



Humidity

Lesson Concept Humidity is a measure of the amount of water vapor in the air.

Link In the previous lesson, students looked at how the water cycle causes precipitation and the different types of precipitation. In this lesson, students explore how the water cycle contributes to relative humidity. In the next lesson, students will explore how density affects the condition of the air around us.

Time 40 minutes

Materials Whole class

Graph

Individual

Pencil

Weather station data for precipitation and relative humidity

Graph

2 different colored markers

Advance preparation 1. Create class graph

Engage *(10 minutes) The amount of water vapor in the air contributes to humidity*

1. Display the hygrometer or sling psychrometer. Ask students to name this instrument they have been using. What does it measure?
2. Write the word humid on the board. Ask students what the word means. How do they feel on a humid day? Chart responses on the white board. (it is ok if they don't know the word).
3. Explain that humidity is another condition of the air or weather.

Explore #1 *(10 minutes) The water cycle contributes to humidity*

4. Ask students where they think humidity comes from. Some students should mention the water cycle. If they do, build on that response. If they don't ask students which part of the water cycle contributes to humidity. Discuss their ideas, leading if necessary to evaporation as the main "part" of the water cycle where water vapor is found.

5. In partners, ask students to discuss how they think humidity might impact the weather.
6. Have several students share their ideas. Use this information to build on their ideas:
 - Humidity is expressed as relative humidity or the amount of moisture in the air relative to the maximum amount the air can hold at a given temperature. It is expressed as a percent
 - 100% humidity is when the air is saturated.
 - At this point, the water vapor forms little drops of water.
 - These drops of water form clouds, which can eventually fall to the Earth in some form of precipitation.

Explain (20 minutes) Humidity and precipitation are related.

7. Ask students to review their precipitation data in their weather data collection journals. Which days had rain? How was the rain measured? How much rainfall occurred?

Teacher Note: If there has been no rain over the period of weather data collection, consider using data from another city such as Seattle, WA. The website, intellicast.com has such data.

8. Create a class chart of the dates and amounts for each rainy day. Have students construct their copy of this graph.
9. Next ask students, working with a partner, to review their data for humidity on and around the dates that it rained. Create another class graph for this data and have students construction their copy of the graph
10. Ask students what they notice about the two graphs. How does this support (or not) the discussion from Steps 5 and 6?
11. Based on their discussion and the data they analyzed, ask students to write a claim in their notebook about the relationship between humidity and precipitation and support it with evidence and reasoning.

Teacher Note: A quality explanation contains a claim, evidence and reasoning. An example: My claim is that humidity and precipitation are related. My evidence from our weather data is _____. My explanation is that In the water cycle the amount of water evaporated contributes to the amount of water vapor in the air (humidity). When the humidity is high, there is more water vapor in the air, which collects into rain clouds. The chance of rain increases as the humidity increases.

Evaluate (10 minutes) The water cycle impacts the condition of the air around us and contributes to the weather

12. Have students respond to this notebook prompt: Justin predicts that it is going to rain when the humidity is 45%. Do you agree with Justin? Why or why not?
13. As a final prompt ask students to answer this prompt: I used to think _____ about humidity. Now I know _____.