

Revisit the Concept of Temperature

Reflecting on Air

1. As soon as you have finished the investigation above, ask your students to think about the differences between measuring the temperature of water and the temperature of air. How are they similar and how are they different. You could ask them how they might measure the temperature of a solid material as well.
2. Let your students discuss the importance of measuring air temperature accurately. What might happen if the temperature is misread? How could they check that a thermometer is reasonably accurate - correctly calibrated? (*They could do this by using several thermometers at the same time. They should all read about the same. If one is different, it's probably faulty. If they are all the same the fault lies with the observer!*)
3. It might be interesting to have students explore connections between air temperature and environmental conditions. Ask them what kinds of animals and plants live in extreme temperature conditions both hot and cold.

Linking to Weather

Your students may need help in understanding air, or atmospheric conditions, are a key components of weather scientists measure and track. They need to begin to understand that air temperature plays a big role in determining weather conditions and patterns. In further investigations, your students will be making air measurements and atmospheric observations similar to those used by scientists to make predictions about everyday weather.

Digging Deeper

Atmospheric Pressure Elements of Weather

All sciences begin with observations. Without observations, scientists have no way to develop new theories and to test existing theories. The weather is no exception. Meteorologists (scientists who study the weather) observe many elements of the weather, both at the Earth's surface and at high altitudes. Weather observations are used for predicting the weather and for developing and testing new theories about how the weather works.

Air Temperature

Air consists of gas molecules, which are combinations of two or more atoms. Although you cannot see them with your eyes, the molecules are constantly moving this way and that at very high speeds. As they move, they collide with one another and with solid surfaces. The temperature of the air is a measure of how quickly the molecules are moving. The more energy of motion the molecules have, the higher the temperature you feel in the air.

Air temperature is measured with thermometers. Common thermometers consist of a glass rod with a very thin tube in it. The tube contains a liquid that is supplied from a reservoir, or "bulb," at the base of the thermometer. Sometimes the liquid is mercury, and sometimes it is red-colored alcohol. As the temperature of the liquid in the bulb rises, the liquid expands. As the liquid expands, it rises up in the tube. The tube is marked with a scale, in degrees Fahrenheit or in degrees Celsius.

When you are measuring the air temperature, be sure to have the thermometer in the shade. If the sun shines on the thermometer, it heats the liquid. Then the reading is higher than the true air temperature. Also, when you take the thermometer outside, give it enough time to adjust to the outdoor air temperature. That might take several minutes.

Weather Unit Sections

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