

The Nature of Weather



Teacher's Guide Middle School

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A Message from our Company ...

Dear Educator:

Thank you for your interest in the educational videos produced by the *Visual Learning Company*. We are a Vermont-based, family owned and operated business specializing in the production of quality educational science videos and materials.

We have a long family tradition of education. Our grandmothers graduated from normal school in the 1920's to become teachers. Brian's mother was an elementary teacher and guidance counselor, and his father was a high school teacher and superintendent. This family tradition inspired Brian to become a science teacher, and to earn a Ph.D. in education, and lead Stephanie to work on science educational programs at NASA.

In developing this video, accompanying teacher's guide, and student activities, our goal is to provide educators with the highest quality materials, thus enabling students to be successful. In this era of more demanding standards and assessment requirements, supplementary materials need to be curricular and standards based - this is what we do!

Our videos and accompanying materials focus on the key concepts and vocabulary required by national and state standards and goals. It is our mission to help students meet these goals and standards, while experiencing the joy and thrill of science.

Sincerely,

Brian and Stephanie Jerome



Standards Correlations

National Science Education Standards

(Content Standards: 5-8, National Academy of Sciences, c. 1996)

Science as Inquiry - Content Standard A:

As a result of activities in grades 5-8, all students should develop:

- Abilities necessary to do scientific inquiry
- Understandings about scientific inquiry

Earth and Space Science - Content Standard D:

As a result of their activities in grades 5-8, all students should develop an understanding that:

- Global patterns of atmospheric movement influence local weather. Oceans have a major effect on climate, because water in the oceans holds a large amount of heat.

Benchmarks for Science Literacy

(Project 2061 - AAAS, c. 1993)

The Physical Setting - The Earth (4B)

- Weather (in the short run) and climate (in the long run) involve the transfer of energy in and out of the atmosphere. Solar radiation heats the land masses, oceans, and air. Transfer of heat energy at the boundaries between the atmosphere, the land masses, and the oceans results in layers of different temperatures and densities in both ocean and atmosphere. The action of gravitational force on regions of different densities causes them to rise or fall and such circulation, influenced by the rotation of the earth, produces winds and ocean currents.



Student Learning Objectives

Upon viewing the video and completing the enclosed student activities, students should be able to do the following:

- Understand the impact weather has on our everyday lives;
- Identify the factors and variables that combine to create weather;
- Explain the role air pressure plays in affecting weather;
- Know how to measure such things as air pressure, temperature and windchill;
- Become familiar with instruments used by meteorologists to measure certain aspects of weather such as temperature and air pressure;
- Understand that wind is created by horizontal differences in temperature;
- Understand how global winds are created and the impact the Coriolis Effect has on winds;
- Explain the roles of conduction, convection, and radiation in distributing heat throughout the atmosphere;
- State the importance of the ozone layer, describe how it protects plants and animals and describe the factors leading to its destruction; and
- Differentiate between a land breeze and a sea breeze.



Assessment

Preliminary Test:

The Preliminary Test, provided in the Student Masters section, is an assessment tool designed to gain an understanding of student preexisting knowledge. It can also be used as a benchmark upon which to assess student progress based on the objectives stated on the previous pages.

Video Review:

The Video Review, provided in the Student Masters section, can be used as an assessment tool or as a student activity. There are two main parts. The first part contains questions titled “You Decide” that can be answered during the video. The second series of ten questions consists of a video quiz to be answered at the conclusion of the video.

Post-Test:

The Post-Test, provided in the Student Masters section, can be utilized as an assessment tool following student completion of the video and student activities. The results of the Post-Test can be compared against the results of the Preliminary Test to assess student progress.



Introducing the Video

Before showing the video, ask students to describe the different types of weather that have occurred during the past week. Also ask them to describe how the weather fluctuates between day and night. Then ask students what factors account for changes in weather over time. Write their ideas on the blackboard. Finally, tell students to pay close attention to the video for scientific explanation of what determines the type of weather.

