

warped: twisted or bent out of shape

humidity: the amount of moisture in the air

molecules: small, individual pieces of matter that contain two or more atoms

condense: change from a gas into a liquid

Condensation plays an important role in Earth's water cycle. Water molecules evaporate from wet areas on Earth's surface to fill the air with moisture. Warm air near Earth's surface naturally rises through the atmosphere, carrying water molecules with it. As the air rises, it becomes cooler. This drop in temperature causes the water molecules to condense around dust particles in the air, and tiny water droplets are formed. They collect to create clouds. Eventually, the amount of water condensed into a droplet becomes too heavy, and gravity pulls it back to Earth as rain.

How were Julio's posters ruined?

It was late October in Springtown. The days were warm, but at night, the temperatures dropped into the low 40s and high 30s. The jacket Julio had worn to school that morning lay on the floor. It was late afternoon, and the sunlight streaming through the hallway windows was making him hot.

Julio was hard at work taping posters onto the glass. He and his sister had spent the previous weekend painting them. In big letters, the posters asked students to "Vote for Julio!" Julio stood back to admire their work and then grabbed his jacket and headed home.

When Julio walked into school the next morning, sunlight poured into the hallway again, but this time from the windows on the opposite side. He quickly made a shocking discovery. Someone had gotten his posters wet! The paper was warped, and the letters had smeared. The posters were ruined.

Julio stomped angrily to his homeroom to inform Ms. Wilson. She asked Julio to calm down and take his seat. Then, she went to investigate.

"Good morning," Ms. Wilson said, as she reentered the room. "We're going to discuss atoms this morning, but first, let me get a drink of water."

Ms. Wilson left again and soon returned carrying a glass of ice water. She set it on her desk and began teaching. About half an hour later, she picked up the glass and showed it to the class. A wet ring had formed on the desk, and the sides of the glass were dripping with water.

"Let's have a short discussion about humidity," Ms. Wilson suggested. "Along with nitrogen and oxygen atoms, the air around you contains water molecules. Whenever the temperature drops, water molecules condense onto surfaces. The dew you find on grass in the mornings is a result of water molecules condensing when the temperatures cooled down overnight."

"This ice water made the surface of the glass very cold," Ms. Wilson continued. "Any air coming close to the glass was cooled as well. The water molecules in the cooled air condensed onto the nearest surface, which was the glass itself. Moisture from the air collected onto the cool glass surface, and soon there was enough water to begin dripping down the sides. Julio, do you understand what I'm saying?"

Julio smiled. "I get it."



Chapter 1 Lesson 4

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Circle the letter of the best answer to each question below.

- Humidity refers to
 - evaporation.
 - the amount of moisture in the air.
 - water that condenses onto surfaces.
 - All of the above
- Dew, which is the moisture found on grass in the morning,
 - comes from inside each blade of grass.
 - falls from the sky as small, almost invisible raindrops.
 - is water molecules from the air that condensed.
 - is drawn up out of the ground by changing temperatures.
- Clouds form when
 - wind pushes rain up into the sky.
 - water molecules get big enough to be seen.
 - a water molecule condenses onto a dust particle.
 - water droplets in the atmosphere collect in large groups.

Write your answers on the lines below.

- Explain why water condensed on the outside of Ms. Wilson's glass.

- Explain what ruined Julio's posters.

Unifying Concepts and Processes

Do you think the temperature of Ms. Wilson's glass rose or fell as water molecules condensed onto it? Explain your answer.
