Weather word search

Directions: Find these words in the word search. Look up the meanings of these words and see if you can find each word in the *Tampa Bay Times*.

Anemometer	Meteorology	Supercell
Atmosphere	Rainbow	Thermometer
Hygrometer	Humidity	Temperature
Isobar	Front	Transpiration

R L T J G F E V U Q O H U O C Y C V Y Q T J G F O
B A G E R X N O G V J G U P Z Z J X I E N D M D Q
Q E I O D V P U S W K V Q F F W F U M Z N P W F Q
J P N N D P I I J B R I L T E B R P S T X D V Q Z
C T W I B R E T E M O M E N A Q E X F A Q G N B R
R W Q L A O D G O G X P W P G R T T D Q Y R U W Z
E O A M I C W D M S F C S Y A W E J Q J J Y X N J
T R A N S P I R A T I O N T W M M B D N V C T S P
N W E M B T N U M Q K T U G U A O R F Y Q I A U P
Y W R H B E G I T R J R H J M F R D V D L S G K F
V V U V P X C U T L E X L O A L G G F L C O M O G
F L A K T S I H B R T D E J V M Y W E L I B F K T
Z U L W L I O G I G H I D B E O H C T O W A Z Z U
X E X Z S V B M B Z E U C V N U R G W Y D R S K W
Z M P O G L P T T F R J V K R E Y O Z R B W B V V
W L E C L Z J N Q A M H G P P K E I R O W Z P H J
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D G D Y E Q V N W X M C S T K X S C V M W N J U M
H E D G Z O S A F L E I I H L Y X N B I G X R K R
G D Q I M D R B Z X T V H Q E S V N A V S M P B G
I W X D V H F O U M E V L Y Y C H U M I D I T Y Y
K L X V H R V M L E R Q H C S D Q U P A T I L E P
D F K H G X U E T O D D L N K S R B J K X N L V V
I P Z D Q J V H H J G M O W R M B H V C J G S I B
E C V V K C D O O X F Y W C C H T J W T O P L M F

Learning with the *Times*

Encountering new words

When you study new things, you can come up against some tough vocabulary words. Most vocabulary words are learned from context clues or good old-fashioned dictionary work. While you read this poster, be sure to highlight or circle words and terms you don't know. You can begin with the list of words in the word search. Try to figure out their meanings by looking for clues in the sentences around these unknown words. Write down your best guess, and then look the words up in a dictionary. Remember, many words have multiple definitions, so you must use context clues to know which definition to select. As a group activity, make a list of the words your classmates identified and see which ones stumped the class. Use the print or electronic editions of the *Tampa Bay Times* to search for articles using these words.

Working together

The Weather Experts at Bay News 9 work closely with the Bay News 9 Morning Team to help prepare you and your family for your busy lives. We had students from Tampa Bay schools send us questions to get to know our morning crew better.

Q: What do you enjoy most about your job, Meteorologist Juli Marquez?

Juli says, "I love talking about the weather! I can talk about sunshine one day and rain the next day. Whether it's hot or cold, wet or dry, people are interested in the weather because it affects all of us.

"For me, the weather is never boring. Even during a week of beautiful weather in Tampa Bay, I can always find something interesting to talk about or to show.

"When we have significant weather, such as severe thunderstorms or freezing temperatures, Erica Riggins, Chuck Henson and I will team up with our reporters and photographers in the field to bring you in-depth coverage during *Your Morning News*.

"When I visit schools I like to ask the class if they are interested in meteorology and see how many students raise their hands. If you like science, math and computers and you love to talk, this could be a future job for you!"

Q: What was the most interesting traffic situation you have seen, Real Time Traffic Expert Chuck Henson?

"Reporting Traffic for 24 years has given me a chance to see the very best and worst on the roads. One of the more remarkable experiences I've had here at Bay News 9 happened just after Tropical Storm Debby. The amount of rainfall from the storm created massive flooding in Pasco, Hernando and Citrus Counties. It was unlike anything I'd seen before. Entire roads were covered in water, neighborhoods were submerged and our community was searching for ways to get through the chaos.

"Using our extensive network of Real Time Traffic Cameras and the eyes of our Sky 9 helicopter we were able to make a huge difference for many people. I could give clear instructions on which roads were open and which were closed. Combining the expertise of Juli Marquez and Klystron 9, with the extensive news coverage Erica Riggins was providing, we were able to clearly paint a picture of what was happening in our community."