Video Viewing Suggestions

The Student Master “Video Review” is provided for distribution to students. You may choose to have your students complete this Master while viewing the program or to do so upon its conclusion.

The program is approximately 20-minutes in length and includes a ten-question video quiz. Answers are not provided to the Video Quiz on the video, but are included in this teacher’s guide. You may choose to grade student quizzes as an assessment tool or to review the answers in class.

The video is content-rich with numerous vocabulary words. For this reason you may want to periodically stop the video to review and discuss new terminology and concepts.



Student Assessments And Activities

Assessment Masters:

- Answers to Student Assessment
- Preliminary Test
- Video Review
- Post-Test

Student Activity Masters:

- Colder Than You Think
- Understanding Winds
- Measuring Relative Humidity
- Vocabulary of *The Nature of Weather*



Video Script: *The Nature of Weather*

1. What subject is so important that it's talked about nearly everyday by just about everyone?
2. Here are some hints. Everyday it's written about on the front page of most newspapers.
3. Sometimes people travel thousands of miles to experience it.
4. At times it can cause tremendous damage to property,
5. And even slow traffic, making it difficult for people to travel to their destinations.
6. What is this phenomena?
7. If you said weather, you are right.
8. Weather affects our lives everyday, having the ability to shut down schools, . . .
9. ...bring cars to a standstill and. . .
10. . . . provide just the right conditions for certain kinds of sports.
11. During the next few minutes we're going to explore the nature of weather . . .
12. . . . and some of the ways we monitor weather.
13. **Graphic Transition – What is weather?**
14. When you woke up this morning, one of the first things you probably did was to look outside to see what the weather was like.
15. What is weather? Weather is the daily condition of the earth's atmosphere.
16. In some places, the weather changes are abrupt and frequent.
17. While in other places the weather is relatively stable day to day.
18. What is responsible for differences in weather and which factors influence weather?
19. What variables in the atmosphere interact to cause weather?
20. There are several main factors that interact to affect weather, including heat, air pressure, wind, and moisture.
21. Let's take a look at how heat interacts with the atmosphere to effect weather.
22. **Graphic Transition – Heat and the Atmosphere**
23. The sun is our nearest star, and the source of heat for our planet.
24. When you feel the warmth of the sun you are bombarded with a type of energy called radiant energy.
25. Radiant energy is extremely important in that it warms the earth, and enables plants, animals, and humans to carry out life functions.
26. Fortunately, for us, and living things, not all the radiant energy from the sun actually reaches the surface of the earth.



Script (cont.)

27. A great deal of the sun's energy is actually absorbed, scattered, or reflected by the atmosphere.
28. Water droplets and dust particles in the atmosphere can absorb or scatter radiant energy from the sun.
29. A thin layer of gas called the ozone layer plays a crucial role in absorbing a type of radiant energy called ultraviolet radiation.
30. You have probably heard of the ozone layer because it is believed to be deteriorating due to pollutants in the atmosphere.
31. The blue area in this image over Antarctica represents a large hole in the ozone layer.
32. Ozone is very important in absorbing ultraviolet radiation.
33. Damage to the ozone layer could increase the amount of ultraviolet radiation hitting the earth, causing damage to plants, animals, and even humans.
34. Clouds also play a role in absorbing and reflecting radiant energy.
35. The radiant energy that does reach the earth's surface can also be scattered or absorbed.
36. Ice, snow, land and water can reflect radiant energy.
37. The radiant energy that is absorbed by the atmosphere or land can be distributed or spread through the atmosphere in different ways. Let's take a look at some of these ways.
38. **Graphic Transition – Conduction, Convection, and Radiation**
39. This silver spoon has been in this boiling water for 15 minutes.
40. You Decide!
Do you think this end of the spoon is hot or cold?
41. It is very hot. How did this end get hot even though it is not in the boiling water.
42. Heat traveled up the spoon via the process of conduction.
43. Conduction is the direct transfer of heat from one substance to the other.
This red hot steel is transferring heat to the tongs and wheel on the right.
44. In the atmosphere, cooler air coming into contact with the warmer ground is often heated.
45. Convection is another way heat is transferred in gases or liquids.
46. The heat from this wood fire is slowly spreading throughout this cool room.
This is an example of convection.
47. Similarly, heat is distributed through the atmosphere from warm areas to cooler areas.
48. For example, this hawk seen here in the Arizona desert is riding a



Script (cont.)

