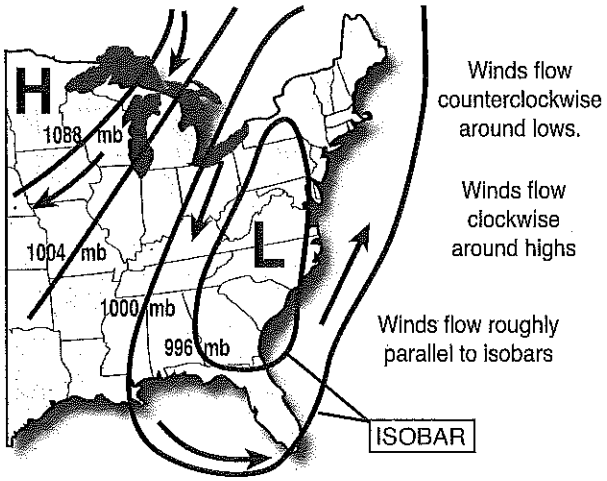
Unit 4: Air Pressure
Student Information

Air pressure is also known as atmospheric pressure or barometric pressure. It is a measure of the weight of air pressing down on a given area of Earth's surface. Air pressure is caused by the weight of air from the top of the atmosphere pressing down on the layers of air below. The layers press down on each other because gravity pulls the air molecules down.

Air has mass and volume. As a result, it exerts pressure. Air is also considered to be a **fluid** as it has the ability to take the shape of its container and to flow. Meteorologists identify air masses of low pressure and high pressure as they track weather patterns and prepare forecasts. Meteorologists use an instrument called a **barometer** to measure changes in air pressure. Today, aneroid barometers have largely replaced mercury barometers due to safety concerns about mercury; however, the data is still reported in units of inches, which came from measuring the height of the column of mercury.



The weather conditions associated with air masses of varying pressures are different. Regions of sinking cool air are called **high-pressure systems**, or anticyclones. In a high-pressure system, the winds rotate clockwise. Regions of rising warm moist air are called **low-pressure systems**, depressions, or cyclones. In a low-pressure system, the winds rotate counterclockwise. If the pressure is very low, these spiraling winds may reach storm or hurricane force. Areas of high pressure are usually associated with fair weather, whereas areas of low pressure are commonly associated with stormy weather. On weather maps, these air masses are labeled with a large **L** for low pressure and **H** for high pressure.



Meteorologists identify air masses as high and low pressure by collecting barometric pressure data from weather reporting stations across the United States. After the barometric pressure data is plotted on a map, lines are drawn to connect areas of equal pressure. These lines are referred to as **isobars**, or lines of equal pressure. Barometric pressure decreases as one moves to the center of the low-pressure area; barometric pressure increases as one moves to the center of a high-pressure area.

Name: _____ Date: _____

Quick Check

Matching

_____	1. low-pressure systems	a.	used to measure changes in air pressure
_____	2. air pressure	b.	regions of sinking cool air
_____	3. barometer	c.	lines of equal pressure on a weather map
_____	4. isobars	d.	known as atmospheric pressure or barometric pressure
_____	5. high-pressure systems	e.	regions of rising warm moist air

Fill in the Blanks

6. Air pressure is caused by the _____ of air from the top of the atmosphere pressing down on the layers of air below.
7. In a _____ _____ _____, the winds rotate counterclockwise.
8. Areas of high pressure are usually associated with _____ _____.
9. Areas of low pressure are commonly associated with _____ _____.
10. On weather maps, air masses are labeled with a large _____ for low pressure and _____ for high pressure.

Multiple Choice

11. What is another name for a high-pressure system?
    a. anticyclone b. depression
    c. cyclone d. hurricane
12. Where do meteorologists get their barometric pressure data?
    a. clouds b. weather reporting stations
    c. barometers d. telephone books
13. What is air considered to be because it can take the shape of its container and it can flow?
    a. solid b. volume
    c. fluid d. area