

The Magical Journey of a Snowflake

Materials Needed:

- A clear glass jar with a lid
- Hot water (adult supervision required)
- Ice cubes
- A dark-colored plate or piece of construction paper
- White paper, cut into squares (at least 2-3 per learner)
- Child-safe scissors
- **Optional:** Magnifying glass, glitter, glue, cotton balls, a short video or pictures of real snowflakes up close

Learning Objectives:

By the end of this lesson, you will be able to:

- Tell me the three "secret ingredients" needed to make snow.
- Describe one special fact about a snowflake's shape.
- Create your own unique paper snowflake.

Lesson Plan

1. Introduction (5 minutes)

Hook:

Let's start with a wonder question! Have you ever caught a snowflake on your mitten and looked at it very closely? What did it look like? Do you think all snowflakes are big, or are some small? Where do you think they come from? Today, we are going to become snow scientists and uncover the secret recipe for making snow and the magical mystery of snowflakes!

Today's Adventure:

"Our mission today is to discover three things:

1. First, we'll learn the secret recipe to make a cloud and snow.
2. Next, we'll discover a magic number that is true for almost every snowflake.
3. Finally, you'll become a snowflake artist and create your very own!

2. Body: The Science of Snow (15-20 minutes)

Part A: The Secret Recipe for Snow (I do, We do)

I do (Educator Explains): "To make snow, the sky needs three special ingredients, just like when we bake cookies!"

1. **Water:** The air has tiny, invisible bits of water in it called water vapor. It's like the steam you see from a teapot!
2. **Cold Air:** This water vapor floats way up high into the sky where it's super cold, like a big freezer.
3. **A Tiny Speck:** The water needs a little speck of something to hold onto, like a tiny piece of dust or pollen floating in the air.

When the water vapor gets cold and grabs onto a speck of dust, it freezes into a tiny ice crystal. That's the beginning of a snowflake!"

We do (Cloud in a Jar Experiment): "Let's make our own cloud to see how it works! This is a team job."

1. **Adult step:** Carefully pour about two inches of hot water into the clear jar. Swirl it around to warm the sides. "We're making the air inside our jar warm and full of that invisible water vapor."
2. Place the lid upside down on top of the jar. "This is the top of our sky."
3. Let's put some ice cubes on top of the lid. "We are making the top of our sky very, very cold."
4. Watch closely! You'll see a cloud start to form inside the jar. "Look! The warm, wet air is meeting the cold air and making a cloud! If it got cold enough inside our jar, these tiny water droplets would freeze and start to become snowflakes."

Part B: The Snowflake's Magic Number (I do, We do)

I do (Educator Explains): "Once a tiny ice crystal is born in a cloud, it starts growing. As it grows, it always makes arms or points. And here is the magic secret: every snowflake has **SIX** sides or **SIX** arms! Let's count to six together! Another amazing secret is that scientists believe no two snowflakes are ever exactly the same. Each one is special and unique, just like you!"

We do (Snowflake Investigation):

- Look at pictures or a short video of real snowflakes up close.
- Let's be detectives! As we look at each picture, let's count the arms together. One, two, three, four, five, six!
- **Discussion:** Do they all look the same? What is the same about them? (They all have six sides). What is different? (The patterns are all unique).

Part C: You Are a Snowflake Artist (You do)

Success Criteria: "You will know you've done a great job when you have created your very own, unique snowflake that you can unfold."

1. **I do (Model the Steps):** "First, I'll show you how to make one. I'll take my square paper and fold it into a triangle. Then I fold it again and again to make a smaller, pointy triangle. Now I will use my scissors to cut little shapes along the sides. Watch what happens when I open it up... Ta-da! A snowflake!"
2. **We do (Guided Practice):** "Now, let's do the first one together. Take your paper square. Match my folds. Let's fold it into a big triangle. Good! Now let's fold it one more time. Great job! Now you can take your scissors and cut some little shapes out."
3. **You do (Independent Creation):** "Now it's your turn to be the artist. You can make as many as you want, and each one can be different because no two snowflakes are alike! You decide what shapes to cut." (Optional: Add glitter to the finished snowflakes to make them sparkle).

3. Conclusion (5 minutes)

Recap and Share:

Let's hang up our beautiful snowflakes! As we look at them, let's remember what we learned.

- "Can anyone tell me one of the three secret ingredients for snow?" (Water, cold, a speck of dust).
- "What is the magic number for a snowflake's arms?" (Six!).
- "Look at your friend's snowflake and your snowflake. Are they exactly the same?" (No!).

Reinforce Takeaway:

"You were fantastic snow scientists and artists today! You learned that snow comes from tiny ice crystals in cold clouds, and that every single snowflake has six sides and is completely unique. Just like your amazing artwork!"

Assessment

- **Formative (During Lesson):** Listen to the learner's answers during the Q&A and discussions. Did they correctly count to six while observing snowflake pictures? Observe if they can follow the basic folding and cutting steps with guidance.
- **Summative (End of Lesson):** The finished paper snowflake serves as the summative assessment. Ask the learner, "Tell me about the snowflake you made. What do you know about real snowflakes?" Their ability to connect their creation to one of the key concepts (unique, six sides) demonstrates understanding.

Differentiation

- **For Scaffolding/Support:**
 - Provide pre-folded paper for the snowflake craft.
 - Draw dotted lines on the folded paper to show the learner where they can cut.
 - Focus on the hands-on craft and the simple idea that "snow is frozen water from clouds."
- **For Extension/Challenge:**
 - Introduce the concept of symmetry. Use a small mirror to show how one side of their snowflake is a mirror image of the other.
 - Look up different types of snowflakes (like dendrites, plates, and columns) and challenge the learner to try and create a specific type.
 - Ask the learner to draw or write a short story about "The adventure of my snowflake" from the cloud to the ground.