- convection current created by rising, warm air.
49. Another way heat is distributed is via radiation. Radiation is the transfer of energy via waves.
 50. We receive radiant energy from the sun.
 51. Energy from the sun is the source of heat on earth. Without the sun, the earth would be dark and cold.
 52. **Graphic Transition – Temperature**
 53. You walk outside on a cold morning and you can feel that the temperature is cold.
 54. What is temperature? Temperature is a relative measurement of the heat of an object. Temperature is commonly used to measure the heat of air.
 55. You Decide! How is temperature measured?
 56. Temperature is measured with an instrument called a thermometer.
 57. Most traditional thermometers consist of a thin glass tube with a bulb at one end which is filled with a liquid which is sensitive to changes in temperature.
 58. When the temperature rises the liquid expands and rises, . . .
 59. . . . and when the liquid cools it contracts and falls.
 60. Thermometers can also be digital, relying on electronics to operate.
 61. Temperature is measured in degrees.
 62. In most of the world, and in science, the Celsius scale is used to measure temperature in the metric system. The unit of temperature on the Celsius scale is the degree Celsius.
 63. Water melts and freezes at zero degrees Celsius...
 64. . . . and one hundred degrees Celsius is the temperature at which water boils.
 65. Temperature is an important factor which influences the type of weather we experience.
 66. **Graphic Transition – Air Pressure**
 67. Next time you go outside, look straight up at the sky.
 68. Above you is over hundreds of kilometers of air which is pushing down on your head.
 69. The force of this air pushing downward is referred to as air pressure.
 70. Air pressure depends upon the density, temperature, and amount of moisture in the air at any given point on the earth's surface.
 71. Air pressure varies day to day and from place to place.
 72. Generally speaking, warmer air is less dense than cooler air. Therefore warmer air tends to exert less pressure than cooler air.



Script (cont.)

73. Moisture laden air also tends to be less dense than dry air, thus exerting less air pressure.
74. And as elevation increases, or you go up in altitude, the air becomes “thinner” or less dense.
75. **Graphic Transition – Air Pressure and Weather**
76. On the radio you hear the weather forecaster say “a major low pressure system is headed our way.”
77. What does this mean, and how is air pressure measured?
78. A low pressure system, seen here, consists of a large body of air which has a lower pressure than surrounding air, and often produces precipitation – rain, snow, or sleet.
79. You Decide!
80. What instrument is used to measure air pressure?
81. Air pressure is measured with an instrument called a barometer.
82. This is a common type of barometer called an aneroid barometer.
83. An aneroid barometer consists of an airtight chamber. A change in air pressure causes a needle to indicate the air pressure.
84. Barometers help forecast the weather by monitoring changes in air pressure.
85. Higher air pressure generally means fair weather is predicted,...
86. ...whereas low air pressure tends to signify moist, cloudy, and perhaps stormy weather.
87. **Graphic Transition - Wind**
88. What is keeping this kite aloft?
89. Wind. We’ve all felt the wind, and seen the effect of wind moving objects.
90. But what causes wind?
91. Wind is generated by horizontal differences in air pressure.
92. So it can be said that air moving from areas of high pressure to areas of low pressure produces wind.
93. **Graphic Transition – Global Winds**
94. Different parts of the earth heat at different rates.
95. You Decide!
96. What part of the earth do you think receives the most amount of heat throughout the year?
97. The area near the equator receives the greatest amount of heat.
98. And the polar regions receive smaller amounts of heat throughout the year.



