Barometers and Air Pressure

Air pressure can be measured in different ways. A barometer is any instrument that measures air pressure. The illustrations above show a simplified version of a common type of barometer. This type contains a sealed flexible chamber that has little air inside. The chamber contracts when the outside air pressure is high and expands when the air pressure is low. A series of levers or other devices turns the motion of the chamber into something that can be read—the movement of a needle on a dial or a jagged line on a strip of graph paper.

How a Barometer Works

High Air Pressure

The flexible chamber on the barometer contracts when the air pressure increases.

Low Air Pressure

The chamber expands when the air pressure decreases.

Which of these barometer readings would be the more likely one on a mountain? Explain why.

Key Concepts

1. How does the movement of air molecules cause pressure?
2. How does altitude affect air pressure?
3. How is air density related to air pressure?

Critical Thinking

4. Apply Would you expect the air pressure in a valley that’s below sea level to be higher or lower than air pressure at sea level? Explain.
5. Predict Two barometers are placed one kilometer apart. One shows higher pressure than the other. What will happen to air between them?

Challenge

6. Infer The eardrum is a thin sheet of tissue that separates air in the middle part of your ear from air outside your ear. What could cause your eardrum to make a popping sound as you ride up a tall building in an elevator?