SNOW!

4-H@Home Activity Book

https://i.pinimg.com/originals/c7/37/fe/c737fe160e524a61beb896d61a698d76.png

Name:_____Age:____

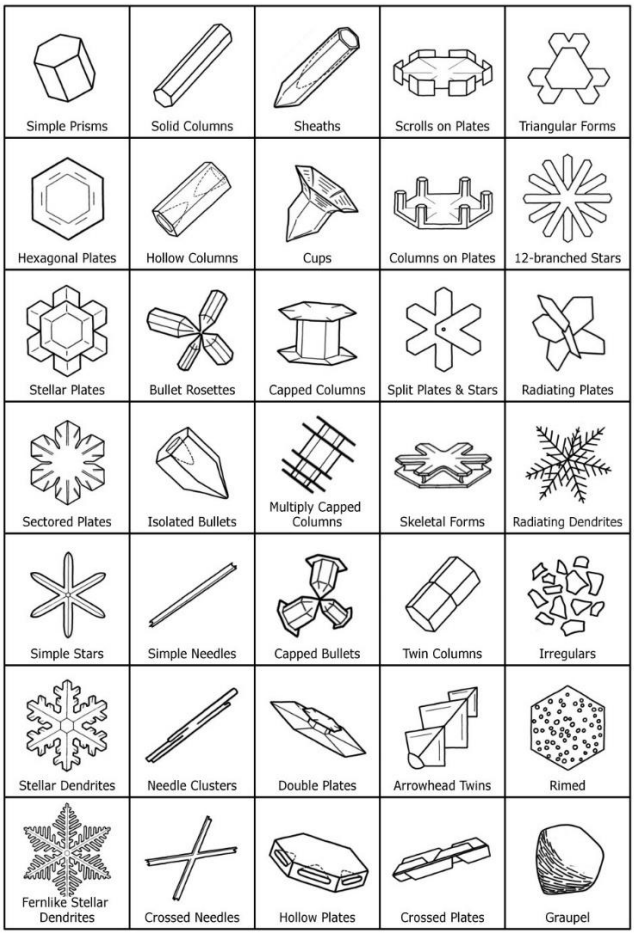
Club:_____

City/County:_____

Tell us what you know about Snow….

Types of Snow Crystals

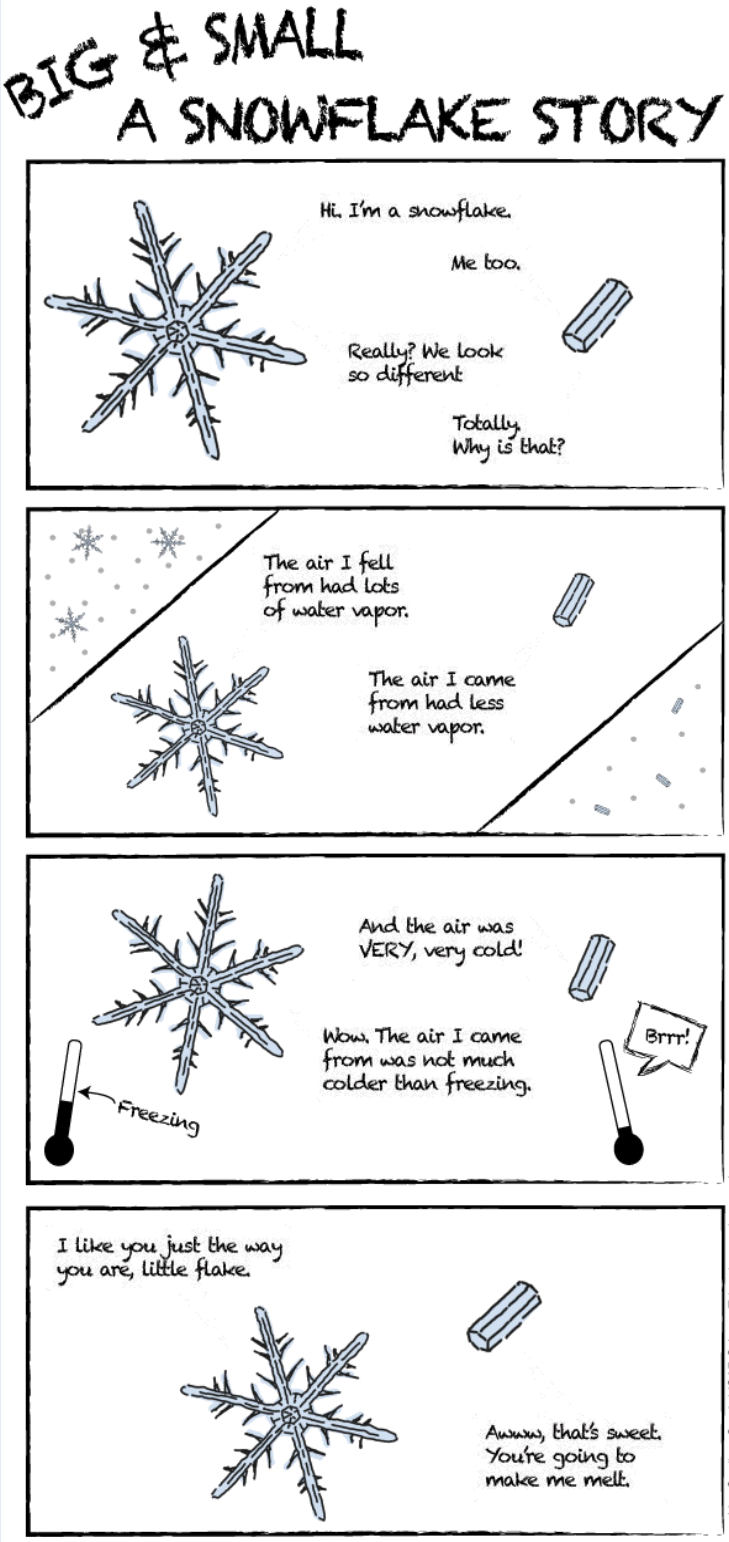
http://www.its.caltech.edu/~atomic/snowcrystals/kids/snowtypes.jpg