Script (cont.)

99. At the equator, warmer air rises and moves toward the poles . . .
100. . . . and at the poles cooler air sinks and moves toward the equator.
101. These differences are fundamental in the creation of global winds.
102. But winds do not move directly from north to south or from south to north.
103. This is because the earth is spinning.
104. The spinning of the earth causes winds to bend to the right in the northern hemisphere and to the left in the southern hemisphere.
105. The curving of wind direction is called the Coriolis Effect.
106. **Graphic Transition – Local Winds**
107. While wind patterns can be formed on a global level, they can also form on a local level.
108. For example, notice the direction of wind on this beach at midday.
109. You Decide!
110. In what direction is the wind blowing?
111. The wind is blowing from the ocean toward the land.
112. This is called a sea breeze. Sea breezes can be formed when cooler ocean air replaces warm air over the land which rises.
113. At night the breeze reverses. The air over the ocean is now warmer because the land surface cools off quickly. The warm air over the water rises, and is replaced by the cooler air from the land, creating a land breeze.
114. These are just a couple examples of local winds.
115. **Graphic Transition - Moisture**
116. Have you ever noticed moisture on the grass early in the morning?
117. Even though it didn't rain during the night, where did the moisture come from?
118. It came from the air. As the air temperature dropped the moisture condensed on the vegetation, forming dew.
119. Moisture, or water vapor in the air, is called humidity.
120. You have probably heard people say it is a humid day. Sometimes you can feel the humidity in the air, particularly on a hot and humid day . . .
121. . . . or on a cold, damp day.
122. Water vapor in the air is a very important factor in the creation of weather, especially when it comes to the creation of rain . . .
123. . . . or snow.
124. **Graphic Transition – Summing Up**
125. During the past few minutes we have learned how weather affects our daily lives.



Script (cont.)

126. And we've taken a look at the factors which interact to create weather,...
127. ... including heat from the sun, . . .
128. ... and the means by which heat is distributed through the atmosphere via conduction, convection, and radiation.
129. We also took a look at the role air pressure plays in affecting weather...
130. ...and how air pressure is measured.
131. We saw how wind is created both globally and locally,...
132. ... and we discussed the importance of moisture in the development of weather.
133. So the next time you look out the window, think about some of the factors which affect weather. You might just think about weather a little differently.

Video Quiz

Fill in the correct word when you hear this tone _____. Good luck and let's get started.

1. The _____ is the source of heat on earth.
2. Energy from the sun is absorbed, scattered or _____.
3. The _____ layer absorbs ultraviolet radiation.
4. _____ is the direct transfer of heat via contact.
5. _____ is the transfer of heat via waves.
6. Moisture laden air is _____ dense than dry air.
7. An instrument called a _____ measures air pressure.
8. Wind moves from areas of _____ pressure to areas of low pressure.
9. A _____ breeze blows from the ocean to the land during the day time.
10. _____ is a measure of water vapor in the air.



Answers to Student Assessments

Preliminary Test

1. degrees
2. 0 degrees
3. 100 degrees
4. barometer
5. air
6. low pressure
7. equator
8. Coriolis
9. water vapor
10. conduction
11. true
12. true
13. false
14. true
15. true
16. true
17. false
18. false
19. true
20. false

Video Review

You Decide:

- A. The end of the spoon is very hot.
- B. Temperature is measured with an instrument called a thermometer.
- C. Air pressure is measured with an instrument called a barometer.
- D. The area near the equator receives the greatest amount of heat.
- E. The wind is blowing from the ocean toward the land.

