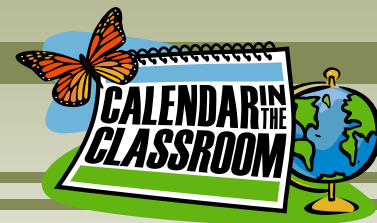




On Snowy Days



Overview

Here are two lessons perfect for snowy school days! In each lesson the class reads about snow and snowflakes and then ventures outdoors to investigate. Each lesson is quick and easily accomplished and allows students to enjoy the snowy gifts of a Minnesota winter, while addressing MDE Academic standards.

Standards/Benchmarks *

- Determine the meaning of words and phrases in a text relevant to a grade 2 topic or subject area. ELA (2.2.4.4)
- Participate in collaborative conversations with diverse partners about grade 2 topics and texts with peers and adults in small and larger groups. ELA (2.8.1.1)
- Recount or describe key ideas or details from a text read aloud or information presented orally or through other media. ELA (2.8.2.2)
- Ask and answer questions about what a speaker says in order to clarify comprehension, gather additional information, or deepen understanding of a topic or issues. ELA (2.8.3.3)
- Use knowledge of language and its conventions when writing, speaking, reading, or listening. ELA (2.10.3.3)
- Demonstrate fluency with basic addition facts and related subtraction facts. Math (2.1.2.2)
- Observe, record and recognize that water can be a solid or a liquid and can change from one state to another. Science (2.2.1.2.1)

Background

To measure the snow depth, select a level area away from buildings, vegetation and other objects that might cause drifting or an unusual area of snow. Have students help select the best sites to take measurements. Monthly normals for precipitation are listed in the *calendar* below the large monthly photograph. For those months when snowfall is possible, the calendar lists snowfall amounts in parentheses. Monthly normals are averages that are calculated for a 30-year period.

The Activity

Lesson #1 'Snow' Much to Learn

After reading, *The Story of Snow: The Science of Winter's Wonder*, students will measure the depth of snow on the schoolyard, record observations in their journals and then use data from the *Minnesota Weatherguide Environment™ Calendar* to find the monthly normal snow amounts and create a graph.

Time:

1 hr./lesson

Skills:

Listening
Discussing
Describing
Data Collecting
Measuring
Drawing Conclusions

Vocabulary:

snowflake
symmetry
precipitation
monthly normals
states of matter

Materials Needed:

- Lesson #1
- Book: *The Story of Snow*
 - Calculators
 - Meter/Yard Sticks (1 per team of students)
 - Journals/Graph paper
 - *Minnesota Weatherguide Environment™ Calendar*
- Lesson #2
- Book: *Snowflake Bentley*
 - Black paper/1 per team of students

Warm Up

1. Read the book *The Story of Snow: The Science of Winter's Wonder*.
2. Discuss the book, focusing on snow as a form of precipitation.
3. As a class, brainstorm facts about snow and winter. Record in journals, on chart paper or board.

The Activity

1. Using the *Minnesota Weatherguide Environment™ Calendar*, show the “Monthly Normals” at the top of each month.
2. Refer to the precipitation, in the form of snowfall, which is in parentheses. These can be found for January, February, March, April, November, and December.
3. Record each number (written as a decimal) on chart paper. Have students record the numbers on graph paper.
3. Have students add all numbers together to determine the total Normal snowfall for the season. Have students display data on a graph.

Wrap Up & Assessment

Now, review how to use the meter/yard stick as a measuring tool, don coats bring journals and head outside to measure the depth of snow on the schoolyard. These measurements and the graphs serve as embedded assessments and help students respond to the following questions.

Questions

Which month is usually the snowiest?

How much snow fell today?

How much snow do you think we will have tomorrow?

Lesson # 2 Savor the Snowflake

Overview

After reading the book, *Snowflake Bentley*, students will discuss snowflakes and how they develop. then they will venture outside to observe and collect snowflakes.

Background

Snowflakes are hexagonal (six-sided) crystals of water. The feathery shapes are complicated and their form is influenced by temperature, and perhaps also by how rapidly they are formed. Large snowflakes are formed by the combination of many small crystals. These large flakes usually form at temperatures just below 32°F, the freezing point of water.

Sleet is another form of precipitation where clear particles of ice form from raindrops that freeze before they reach the ground. They will not have 6-sided crystals. Water is the only common substance on Earth that you can find in all three states of matter. (Perhaps, a picture in the calendar will have a scene of lake water with clouds, or mist rising and snow on the shore.)

A sheet of black construction paper can be used to catch and observe snowflakes. To keep crystals from melting quickly, place the paper outdoors or in a freezer before going out to observe the snow.

The Action

1. Read the book *Snowflake Bentley* by Jacqueline Briggs Martin. Be sure to read the facts in the margins of the pages.
2. Discuss the book. Ask the students how they could observe snowflakes.
3. Go outside as snow falls and “catch” snowflakes using a black piece of paper. Make observations with the magnifiers and sketch what they see.
4. Watch the frozen crystals melt to form liquid water when they land on warm surfaces.
5. Don't forget to look up at the clouds in the sky, from which the snowflakes come. Depending on the temperatures the clouds may contain liquid or frozen water.

Wrap Up & Assessment

Discuss the frozen and liquid states of water that students were able to observe.

Questions

- What are snowflakes?
- Where do snowflakes come from?

· Snowflake Bentley said, “Of all the forms of water, the tiny six-pointed crystals of ice called snow, that form in such quantities within the clouds during storms, are incomparably the most beautiful and varied.” What do the students think of this statement?

Resources

Snowflake Bentley by J.B. Maratin
The Story of Snow: The Science of Winter's Wonder by M. Casino and J. Nelson
<http://www.weather.gov/climate/index.php?wfo=mpx>
Minnesota Weatherguide Environment™ Calendar

*** Minnesota Academic Standards**

Standards Met

Subject	Code	Standard	Benchmark
ELA	2.2.4.4	Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.	Determine the meaning of words and phrases in a text relevant to a grade 2 topic or subject area.
	2.8.1.1	Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively.	Participate in collaborative conversations with diverse partners about grade 2 topics and texts with peers and adults in small and larger groups. <ul style="list-style-type: none"> a. Follow agreed-upon rules for discussions. b. Build on others' talk in conversations by linking their comments to the remarks of others. c. Ask for clarification and further explanation as needed about the topics and texts under discussion. d. Cooperate for productive group discussion. e. Follow two- and three- step oral directions.
	2.8.2.2	Integrate and evaluate information presented in diverse media and formats, including visually, quantitatively, and orally.	Recount or describe key ideas or details from a text read aloud or information presented orally or through other media.
	2.8.3.3	Evaluate a speakers' point of view, reasoning, and use of evidence and rhetoric.	Ask and answer questions about what a speaker says in order to clarify comprehension, gather additional information, or deepen understanding of a topic or issues.
	2.10.3.3	Apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening.	Use knowledge of language and its conventions when writing, speaking, reading, or listening.
Math	2.1.2.2	Demonstrate mastery of addition and subtraction basic facts; add and subtract one- and two-digit numbers in real-world and mathematical problems.	Demonstrate fluency with basic addition facts and related subtraction facts.
Science	2.2.1.2.1	The physical properties of materials can be changes, but not all materials respond the same way to what is done to them.	Observe, record and recognize that water can be a solid or a liquid and can change from one state to another.