Types of Snowflakes

"Q: How are snowflakes formed?
A: A snowflake begins to form when an extremely cold water droplet freezes onto a pollen or dust particle in the sky. This creates an ice crystal. As the ice crystal falls to the ground, water vapor freezes onto the primary crystal, building new crystals – the six arms of the snowflake."

"**Q: So, why are no two snowflakes exactly alike?**
A: Well, that's because *individual snowflakes* all follow slightly different paths from the sky to the ground —and thus encounter slightly different atmospheric conditions along the way. Therefore, they all tend to look unique, resembling everything from prisms and needles to the familiar lacy pattern."
https://www.noaa.gov/stories/how-do-snowflakes-form-science-behind-snow



https://scied.ucar.edu/image/big-and-small-snowflake-story

Activity 1: Look at Snowflakes!

Supplies:

Black construction paper or craft foam
Magnifying glass
Plastic bag or cardboard box.
Optional: toothpicks and a soft paint brush

Background: It's fun to catch snowflakes on your glove or mitten, but they melt so fast! Here is a way for you to take a closer look at snowflakes before they melt! Having all your equipment cold will keep the snowflakes from melting too fast while you look at them.

1. Place the construction paper of craft foam, magnifier, and optional toothpicks and brush in a bag or box and place them outside on your porch overnight. (You may also place them in your freezer for several hours.)
2. When it starts to snow, catch snowflakes on the black paper or foam. You can move them around with a paintbrush or toothpicks if you wish. Look at them with the magnifying glass. A magnifying glass works best if you hold it close to your eye and move the paper with the snowflake up close to get it in focus. Don't breathe on the snowflake or it might melt.

Reflect:

How many sides does a snowflake have? Do all snowflakes seem to have this same number of sides? Does the size or shape of snowflakes change with the weather? What are some other examples of things that are unique?

Going Further: For some beautiful images of snowflakes go to:
https://www.facebook.com/watch/?v=10155724024766005

Facilitator's Notes: By chilling the equipment before attempting to catch snowflakes, you are more likely to observe the flake before it melts. If the magnifying glass is not chilled, it will fog up.

Snowflake Bentley

Wilson Bentley was a Vermont farmer who was fascinated with snow and snowflakes. On January 15, 1885 he became the first person to photograph a single snow crystal. In his lifetime, he photographed over 5000 snowflakes, never finding two the same. Because of his wonderful work photographing and studying snow crystals, he became known as "Snowflake Bentley"

https://snowflakebentley.com/

Activity 2: Read the book Snowflake Bentley by Jacqueline Briggs Martin, illustrated by Mary Azarian |ISBN-10 : 0547248296

