

Photo Description



A big ball of ice sits in a blue tray. The ice ball has white lines that look like cracks. Water is around the ice ball where some ice melted.

Scientific Phenomena

This image shows the melting phenomenon - the phase change from solid ice to liquid water. The anchoring phenomenon occurs because thermal energy from the warmer air temperature is being transferred to the ice, causing the molecular structure to change from the rigid crystalline arrangement of ice to the more fluid arrangement of liquid water. The cracked appearance shows the internal stress as different parts of the ice sphere warm at different rates.

Core Science Concepts

1. States of Matter: Ice is the solid form of water, and when it gets warm, it changes to liquid water
2. Temperature and Heat: Warm air makes ice melt by giving it energy
3. Observable Changes: We can see and feel when things change from solid to liquid
4. Properties of Materials: Ice is hard and cold, while water is wet and flows

Pedagogical Tip:

Use concrete, hands-on experiences with ice cubes in different containers to help kindergarteners make direct observations about melting. Let them touch, observe, and describe what they see happening over time.

UDL Suggestions:

Provide multiple ways for students to document their observations - drawing pictures, using simple words, acting out the melting process with their bodies, or using digital tools to take before/after photos.

Zoom In / Zoom Out

1. Zoom In: Inside the ice, tiny water molecules are packed tightly together like people holding hands. When it gets warm, they start moving faster and let go of each other's hands, becoming liquid water.
2. Zoom Out: This melting happens everywhere in nature - icicles on houses, snow on mountains, and ice on ponds all melt when spring comes, providing water for plants and animals.

Discussion Questions

1. What do you think will happen to this ice ball if we leave it here for one hour? (Bloom's: Predict | DOK: 2)
2. How does this ice ball feel different from the water around it? (Bloom's: Analyze | DOK: 1)
3. Where have you seen ice melting in your everyday life? (Bloom's: Apply | DOK: 2)
4. What could we do to make this ice ball melt faster or slower? (Bloom's: Evaluate | DOK: 3)

Potential Student Misconceptions

1. Misconception: "The ice disappears when it melts"
Clarification: The ice changes into water - it's still there, just in a different form
2. Misconception: "Only fire can melt ice"
Clarification: Anything warmer than freezing temperature can melt ice, including warm air, warm hands, or sunshine
3. Misconception: "Melting happens instantly"
Clarification: Melting takes time and happens gradually as the ice gets warmer

Cross-Curricular Ideas

1. Math: Measure how much water the ice ball makes as it melts using cups or containers. Count how many small cups of water equal one ice ball. Graph or chart observations over time (comparing amounts at 10 minutes, 20 minutes, 30 minutes).
2. ELA: Read stories about winter and melting snow. Have students dictate or draw their own story about "The Ice Ball's Journey" from solid ice to liquid water. Use descriptive words like "cold," "dripping," "wet," and "shiny" to describe what they observe.
3. Art: Create ice paintings by freezing water with food coloring in balloon molds, then watching them melt on paper to make colorful designs. Students can paint with melted ice water or use ice as a paintbrush before it melts completely.
4. Social Studies: Discuss how people and animals in cold places depend on ice and snow, and how melting ice affects communities. Talk about seasons and how spring brings melting snow that helps plants grow.

STEM Career Connection

1. Climate Scientist: Climate scientists study how ice, snow, and water move around our planet. They watch glaciers and ice caps to understand how Earth is changing. These scientists help us learn about weather and seasons. They work in offices, laboratories, and outdoors observing nature.
 - Average Annual Salary: \$65,000 - \$95,000 USD
2. Materials Engineer: Materials engineers figure out how different things like ice, plastic, and metal behave when they get hot, cold, or wet. They design materials that work better for things we use every day, like coolers that keep ice frozen longer or water bottles that don't crack.
 - Average Annual Salary: \$60,000 - \$100,000 USD
3. Environmental Scientist: Environmental scientists study how water moves through nature—melting from ice, flowing in rivers, and falling as rain. They help protect water sources so people and animals have clean water to drink and use.
 - Average Annual Salary: \$63,000 - \$98,000 USD

NGSS Connections

Performance Expectation: K-PS1-3: Make observations to determine the effect of sunlight on Earth's surface

Disciplinary Core Ideas:

- K-PS1.A: Matter and Its Properties
- K-ESS2.D: Weather and Climate

Crosscutting Concepts:

- Patterns
- Cause and Effect

Science Vocabulary

- * Melt: When something solid becomes liquid because it gets warm
- * Solid: Something that keeps its shape, like ice or a rock
- * Liquid: Something that flows and takes the shape of its container, like water
- * Temperature: How hot or cold something is
- * Change: When something becomes different than it was before

External Resources

Children's Books:

- The Magic School Bus: Wet All Over by Joanna Cole
- Water Is Water by Miranda Paul
- Ice Is Nice by Robin Hill