Video Quiz:

1. sun
2. reflected
3. ozone
4. conduction
5. radiation
6. less
7. barometer
8. high
9. sea
10. humidity

Post Test

1. true
2. false
3. true
4. true
5. false
6. true
7. true
8. false
9. false
10. true
11. barometer
12. equator
13. 100 degrees
14. degrees
15. water vapor
16. air
17. 0 degrees
18. conduction
19. Coriolis
20. low pressure



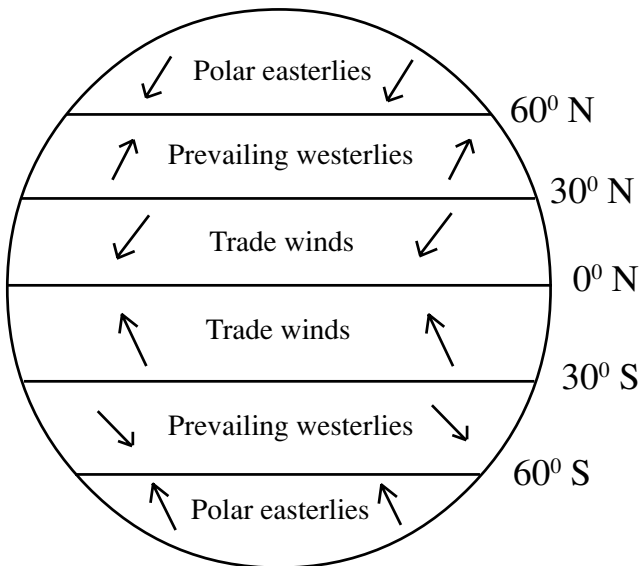
Answers to Student Activities

Colder Than You Think

1. 25 m.p.h.
2. 20 m.p.h. at 0° F
3. 20 m.p.h. at 5° F
4. The wind chill is -59° . You should dress for the chilly weather by wearing layers of warm clothing and a coat to break the wind.
5. 35 m.p.h. at -30° F
35 m.p.h. at -25° F
30 m.p.h. at -30° F

Understanding Winds

1.



2. For the diagram demonstrating a sea breeze, the arrows should point away from the water and toward the land. A diagram showing a land breeze should be the opposite where the arrows indicate that the wind is coming off the land and going out, over the sea.

Measuring Relative Humidity

1. Answers will vary.
2. Answers will vary.
3. 46% relative humidity.
4. Possible differences in data could result from errors in reading the thermometer or errors in reading the charts.

Vocabulary

1. Coriolis effect, h
2. humidity, f
3. radiant energy, e
4. ozone, g
5. weather, a
6. thermometer, c
7. sea breeze, j
8. conduction, d
9. land breeze, i
10. convection, b

Assessment and Student Activity Masters





Preliminary Test

Directions: Fill in the blank with the correct word. A list of possible answers is provided at the bottom of the page.

1. Temperature is measured in _____.
2. In the Celsius scale, freezing occurs at _____.
3. In the Celsius scale, boiling occurs at _____.
4. Air pressure is measured using an instrument called a _____.
5. Wind involves the movement of _____.
6. Wind moves from an area of high pressure to an area of _____.
7. The earth is warmest at the _____ and coldest at the north and south poles.
8. The _____ effect is responsible for bending global winds.
9. Dew condenses from _____ in the air.
10. The direct transfer of heat from one substance to another is called _____.

- | | |
|--------------|-------------|
| low pressure | 0 degrees |
| degrees | air |
| Coriolis | 32 degrees |
| conduction | thermometer |
| barometer | equator |
| water vapor | 100 degrees |



Preliminary Test

Directions: Decide whether the answer is True (T) or False (F).