or watch https://www.youtube.com/watch?v=cjvMrNWadqg

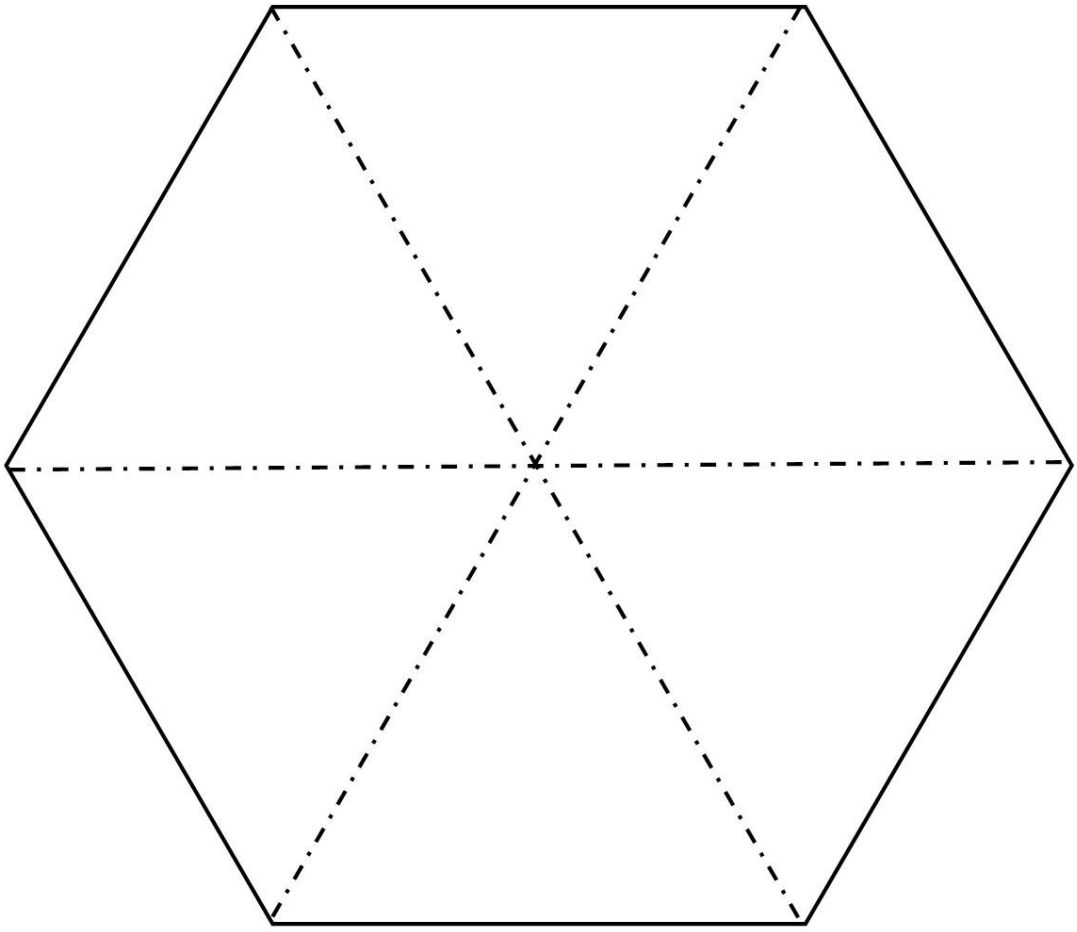
Activity 3: Make a Paper Snow Flake!

Supplies: White paper with with hexagon shape printed on it, Scissors

Glue and glitter (optional)

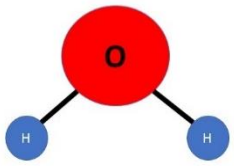
1. Cut out the hexagon below.
2. Using the dotted lines, fold in half and then into thirds,to form a triangle.
3. Using a scissors, cut snips out of all three sides, being careful to not cut entirely through the folds.
4. Brush with white glue and sprinkle with glitter (optional)
5. Unfold the snowflake and hang in your window.

How many sides does a hexagon have? How many triangles fit inside of a hexagon?
Why did we use a hexagon pattern to create our snowflake?
Going further: Create a variety of different snowflakes. If you try other shapes (squares, circles,etc) do they look like snowflakes too? Why or why not?



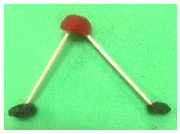
Activity 4: Create an "Ice Crystal"

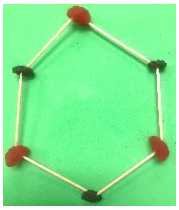
Supplies: Toothpicks
Any two of the following : Raisins, Marshmallows, Fruit Snacks, Blueberries, Seedless Grapes.



