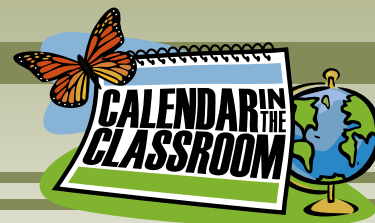




Weather Journal



Overview

Like local meteorologists, students will document weather data in a science journal as they learn what information is needed to forecast the weather. Students will use data in the *Minnesota Weatherguide Environment™ Calendar* to compare temperature averages over the last 30 years to the actual daily temperatures.

Standards/Benchmarks *

- Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content. ELA (3.6.2.2)
- Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing. ELA (3.10.2.2)
- Use time, money and temperature to solve real world and mathematical problems. Math (3.3.3.2)
- Scientists work as individuals and in groups, emphasizing evidence, open communication and skepticism. Science (3.1.1.1.1)
- Scientific inquiry is a set of interrelated processes incorporating multiple approaches that are used to pose questions about the natural world and investigate phenomena. Science (3.1.1.2.1)
- Scientific inquiry is a set of interrelated processes incorporating multiple approaches that are used to pose questions about the natural world and investigate phenomena. Science (3.1.1.2.3)
- Men and women throughout history of all cultures, including Minnesota American Indian tribes and communities, have been involved in engineering design and scientific inquiry. Science (3.1.3.2.1)
- Recognize that the practice of science and/or engineering involves many different kinds of work and engages men and women of all ages and backgrounds. Science (3.1.3.2.2)
- Tools and mathematics help scientists and engineers see more, measure more accurately, and do things that they could not otherwise accomplish. Science (3.1.3.4.1)

Background

Meteorology is the scientific study of the atmosphere especially as it relates to weather conditions. Meteorologists study long-term global atmospheric patterns and climatic conditions that affect our Earth. (Weather is what happens day to day. Climate refers to weather conditions occurring in a specific area over a long period of time.)

The *Minnesota Weatherguide Environment™ Calendar* contains much data on daily temperatures over time. The Normal maximum and minimum temperatures listed for each day are temperatures that have been averaged over a 30-year period.

On a daily basis we turn to news sources and the Internet to learn about current weather conditions that affect our daily lives: temperature,

Time:

Day 1 – 30 to 40 min.
Thereafter 10 min.
daily/as necessary

Skills:

Observing
Recording
Data collecting
Predicting
Forecasting
Drawing conclusions

Vocabulary:

meteorologist
meteorology
maximum
minimum
prediction
average
normal
precipitation
Beaufort Scale
forecast

Materials Needed:

- Chart paper
- *Minnesota Weatherguide Environment™ Calendar*
- Science Journals
- Thermometer
- Rain gauge
- Internet access (optional)

precipitation, wind speed and notice of any approaching storms. To supplement daily data, the *Minnesota Weatherguide Environment™ Calendar* offers monthly commentaries by the Kare11 meteorologists, scientists who interpret the local weather patterns for us on T.V.

Your students will be collecting some first-hand weather data and you can add interest by also using the Internet to seek additional information. In addition to looking up daily weather data online for comparison with your schoolyard data, check out the following blogs written by Kare11 meteorologists.

- Belinda Jensen: <http://www.kare11.com/life/lifestyle/grow/default.aspx>
- Johnathan Yuhas: www.kare11.com/weather
- Jerrid Sebesta: www.kare11.com/weather
- Sven Sundgaard: <http://www.kare11.com/news/simplicscience/default.aspx>

Warm Up

1. Ask the students the following questions: What is a meteorologist? What kinds of jobs do they have? What do they include when they give a forecast? Write the responses on a piece of chart paper or on the board. Students should state that a meteorologist studies: wind, temperature, precipitation (in all its forms), weather patterns and their movement across the continent. Have the students name all of the possible forms of precipitation.

2. Explain that students will be recording weather data. What can they measure and record? Ideas include: maximum and minimum temperatures of the day, the average maximum and minimum temperatures for a week, precipitation, and wind speed and direction and cloud type and cover.

For comparison purposes, measurements should be made at the same time and location each day. To collect the most accurate maximum and minimum temperatures on the school grounds make the measurements at the beginning and end of the school day. Discuss with students the time of day and how the most accurate temperatures would usually be earlier and later in the day.