- | | | |
|---|---|---|
| 11. Weather is the daily condition of the atmosphere surrounding the earth. | T | F |
| 12. Heat, air pressure, wind and moisture are all factors influencing the weather. | T | F |
| 13. Low air pressure generally means fair weather is predicted. | T | F |
| 14. The sun is the source of heat on our planet. | T | F |
| 15. Some radiant energy from the sun is absorbed in the ozone layer. | T | F |
| 16. All the radiant energy from the sun does not reach the earth. | T | F |
| 17. Heat transfers to your hand holding a hot stone by a process called convection. | T | F |
| 18. Heat in the atmosphere moves by convection currents from an area of cold air to and area of warm air. | T | F |
| 19. The Coriolis Effect bends winds in the Northern Hemisphere to the right. | T | F |
| 20. Temperature is measured using an instrument called a barometer. | T | F |



Video Review

Directions: During the course of the program, answer the “You Decide” questions as they are presented in the video. Answer the Video Quiz questions at the end of the video.

You Decide:

- A. Do you think this end of the spoon is hot or cold? Answer _____

- B. How is temperature measured? Answer _____

- C. What instrument is used to measure air pressure? Answer _____

- D. What part of the earth do you think receives the most amount of heat throughout the year? Answer _____

- E. In what direction is the wind blowing? Answer _____

Video Quiz:

1. The _____ is the source of heat on earth.
2. Energy from the sun is absorbed, scattered or _____.
3. The _____ layer absorbs ultraviolet radiation.
4. _____ is the direct transfer of heat via contact.
5. _____ is the transfer of heat via waves.
6. Moisture laden air is _____ dense than dry air.
7. An instrument called a _____ measures air pressure.
8. Wind moves from areas of _____ pressure to areas of low pressure.
9. A _____ breeze blows from the ocean to the land during the day time.
10. _____ is a measure of water vapor in the air.



Post Test

Directions: Decide whether the answer is True (T) or False (F).

1. Some radiant energy from the sun is absorbed in the ozone layer. T F
2. Heat in the atmosphere moves by convection currents from an area of cold air to and area of warm air. T F
3. Weather is the daily condition of the atmosphere surrounding the earth. T F
4. All the radiant energy from the sun does not reach the earth. T F
5. Low air pressure generally means fair weather is predicted. T F
6. Heat, air pressure, wind and moisture are all factors influencing the weather. T F
7. The sun is the source of heat on our planet. T F
8. Heat transfers to your hand holding a hot stone by a process called convection. T F
9. Temperature is measured using an instrument called a barometer. T F
10. The Coriolis Effect bends winds in the Northern Hemisphere to the right. T F



Post Test

Directions: Fill in the blank with the correct word. Choose from the list of possible answers at the bottom of the page.

11. Air pressure is measured using an instrument called a _____.
12. The earth is warmest at the _____ and coldest at the north and south poles.
13. In the Celsius scale, boiling occurs at _____.
14. Temperature is measured in _____.
15. Dew condenses from _____ in the air.
16. Wind involves the movement of _____.
17. In the Celsius scale, freezing occurs at _____.
18. The direct transfer of heat from one substance to another is called _____.
19. The _____ effect is responsible for bending global winds.
20. Wind moves from an area of high pressure to an area of _____.

low pressure
degrees
Coriolis
conduction
barometer
water vapor

0 degrees
air
32 degrees
thermometer
equator
100 degrees



Colder Than You Think

Background: You may have heard the weather forecaster say that it is 30 degrees outside but only 4 degrees with the wind chill. The difference between the air temperature and how cold it really feels is due to the **wind chill**. The United States National Weather Service devised the chart below to determine the **wind chill index**. It is based on the rate at which the body loses heat when exposed to cold temperatures and high wind speeds. Find the air temperature on the top line and the wind speed in the left column. The point at which the lines meet, is the degree of wind chill.

Directions: Using the information provided in the wind chill chart below, answer the following questions.

