

## WEATHER PROVERBS

### Performance Standard 12E/11A/13A/13B.G

Students will apply the processes of scientific inquiry to investigate large-scale meteorological forces accordingly:

- *Knowledge*: Describe the scientific basis of meteorological factors as they relate to the historic and cultural basis of understanding weather and to current technologies.
- *Application*: Design and conduct scientific inquiry investigations that test weather factors.
- *Communication*: Present explanations which support or refute common weather proverbs and historic, cultural and technological meteorological inter-relationships.

### Procedures

1. ***In order to know and apply concepts that describe the features and processes of the Earth and its resources (12E) and the concepts, principles and processes of scientific inquiry (11A), and the concepts that describe the interaction between science, technology and society (13A)*** students should experience sufficient learning opportunities to develop the following:
  - Construct inquiry cause-effect hypotheses associated with commonly believed weather proverbs.
  - Deliberate and explain the choice of variables for selected proverbs to test hypothesis.
  - Review pertinent sources of scientific meteorological research to explore and describe the following:
    - Technologies used by scientists to forecast, explain or test meteorological events.
    - Interactions of science and technology in multicultural, societal and economic settings.
    - Historic, multicultural societal influences on meteorological scientific discoveries and technological innovations.
  - Design and conduct inquiry investigation which tests posed hypothesis.
  - Incorporate appropriate safety precautions and materials and equipment handling directions.
  - Recognize necessity of controlled variables, carefully and accurately recorded objective observations and replicable multiple trials.
  - Prepare data tables, charts and visualizations and document observational and graphic data.
  - Interpret and represent analysis of results to produce findings, observing trends within data sets.
  - Cite applicable scientific principles and theories.
  - Communicate the hypothesis, procedure and explanations orally and in written formats for peer review.
  - Generate further questions which address alternative investigations and procedural refinements.

Note to teacher: This activity relates to knowledge associated with standard 12E, while addressing the performance descriptors for stage G within standard 11A, 13A and 13B.
2. Have students review and discuss the assessment task and how the rubric will be used to evaluate their work.
3. Begin study of meteorology with a discussion about how people knew what the weather was going to be like before the days of radio, television and computers. They may begin to offer some commonly accepted proverbs about weather. Discuss what a proverb is. Offer students the opportunity to generate some familiar weather proverbs. From this listing, conduct an informal survey of student acceptance or rejection of the proverbs. Encourage students to project reasons why some of the proverbs could have emerged over time and in different cultures. Continue with brainstorming ideas for how scientists could test the proverbs for their validity.
4. Assign students to research a selected proverb. They must design an investigation which can test the proverb for its validity. Allow approximately four weeks for experiments so that the students can gather enough data on which to base valid conclusions. As most of the data must be taken at a time other than class time, i.e., sunrise, sunset, when the moon is out, etc., it does not take much time in class. Continue with curricular studies on meteorology; the students can begin to see connections between what they are testing to historic or cultural settings, and current and future technologies. They must present their findings and research for class discussion. A listing of starter proverbs is provided, along with the report format.
5. Evaluate each student's work using the Science Rubric as follows and add the scores to determine the performance level:
  - *Knowledge*: The descriptions of meteorological factors, historic and cultural basis of weather understanding and current technologies were complete and correct.
  - *Application*: The scientific investigation was designed and conducted effectively and accurately.
  - *Communication*: The presentation and inter-relationships were complete and thorough.

## **Examples of Student Work not available**

### **Time Requirements**

- 1 class period for introductory activity; 3-5 class periods for research and investigations; 2-3 days for individual presentations (8-10 minutes)

### **Resources**

- Access to meteorological research and resources
- Applicable scientific materials and equipment for collecting weather data
- Project explanation page
- Starter Weather Proverbs
- Science Rubric
- [Weather Proverbs](#) by George D. Freier

## **WEATHER PROVERB PROJECT**

### **Your report must include:**

1. The weather proverb you were testing.
2. An explanation of what the proverb means.
3. Your prediction (hypothesis) of whether the proverb is true or not.
4. Detailed procedure for your experiment, written so that someone else could exactly duplicate your experimental procedure.
5. Data in table and/or graph form; short statement of what data showed.
6. Analysis of experimental data: What did the data show?
7. What were the general trends, etc?
8. Conclusion: How did your results compare to your hypothesis? Is this proverb a reliable weather forecasting statement?
9. Analysis of experimental procedure: How would you change the experiment if you were to do it again? What would you do the same and what would you do differently and why?
10. Meteorological explanation of the weather proverb: What's the science behind the proverb? What was a possible cultural setting for the origin of this proverb?
11. What kinds of historic, current and future technologies to forecast, explain or test meteorological events have meteorologists developed or expect?
12. Visual display relating to your proverb, results, etc.
13. Presentation to the class.

## WEATHER PROVERBS

An evening red and a morning gray, will send the traveller on his way;  
But an evening gray and a morning red, put on your hat, or you'll wet your head.

When the sun sets unhappily with a red veiled face,  
Then will the morning be angry with wind and storms.

Birds flying low, expect rain and a blow.

When bubbles are rising on the surface of coffee and they hold together, good weather is coming; if the bubbles break up, weather you don't need is coming.

If cirrus clouds form in weather with a falling barometer, it is almost sure to rain.

Count the number of cricket chirps in 14 seconds; add 40 and you have the temperature in degrees Fahrenheit.

A reddish sun has water in his eye; before long you won't be dry.

If a dog pulls his feet up high while walking, a change in weather is coming.

If the sun in red should set, the next day surely will be wet;  
If the sun should set in gray, the next will be a fair day.

Pale moon rains, Red moon blows; White moon neither rains nor blows.

When the moon rises red and appears large, with clouds, expect rain in 12 hours.

Soap gets slippery before a rain.

If there is dew on the grass in the morning, fair weather.

When dew is on the grass, Rain will never come to pass.

Clear moon, frost soon.

Rain before seven, clear before eleven.

A hailstorm by day denotes frost at night.  
In frosty weather, the stars appear most sparkling.

A frequent change of wind, with agitation in the clouds, denotes a storm.

When the sky seems very full of stars, expect frost.

If the horns on the moon are sharp and pointed, Clear weather, maybe frost; if the points are dull, expect rain.

When the wind's in the west, the weather's always best.

When smoke goes west, Good weather is past.

When smoke goes east, Good weather comes niest (next).

Expect stormy weather when ants travel in a straight line; when they scatter all over, the weather is fine.

Mackerel skies and mares' tails, Make tall ships carry low sails.

When a dog rolls on his back, it will soon rain.

After black clouds, fair weather.

Red sky in the morning, sailor take warning;

Red sky at night, sailor's delight.

If the sun sets behind a cloud, it forebodes rain the next day.

When the moon's outline is not clear, rain is to be expected.

