

## Photo Description

A big ball of ice sits in a blue tray. The ice ball has cracks and lines all through it. Water is melting from the ice and making puddles in the tray.



## Scientific Phenomena

This image represents the Anchoring Phenomenon of ice melting due to heat transfer from the surrounding environment. The ice ball is absorbing thermal energy from the warmer air around it, causing the solid water molecules to gain enough energy to break their rigid bonds and transform into liquid water. The radial crack patterns show how ice expands and contracts as it changes temperature, creating stress fractures throughout the structure.

## Core Science Concepts

1. States of Matter: Ice is solid water that changes to liquid water when it gets warm enough
2. Heat Transfer: Warmth from the air moves into the cold ice, making it melt
3. Observable Changes: We can see and feel the ice changing from hard to soft to liquid
4. Temperature Effects: Cold things get warmer when they are in warm places

### Pedagogical Tip:

Use concrete, hands-on experiences with ice cubes in different environments (sunny windowsill vs. shaded area) to help first graders observe and compare melting rates. This builds their observation skills while reinforcing the concept.

### UDL Suggestions:

Provide multiple ways for students to document their observations - drawing pictures, taking photos, using simple recording sheets with pictures, or verbally describing what they notice. This supports different learning styles and abilities.

## Zoom In / Zoom Out

1. Zoom In: Inside the ice, tiny water pieces called molecules are stuck together tightly. When the ice gets warm, these tiny pieces start moving faster and break apart, turning into liquid water we can see dripping.
2. Zoom Out: This melting ice connects to the big water cycle on Earth. When ice melts in nature (like snow on mountains or ice on ponds), it becomes water that flows into streams, rivers, and eventually back to the ocean where it can evaporate and make clouds.

## Discussion Questions

1. What do you notice happening to the ice ball? (Bloom's: Observe | DOK: 1)
2. Why do you think the ice is changing into water? (Bloom's: Analyze | DOK: 2)
3. What would happen if we put this ice ball in the freezer instead? (Bloom's: Predict | DOK: 2)
4. How is this melting ice ball like snow melting outside in spring? (Bloom's: Compare | DOK: 3)

## Potential Student Misconceptions

1. Misconception: "The ice is disappearing or going away"  
Clarification: The ice is changing into water - it's still there, just in a different form
2. Misconception: "Only fire or hot things can melt ice"  
Clarification: Room temperature air is warm enough to melt ice - anything warmer than freezing (32°F) can melt ice
3. Misconception: "The cracks mean the ice is broken or damaged"  
Clarification: Cracks are natural and happen when ice expands and contracts as temperature changes

## Cross-Curricular Ideas

1. Math - Measurement & Graphing: Have students measure how much water collects in the tray as the ice melts over time. Create a simple picture graph showing the amount of water at different times (beginning, middle, end). This connects to 1.MD.1 (ordering and comparing lengths) and introduces data collection.
2. ELA - Descriptive Writing & Vocabulary: Students can draw pictures of the melting ice and label what they see using words like "wet," "cold," "dripping," and "puddle." Create a class "Ice Melting" word wall. Read related books like *Ice Is Nice!* and discuss sensory words (what does ice feel like? sound like when it cracks?).
3. Art - Process & Change: Have students create artwork showing the ice ball at different stages of melting using watercolors or blue paint that gradually becomes lighter. This helps them visualize the progression of change and encourages observation of subtle differences in appearance.
4. Social Studies - Seasons & Community: Connect melting ice to spring and how communities prepare for warmer weather. Discuss how ice melting helps plants grow and how people in cold climates experience spring differently. Invite students to share experiences with snow or ice melting in their own neighborhoods.

## STEM Career Connection

1. Meteorologist (Weather Scientist): Meteorologists study weather and how ice and snow melt affect rain, rivers, and floods. They predict if it will be cold enough for snow or warm enough for ice to melt. They help communities stay safe during big melts. Average Salary: \$97,000/year
2. Environmental Scientist: Environmental scientists study how water moves through nature - including when ice melts and becomes part of rivers and oceans. They work to keep our water clean and make sure we have enough water for people to drink and use. Average Salary: \$73,000/year
3. Engineer (Water Systems): Engineers design systems to manage water, including what happens when large amounts of ice melt. They build dams, pipes, and storage systems to control water flow and protect communities from flooding. Average Salary: \$101,000/year

## NGSS Connections

- Performance Expectation: 2-PS1-1 Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties
- Disciplinary Core Idea: 2-PS1.A - Different kinds of matter exist and many of them can be either solid or liquid, depending on temperature
- Crosscutting Concept: Patterns - Patterns in the natural and human designed world can be observed

## Science Vocabulary

- \* Melt: When something solid becomes liquid because it gets warmer
- \* Solid: Matter that keeps its shape and feels hard
- \* Liquid: Matter that flows and takes the shape of its container
- \* Temperature: How hot or cold something is
- \* Observe: To look carefully and notice what happens

## External Resources

Children's Books:

- Ice Is Nice! by Robin Nelson
- Solid, Liquid, or Gas? by Fiona Bayrock
- Snow Is Falling by Franklyn Branley