		Temperature in ° Fahrenheit													
		35°	30°	25°	20°	15°	10°	5°	0°	-5°	-10°	-15°	-20°	-25°	-30°
Wind Speed (m.p.h.)	5	32	27	22	16	11	6	0	-5	-10	-15	-21	-26	-31	-36
	10	22	16	10	3	-3	-9	-15	-22	-27	-34	-40	-46	-52	-58
	15	16	9	2	-5	-11	-18	-25	-31	-38	-45	-51	-58	-65	-72
	20	12	4	-3	-10	-17	-24	-31	-39	-46	-53	-60	-67	-74	-81
	25	8	1	-7	-15	-22	-29	-36	-44	-51	-59	-66	-74	-81	-88
	30	6	-2	-10	-18	-25	-33	-41	-49	-56	-64	-71	-79	-86	-93
35	4	-4	-12	-20	-27	-35	-43	-52	-58	-67	-74	-82	-89	-97	

Questions:

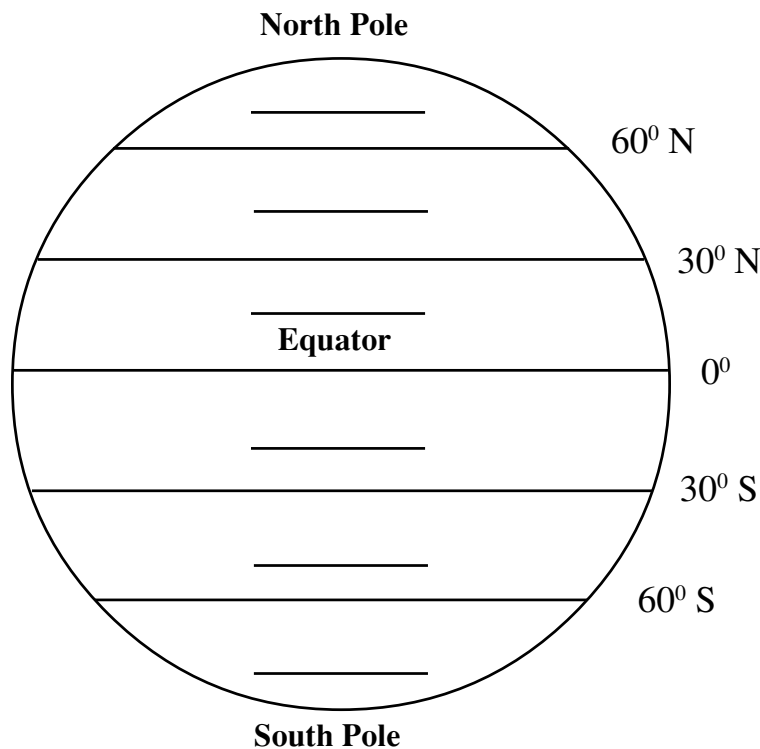
1. It is 25 degrees Fahrenheit outside but the weather forecaster said it is -7 degrees with the wind chill. What is the wind speed?
2. What wind speed and temperature will give you a -39 degrees wind chill?
3. Which combination produces a colder wind chill temperature, a 10 m.p.h. wind at 0 degrees F or a 20 m.p.h. wind at 5 degrees F?
4. The wind is blowing at a speed of 25 m.p.h. and the air temperature is -10 degrees. What is the wind chill? How should you dress for this weather?
5. Which combination of wind speeds and temperature will give you the three coldest wind chill temperatures?



Understanding Winds

Background: **Global winds** are wind systems that determine the major weather patterns on the earth. Unequal heating, unequal air pressure and the rotation of the earth cause wind patterns to form. Winds move from areas of high pressure to areas of low pressure. Warm air from the equator rises and heads towards the poles, while cold air from the poles sinks towards the equator. The rotation of the earth causes winds to curve. This curving of winds is known as the **Coriolis Effect**. There are several types of global winds. Winds between latitudes 30° north and south of the equator blow from east to west toward the equator. These winds are called **trade winds**. Trade winds derive their name from the ships that used to travel along trade routes. Between 30° and 60° latitude north and south of the equator are winds called **prevailing westerlies**. These winds blow from west to east, and are also the winds responsible for the movement of weather across the United States and Canada. In the Northern Hemisphere they blow toward the north pole and in the Southern Hemisphere they blow towards the south pole. Above 60° latitude north and south of the equator are winds called **polar easterlies**. These winds blow from east to west towards the equator.

