

## Photo Description



This image shows snow falling on a brick building surrounded by ivy-covered walls on a cold day. You can see white snowflakes falling from the sky and landing on the roof, ground, and plants. Snow is frozen water that falls from clouds when the weather gets very cold.

## Scientific Phenomena

Anchoring Phenomenon: Precipitation falling as snow

This image captures precipitation—water falling from clouds to Earth. When temperatures in the atmosphere drop below freezing (32°F or 0°C), water vapor in clouds freezes into ice crystals instead of forming raindrops. These ice crystals stick together and become snowflakes, which are heavy enough to fall to the ground. This is one of the key ways water moves through Earth's water cycle and an important weather pattern.

## Core Science Concepts

- \* Precipitation: Water falling from clouds in the form of rain, snow, sleet, or hail. Snow is precipitation that falls when it's cold enough for water to freeze in the sky.
- \* Temperature and States of Matter: Water changes form based on temperature. When it's very cold, liquid water becomes solid ice and snow instead of staying as a liquid or becoming water vapor.
- \* Weather Patterns: Snow is part of seasonal weather patterns. In many places, snow falls during winter when temperatures drop below freezing.
- \* Water Cycle: Snow is part of Earth's water cycle—water evaporates, forms clouds, falls as precipitation, and flows back to oceans and lakes.

### Pedagogical Tip:

For First Grade, use sensory-rich language and direct observations. Instead of explaining molecular movement, focus on "What do you see falling?" and "How does it feel?" Make connections to students' own experiences with snow or cold weather to build schema before introducing vocabulary.

### UDL Suggestions:

Provide multiple means of representation: Use real snow samples (if available), photographs, and video clips to show precipitation. For students who cannot access snow, show animated water cycle diagrams or digital simulations. Offer both visual and tactile learning experiences where possible. Consider using a snow sensory bin or ice exploration station so all learners can manipulate and investigate frozen water, regardless of their geographic location.

## Zoom In / Zoom Out

### Zoom In: Snowflake Formation (Microscopic Level)

When we look at a single snowflake up close, we see it has a special six-sided shape with beautiful patterns. Inside each snowflake, tiny pieces of water (called water molecules) are arranged in a perfect pattern. When water freezes way up in the cold clouds, these water pieces stick together in this special six-sided way every single time! If we could shrink down to the size of a speck of dust, we'd see millions of these tiny water molecules holding hands in the clouds, forming the crystal shape that makes a snowflake special. No two snowflakes are exactly alike because they freeze in slightly different ways!

### Zoom Out: Global Water Cycle and Climate Systems

When we look at the big picture, snow falling on this building is just one tiny part of Earth's enormous water cycle. Water from oceans, lakes, and rivers evaporates into clouds all around the world. When those clouds move over cold places (like mountains or winter areas), the water freezes into snow and falls. That snow melts into streams and rivers, which flow back to oceans, and the cycle starts all over again! Snow in one place affects weather patterns far away, helps fill our water supplies, and is part of how Earth stays balanced. Scientists study snow and weather patterns all over the planet to understand our climate and predict seasons.

## Discussion Questions

1. What do you observe falling from the sky in this picture? (Bloom's: Remember | DOK: 1)
2. Why do you think the water from the sky is frozen into snow instead of falling as rain? (Bloom's: Analyze | DOK: 2)
3. Where do you think the snow goes after it lands on the ground? Where does the water go? (Bloom's: Evaluate | DOK: 3)
4. How is snow different from rain? What would happen if it was warmer outside? (Bloom's: Analyze | DOK: 2)

## Potential Student Misconceptions

### Misconception 1: "Snow comes from the ground freezing"

Clarification: Some students might think snow forms when water on the ground freezes into snow. Actually, snow forms high up in the clouds when it's very cold, and the frozen snowflakes fall down from the sky. Snow doesn't come from the ground—it comes from the clouds! When snow lands on the ground and melts, that's when liquid water appears, but the snow itself was made in the cold sky first.

### Misconception 2: "All white, cold things falling from the sky are snow"

Clarification: Students may not distinguish between different types of precipitation. Help them understand: Snow is light and fluffy and falls when it's very cold. Rain is liquid water that falls when it's warmer. If it's only a little bit cold, water might fall as rain instead of snow. The temperature of the air decides whether we get snow or rain!

### Misconception 3: "Snow is water that froze on its way down"

Clarification: While this sounds logical, it's not quite right. Snow forms inside the clouds when water vapor freezes into ice crystals way up high—before it falls. The snowflake doesn't become snow while falling; it's already snow when it leaves the cloud! The cold air high in the sky is what makes the snow form, not the falling itself.

## Extension Activities

1. "Snowflake Observation Walk" (Outdoor or Virtual)

Take students outside to observe snow falling (or show video/photos if snow isn't available). Have them watch and describe snowflakes using sensory language: "What shape do you see? Is it wet or dry? Does it feel cold?" Return inside and create snowflake shapes with white paper cutouts or pipe cleaners.

