

RESOURCE LIBRARY
ACTIVITY : 30 MINS

Measuring Weather

Students use prior knowledge to brainstorm instruments scientists use to measure weather. They play a game to match illustrations of instruments that measure weather with descriptions of each instrument, and then use a photo gallery to check their answers. Students analyze the instruments based on how valuable they would be for measuring weather on other planets, or what modifications they may need to handle extreme weather.

GRADES

6 - 8

SUBJECTS

Earth Science, Meteorology

CONTENTS

1 PDF, 11 Images

OVERVIEW

Students use prior knowledge to brainstorm instruments scientists use to measure weather. They play a game to match illustrations of instruments that measure weather with descriptions of each instrument, and then use a photo gallery to check their answers. Students analyze the instruments based on how valuable they would be for measuring weather on other planets, or what modifications they may need to handle extreme weather.

For the complete activity with media resources, visit:

<http://www.nationalgeographic.org/activity/measuring-weather/>

Program

DIRECTIONS

1. Activate prior knowledge about instruments used to measure weather.

Ask: *What instruments do scientists use to measure weather?* Students will likely be able to name a thermometer, but they may not be able to name any other instruments that measure weather. Explain to students that there are many more tools scientists use to measure weather. They even use their eyes as important instruments for measuring visibility and making observations.

2. Have small groups create decks of cards.

Divide students into small groups. Distribute one copy of the worksheet *Instruments That Measure Weather* to each group. Have the group cut apart the cards to create a deck and divide the cards evenly among group members.

3. Have small groups match illustrations and descriptions.

Ask students to look at all of the illustrations of instruments that measure weather. Have each group choose one student to start the activity. The starting student will read the clues on the back of a card. The student who thinks they have the matching illustration will give it to the starting student and explain why they think it is a match. Then the student to the left reads the clues on the back of the next card, and play continues around the circle until all illustrated cards have a matching description.

4. Have students use the photo gallery *Instruments That Measure Weather* to check answers.

Display the photo gallery and have a whole-class discussion to check groups' answers.

(Answers: Instrument 1: thermometer; Instrument 2: barometer; Instrument 3: hygrometer; Instrument 4: anemometer; Instrument 5: precipitation gauge; Instrument 6: sling psychrometer; Instrument 7: wind vane; Instrument 8: weather satellite; Instrument 9: observations; Instrument 10: visibility; Instrument 11: pyranometer) Finally, have groups glue together the matching cards until they have a full deck of 11 cards to use as flashcards.

5. Have students make connections to weather on other planets.

Have a whole-class discussion about the questions below. In between each, allow students time to discuss the question in their small groups and then report back to the whole class:

- Which instruments do you think would be most valuable in determining weather on other planets? Why?
- Which would not be helpful at all? Why not?
- What modifications would be required for the instrument to handle the conditions on another planet?

Informal Assessment

Use the student-created flashcards to check students' comprehension of what each tool is and how it measures weather conditions.

OBJECTIVES

Subjects & Disciplines

Earth Science

- Meteorology

Learning Objectives

Students will:

- define and describe weather-measuring instruments
- describe units of measure for different types of weather measurement instruments
- determine which instruments would not be helpful on other planets

Teaching Approach

- Learning-for-use

Teaching Methods

- Discussions
- Simulations and games

Skills Summary

This activity targets the following skills:

- 21st Century Student Outcomes
 - Learning and Innovation Skills
 - Communication and Collaboration
- Critical Thinking Skills
 - Analyzing
 - Understanding

National Standards, Principles, and Practices

NATIONAL SCIENCE EDUCATION STANDARDS

- (5-8) Standard A-1:

Abilities necessary to do scientific inquiry

- (5-8) Standard E-2:

Understandings about science and technology

Preparation

What You'll Need

MATERIALS YOU PROVIDE

- Glue sticks
- Pencils
- Pens
- Scissors

REQUIRED TECHNOLOGY

- Internet Access: Optional
- Tech Setup: 1 computer per classroom, Projector

PHYSICAL SPACE

- Classroom

GROUPING

- Small-group instruction

BACKGROUND & VOCABULARY

Background Information

Scientists use a variety of instruments to measure weather. Before we can collect data on other planets, we must understand what data is collected on our own planet, and how it is collected.

Prior Knowledge

Recommended Prior Activities

- [Design a Space Probe](#)
- [Extreme Weather in Our Solar System](#)
- [Extreme Weather on Earth](#)
- [Space Probes](#)

Vocabulary

Term	Part of Speech	Definition
anemometer	<i>noun</i>	a device that measures wind speed.
barometer	<i>noun</i>	an instrument that measures atmospheric pressure.
hygrometer	<i>noun</i>	device for measuring humidity, or the amount of water vapor in the air.
observation	<i>noun</i>	something that is learned from watching and measuring an object or pattern.
planet	<i>noun</i>	large, spherical celestial body that regularly rotates around a star.
precipitation gauge	<i>noun</i>	device for measuring rain or other forms of liquid precipitation, usually in millimeters. Also called a rain gauge, udometer, pluviometer, or ombrometer.
pyranometer	<i>noun</i>	device for measuring the amount of sunlight reaching a planet's surface. Also called a solarimeter.

Term	Part of Speech	Definition
sling psychrometer	<i>noun</i>	device for measuring humidity that uses two thermometers: one measures the air temperature while the bulb of the other is kept cool and moist. The sling psychrometer is whirled around until moisture from the wet bulb evaporates.
thermometer	<i>noun</i>	device that measures temperature.
visibility	<i>noun</i>	the ability to see or be seen with the unaided eye. Also called visual range.
weather	<i>noun</i>	state of the atmosphere, including temperature, atmospheric pressure, wind, humidity, precipitation, and cloudiness.
weather satellite	<i>noun</i>	instrument that orbits the Earth to track weather and patterns in the atmosphere.
wind vane	<i>noun</i>	device that rotates to show the direction the wind is blowing. Also called a weather vane.

For Further Exploration

Websites

- [American Meteorological Society: Glossary of Meteorology](#)
- [Nat Geo Movies: Wildest Weather in the Solar System](#)

FUNDER



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