Directions: Using the above information, fill in the lines on the diagram of the earth. Use arrows to show which direction the wind is blowing.





Understanding Winds (cont.)





Measuring Relative Humidity

Objective: In this activity you will learn how to measure the relative humidity in the air.

Background: Have you ever wondered why the temperature outside is 75°F, but you are sweating and it feels like it is 100°F? It is probably due to the humidity in the air. High humidity can make the temperature feel much hotter. The humidity in the air can be measured by comparing the temperature of a dry bulb thermometer to the temperature of a wet bulb thermometer. The temperature of a wet bulb thermometer will decrease due to evaporation. If the humidity in the air is low, the water on the wet bulb will evaporate quickly and the reading on the thermometer will decrease. If the humidity in the air is high, the water will evaporate slowly and the temperature will not change much.

Materials:

- 2 Celsius thermometers
- Piece of cloth or cotton gauze
- Small fan

Directions:

1. Your teacher will divide you into pairs.
2. Make a wet bulb thermometer by wetting a piece of cloth or gauze. Wrap it around the bulb of one thermometer. Leave the bulb uncovered on the other thermometer. Set both thermometers on a raised flat surface.
3. Turn the fan on and let it blow on the bulbs of both thermometers.
4. Record the temperature of both thermometers. Do three trials. Note the lowest temperature you recorded from the wet bulb thermometer. Subtract this number from the temperature of the dry bulb thermometer.
5. Find the number on the top line of the chart on the following page. Locate the temperature of the dry bulb thermometer on the left column. The point at which the two lines meet is the percentage of relative humidity in the air.

Questions:

1. What is the relative humidity in the classroom?
2. Did the water evaporate quickly or slowly?
3. What would be the relative humidity in the air if the air temperature was 26°C and the temperature of the wet bulb was 8°C lower?
4. Compare your results with other groups in the class. Are the results the same? If not, what could be a reason for the difference?



Measuring Relative Humidity (cont).

Difference between dry-bulb and wet-bulb temperature (C⁰)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
0	81	64	46	29	13											
2	84	68	52	37	22	7										
4	85	71	57	43	29	16										
6	86	73	60	48	35	24	11									
8	87	75	63	51	40	29	19	8								
10	88	77	66	55	44	34	24	15	6							
12	89	78	68	58	48	39	29	21	12							
14	90	79	70	60	51	42	34	26	18	10						
16	90	81	71	63	54	46	38	30	23	15	8					
18	91	82	73	65	57	49	41	34	27	20	14	7				
20	91	83	74	66	59	51	44	37	31	24	18	12	6			
22	92	83	76	68	61	54	47	40	34	28	22	17	11	6		
24	92	84	77	69	62	56	49	43	37	31	26	20	15	10	5	
26	92	85	78	71	64	58	51	46	40	34	29	24	19	14	10	5



Vocabulary of *The Nature of Weather*

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|--------------------------|---|
| _____ 1. lsrooici ftefec | a. the daily condition of the earth's atmosphere |
| _____ 2. thduiyimi | b. the way in which heat is transferred through gasses and liquids due to density differences |
| _____ 3. adirnat ryeeegn | c. an instrument used to measure temperature |
| _____ 4. eznoo | d. the direct transfer of heat from one substance to another |
| _____ 5. hwaetre | e. the source of heat on earth |
| _____ 6. rehomtetemr | f. moisture in the air |
| _____ 7. ase ezrebe | g. gas that absorbs ultraviolet radiation |
| _____ 8. ntdicuoonc | h. the curving of wind direction due to the spinning of the earth |
| _____ 9. dnla zeereb | i. a wind that blows from the land toward the ocean |
| _____ 10. nicotvceno | j. a wind that blows from the ocean toward the land |