The Activity

1. Look at the information provided each day on the *Minnesota Weatherguide Environment™ Calendar*.

- Discuss how the normal temperatures are determined?
- How will we measure wind speed? Direct students to the Beaufort Scale found in the back of the calendar (on or near page 56). Wind speed can be estimated by observing physical effects on the environment. Students can even estimate the wind chill by using an adjacent chart.
- Clouds can be identified by using the Cloud Chart in the back of the calendar.

2. Let the students know that they will be recording daily weather information in their science notebooks. It may be a good idea to designate a section of the notebooks to document the weather.

Keep a daily record on the class bulletin board for comparison and discussion purposes.

3. Practice in forecasting might be achieved by having students record a weather forecast for the next school day.

4. Daily temperatures can be found online on any local television news website or in a local daily paper. Another option would be setting up an outside thermometer somewhere on school grounds where students could take daily readings.

Wrap Up & Assessment

1. Students should begin a routine of recording in their journals the weather information each day.

2. As students continue the procedure of documenting the weather each day, they can summarize their recordings at the end of each week by writing a short paragraph that describes the actual weather as it compares to the averages.

Questions for Discussion

- How could knowing and understanding the daily temperatures and precipitation help us? We would have a better idea of what to expect and how to dress for the weather or plan outdoor activities.

- Think about people and jobs that may rely on daily weather information. What might they be? Construction workers, pilots, snowplow drivers, etc.
- How did people predict the weather before television, radio, or the internet? They looked for signs in nature, cloud types, behaviors of animals .It might be interesting to introduce students of the *Farmers' Almanac*. www.farmersalmanac.com/

Extensions

- Students graph information of temperature maximums and minimums after a month of recording.

Resources

- *Minnesota Weatherguide Environment™ Calendar*
- For more information about wind measurement and the Beaufort Scale, see ‘Measuring the Wind,’ a 2nd grade lesson contained in this lesson set.

*** Minnesota Academic Standards**

Standards Met

Subject	Code	Standard	Benchmark
ELA	3.6.2.2	Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.	Write informative/explanatory texts to examine a topic and convey ideas and information clearly. b. Develop the topic with facts, definitions, and details. c. Use linking words and phrases to connect ideas within categories of information.
	3.10.2.2	Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.	Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing. e. Use conventional spelling for high-frequency and other studied words. f. Use spelling pattern and generalizations in writing words. g. Consult reference materials, including beginning dictionaries, as needed to check and correct spellings.
Math	3.3.3.2	Use time, money and temperature to solve real world and mathematical problems.	Know relationships among units of time.
Science	3.1.1.1.1	Scientists work as individuals and in groups, emphasizing evidence, open communication and skepticism.	Provide evidence to support claims other than saying “Everyone knows that,” or “I just know”, and question such reasons when given by others.
	3.1.1.2.1	Scientific inquiry is a set of interrelated processes incorporating multiple approaches that are used to pose questions about the natural world and investigate phenomena.	Generate questions that can be answered when scientific knowledge is combined with knowledge gained from one’s own investigations.
	3.1.1.2.3	Scientific inquiry is a set of interrelated processes incorporating multiple approaches that are used to pose questions about the natural world and investigate phenomena.	Maintain a record of observations, procedures and explanations, being careful to distinguish between actual observations and ideas about what was observed.
	3.1.3.2.1	Men and women throughout history of all cultures, including Minnesota American Indian tribes and communities, have been involved in engineering design and scientific inquiry.	Understand that everybody can use evidence to learn about the natural world, identify patterns in nature, and develop tools.
	3.1.3.2.2	Men and women throughout history of all cultures, including Minnesota American Indian tribes and communities, have been involved in engineering design and scientific inquiry.	Recognize that the practice of science and/or engineering involves many different kinds of work and engages men and women of all ages and backgrounds.
	3.1.3.4.1	Tools and mathematics help scientists and engineers see more, measure more accurately, and do things that they could not otherwise accomplish.	Use tools, including rulers, thermometers, magnifiers and simple balances, to improve observation and keep a record of the observations made.