### 2. "Melting Ice Investigation"

Provide students with ice cubes (or frozen water in clear cups). Observe what happens as ice melts in the classroom. Ask: "Where is the ice going? What do you see?" Connect this to snow melting on the ground. Students can draw or write about the transformation from solid to liquid.

### 3. "Water Cycle in a Bag"

Create a simple water cycle demonstration by placing water in a clear plastic bag with a marker-drawn sun, cloud, and ground. Seal it and tape it to a sunny window. Over days, students observe condensation forming ("clouds"), water droplets appearing ("rain"), and evaporation occurring. Discuss how this relates to the snow in the photo.

## Cross-Curricular Ideas

### Math: Snowflake Counting & Patterns

Have students count snowflakes in the photo or on winter-themed worksheets. Explore the natural six-sided pattern of snowflakes by creating symmetrical snowflake designs using folded paper and scissors. Students can count the points on snowflakes, sort them by size, or create repeating patterns with snowflake cutouts. This connects geometry (symmetry and shapes) to the science of precipitation.

### ELA: Winter Weather Stories & Descriptive Language

Read *The Snowy Day* by Ezra Jack Keats and have students use sensory words to describe snow: cold, soft, white, wet, crunchy. Students can dictate or write simple sentences about snow using "I see..." or "I feel..." sentence starters. Create a class snow poem using repetitive, rhythmic language. Students can also retell the water cycle as a simple story: "Water goes up, up, up into clouds. Then it falls down as snow!"

### Social Studies: Seasonal Clothing & Community

Discuss how snow affects the way people dress, play, and work. Compare winter activities in snowy places versus warm places. Students can sort pictures of clothing by season or create a chart showing "Things we do in snow" versus "Things we do in warm weather." This helps students understand how weather patterns shape human life and community practices.

### Art: Snowflake Crafts & Winter Scenes

Students can create paper snowflakes using symmetrical paper folding and cutting, paste snowflakes onto winter landscape drawings, or paint snowy scenes using white paint on blue paper. They can also create 3D snowflakes from pipe cleaners or create an "icy" texture collage using cotton balls, glitter, and white paper. This artistic exploration reinforces the visual patterns of snowflakes and seasonal changes in nature.

## STEM Career Connection

### Meteorologist (Weather Scientist)

A meteorologist is a scientist who studies weather and clouds. They observe snow, rain, wind, and temperature to understand what the weather will be like. Meteorologists use special tools and computers to help people know if snow is coming so they can get ready! They might work at weather stations, on airplanes, or at universities learning about storms and seasons. These scientists help keep people safe during bad weather.

Average Annual Salary: \$97,000–\$104,000 USD

### Climatologist (Climate and Snow Expert)

A climatologist is a scientist who studies long-term weather patterns and how Earth's climate changes over many years. Some climatologists focus especially on snow—they study how much snow falls in different places, how snow affects animals and plants, and how our climate is changing. They travel to snowy mountains and cold places to collect snow samples and data to help us understand our planet better.

Average Annual Salary: \$95,000–\$110,000 USD

Hydrologist (Water Scientist)

A hydrologist is a scientist who studies water—where it comes from, where it goes, and how it moves around Earth. Hydrologists care a lot about snow because melting snow fills rivers, lakes, and the water we drink! They track snow in mountains, measure how much water snow brings when it melts, and help communities plan for water needs. Hydrologists work to make sure we have enough clean water for people, plants, and animals.

Average Annual Salary: \$88,000–\$102,000 USD

### NGSS Connections

Performance Expectation:

1-ESS2-1: Use observations to describe patterns in the amount of daylight and the way daylight changes from day to day to predict seasonal patterns.

Disciplinary Core Ideas:

- \* 1-ESS2.D Weather and climate observations help us understand seasonal patterns
- \* 2-ESS1.B Patterns of the sun, moon, and stars change in predictable ways; weather patterns change daily

Crosscutting Concepts:

- \* Patterns – Snow falls in patterns (winter season, cold weather)
- \* Systems and System Models – Snow is part of the water cycle system

### Science Vocabulary

- \* Precipitation: Water that falls from clouds to Earth, such as rain or snow.
- \* Snow: Frozen water that falls from clouds when the weather is very cold.
- \* Temperature: How hot or cold something is; we measure it with a thermometer.
- \* Freeze: When a liquid (like water) becomes a solid (like ice) because it gets very cold.
- \* Weather: What the air and sky are like outside—sunny, rainy, snowy, or windy.
- \* Water Cycle: The journey water takes: it evaporates into the air, forms clouds, falls as precipitation, and returns to oceans and lakes.

### External Resources

Children's Books:

- Snow\* by Manya Stojic (Explores how different animals experience and respond to snow)
- The Snowy Day\* by Ezra Jack Keats (Classic story about a child's winter adventures; great for building schema)
- Come On, Rain!\* by Karen Hesse (Poetic exploration of precipitation and weather)