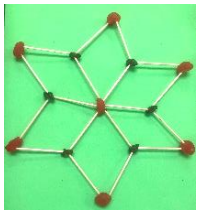
Background: All matter is made up of different kinds of atoms. Atoms are the basic building blocks of all things. Atoms join together to form molecules. A water molecule is made up of two hydrogen atoms and one oxygen atom. When these atoms join, they form a triangle. When many water molecules combine together they form crystals in hexagonal (six-sided) shapes.

1. Using the toothpicks and two different kinds of snacks, form a triangle with an open end. (The photo shows raisins and fruit snacks.)





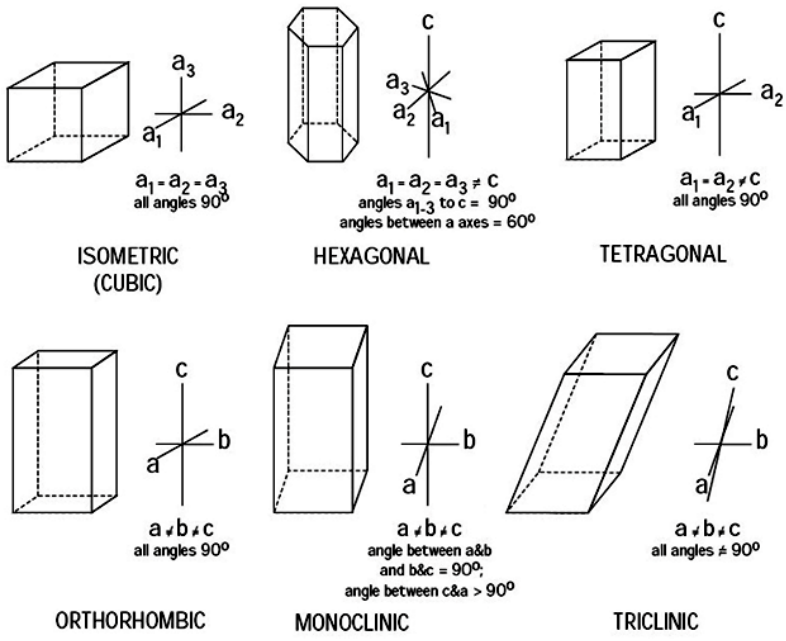
2. Now try to form a six-sided figure, alternating two different kinds of candy or snack.
3. Continue to use toothpicks, candies or snacks to form different shapes of six sided "snowflakes".



Going Further: Try to Create 3 dimensional crystals and shapes. Compare them to real crystal structures by comparing them to the pictures on the right.

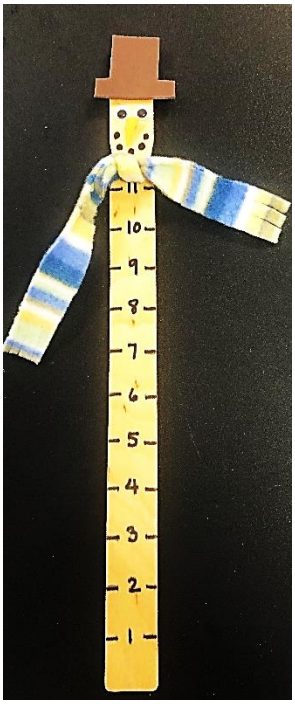
Reflect: Why do snowflakes form in six sided shapes? Was is difficult to constuct crystals in three directions? Can you think of any other crystals that you besides snow crystals?

Faciltator's Notes: Marshmallows and fruit snacks are easier to use than raisins or berries. Younger children may have difficulty constructing crystals in three dimensions. Reassure them that their "crystal" structures do not need to be perfect and that in nature, crystals are usually not perfect.



http://www.luckysci.com/wp-content/uploads/2014/01/CrystalSystems.png

Activity 5: Create a Paint Stick Snowman Ruler



Supplies:

14-inch woodend paint stick
White glue or glue dots
Craft Foam
12-inch strip of fleece or felt
Googly eyes
Ruler
Pencil
Permanent Marker

1. Place a ruler along the right side of the paint stick.
2. Using a pencil, make a line for each inch.
3. Repeat on the left side of the stick
4. Starting at the bottom, number the lines from 1-11.
5. Trace over the lines and numbers with a permanent marker.
6. Cut out a piece of craft foam in the shape of hat and glue to the top of the handle of the paint stick.
7. Decorate the snow man's face with a marker or small pieces of craft foam.
8. Glue on the googly eyes.
9. Take a strip of felt or fleece and knot it around the "neck" of the snow man.
10. Wait for a snowy day! Find a place where the snow is even (not drifted) and measure the snowfall. **Optional:** Measure in several places around your yard and record your results. Ask a trusted adult or teenager to average of your measurements by totalling your measurements and dividing it by the number of times you measured the snow.

Reflect: How did your measurements compare to the weather forecast? Were your measurements different when you went to other places around your yard? What could have caused the measurements to be different? What other times would it be good to take several measurements instead of just one?

Going Further: Record your measurements and the date each time it snows. Add up the daily averages and calculate the average snowfall for the month or year!

Facilitator's Notes: Younger children may need assistance with marking the measurements and recording and averaging their results. Don't leave your snowman outside—the moisture and cold will quickly destroy the snowman's appearance!

Activity 6: Make Hot Cocoa Mix!

What is better after going outside in the snow than hot cocoa and a good story? Enjoy your cocoa while you complete Activty 7!

Supplies:

Medium-sized mixing bowl
Dry Measuring Cups
Measuring spoons
Fork or Whisk
Jar or plastic bag
2 cups Non-fat dry milk powder *
5 tbsp. cocoa powder
5 tbsp. powdered sugar

1. Measure 2 cups of milk powder and place in the mixing bowl
2. Measure and add 5 tablespoons of cocoa and 5 tablespoons of powdered sugar.
3. Using a fork or whisk, mix the three powders thoroughly.

To Prepare: Place 3 tablespoons of the mix into a cup or mug. Add enough warm water to fill the cup. Stir and enjoy!
If you have left-over candy canes, try using one as a stirrer for your cocoa, or crush a candy cane and add it to your mix!
Makes 10-12 servings of mix. Each serving has 70 calories, 0 g of fat, 5 g of protein, 13 g of carbohydrate, 1 g of fiber and 70 mg of sodium.
**If you don't have dry milk, simply mix the cocoa powder and the powdered sugar together, leaving out the dry milk. Use 1 tablespoon of mix and combine with 6 ounces of warm milk. Stir and enjoy!*

Reflect: In this activty, you read and followed a recipe. Why is it important to do this? What things can you do other than cooking where it is important to read and follow directions?

Activity 7: Read A Snowy Day by Ezra Jack Keats ISBN-10: 067001270X
Or watch **https://www.youtube.com/watch?v=FmZCQfeWjeQ**

What did you learn about snow?

Additional Activities:

1. Paint a snow scene using "snow paint" Combine 1/2 cup white school glue with 1/2 cup of shaving cream in a bowl and mix together until it looks like thick, whipping cream. Sprinkle over lots of silver glitter and stir. Paint a snow scene on a piece of black or blue construction paper and allow to dry.
2. Measure the water content of Snow. Fill a mason jar with snow, leaving about an inch at the top. (Don't pack it tightly.) Using a marker and a ruler, measure and mark how much snow is in the jar. Allow the snow to melt. And measure and mark the level of water in the bottom of the jar. Why does snow take up so much more space than water? Is this true of other solids and liquids?
3. Learn about Snow Clouds. Go to https://scijinks.gov/clouds/ to learn about what kind of clouds produce snow.
4. Make "Snow Crystals" Go to https://science.gmu.edu/media/snowflake
5. Learn more about Water and the Water Cycle! Go to https://climatekids.nasa.gov/water-cycle/
6. Read A Drop Of Water: A Book of Science and Wonder, by Walter Wick, ISBN 9780590023191

References:

http://www.its.caltech.edu/~atomic/snowcrystals/kids/snowtypes.jpg

http://www.luckysci.com/wp-content/uploads/2014/01/CrystalSystems.png

https://scied.ucar.edu/learning-zone/storms/snowflake-story

https://scijinks.gov/clouds/

https://snowflakebentley.com/

https://www.canr.msu.edu/news/snow_science_what_is_a_snowflake

https://www.ndsu.edu/fileadmin/4h/Cloverbuds/FD017.pdf

https://www.noaa.gov/stories/how-do-snowflakes-form-science-behind-snow

For ages 5-11
SOL's: Science K.1, K.9, 1.1, 1.7, 2.3, 3.3, 5.7 Math 3.12, 5.17
Life skills: Critical Thinking, Problem Solving, Learning to Learn, Communication
5 C's: Critical Thinking Skills, Communication Skills, Creative Thinking Skills
Compiled by Kathryn Alstat, Senior 4-H Extension Agent, Greene County VA
Edited by Ruth Wallace, 4-H Agent Buckingham County, Kim Mayo, Senior 4-H Agent Fluvanna County