Q: Do you get embarrassed when reporting or anchoring in front of the camera and how do you stay confident, news anchor Erica Riggins?

"We all feel embarrassment at different times in life. It's a natural emotion, often tied to failure or mistakes that we make along the way in our personal and professional lives. However, I have always believed embarrassment is a feeling we should not fear. It's something to overcome.

"I received my first break in this business in a small Texas town, and there was no time to mourn those early mistakes during live reports. I had a responsibility to finish presenting the report as clearly as possible. In the back of my mind, I imagined the strength and mental toughness of athletes, specifically ice skaters or gymnasts. They always try to finish strong after a fall during their routines. They don't let embarrassment chip away at their confidence.

"If you love what you're doing and give 100 percent to get the job done, confidence will come naturally."

Project Weather and you

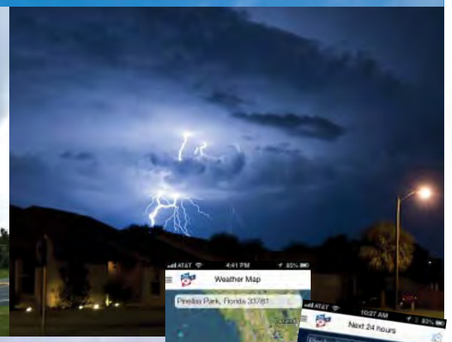
BAY NEWS 9 project weather

Weather can be mysterious, exciting and sometimes dangerous. That's why Bay News 9 created Project Weather to help provide kids with the information they need to stay safe. Project Weather is made up of interactive educational resources to help prepare students for the future. Students will need skills in science, technology, engineering or math for 80 percent of jobs in the next 10 years. Therefore, educating kids about weather sciences is the perfect subject for the Bay News 9 weather experts!

The Project Weather Scholarship Contest is a one-time award of $1,000 presented to seven high school seniors who excel in science. The scholarship is granted as a part of Bay News 9's commitment to educating children about science and weather.

For more information, go to baynews9.com/projectweather.

Weather — It's in the air and everywhere



According to the National Oceanic and Atmospheric Administration (NOAA), weather is the state of the atmosphere, which includes the air surrounding the earth, in regard to wind, temperature, cloudiness, moisture and pressure. When you hear people speaking about weather, they are referring to the atmospheric conditions at a given point in time: today, tomorrow, the weekend.

Weather is what the air is like in any one place at any one time. How hot or cold is the air? How much dampness, or moisture, is in the air? How fast is the air moving? How heavily does the air press on the earth? Weather is what happens in the air from minute to minute. The weather can change a lot within a very short time, especially in Florida.

Weather includes daily changes in precipitation (rain), barometric pressure, temperature and wind conditions in a given location. Weather is fueled by the sun. However, other factors also affect weather, such as friction, or resistance, between the land and sea; the rotation of the earth; and the shifting of wind. These cycles and forces create complex and ever-changing patterns.

Weather also is the way water changes in the air. Without water, there would be no clouds, rain, snow, thunder or fog. In fact, weather affects our lives and all things on Earth, plays a big part in our lives and affects many of the things that we do.

Sources: National Oceanic and Atmospheric Administration, United States Environmental Protection Agency and ThinkQuest

Learning with the *Times*

Going deeper

Research greenhouse gasses, climate and weather in your school media center or local library. Make a list of all of the facts you can find. Put a star next to the facts that are new or surprising to you. Next, look for an article about one of these topics in the *Tampa Bay Times*. Write down the main ideas from the article. Underline the information that is new to you. Share what you have learned with your class.

Newspaper in Education

The Tampa Bay Times Newspaper in Education (NIE) program is a cooperative effort between schools and the Times Publishing Co. to promote the use of newspapers in print and electronic form as educational resources. NIE provides schools with class sets of the newspaper, plus our award-winning original curriculum, at no cost to teachers or schools.

With ever-shrinking school budgets, the *Tampa Bay Times* and our curriculum supplements have become an invaluable tool to teachers. In the Tampa Bay area each year, more than 5 million newspapers and electronic licenses are provided to teachers and students free of charge thanks to our generous individual, corporate and foundation sponsors.

The *Times* and our NIE curriculum are rich educational resources, offering teachers an up-to-the-minute, living text and source for countless projects in virtually every content area. Our teaching materials cover a variety of subjects and are consistent with Florida's educational standards.

For more information about NIE, visit tampabay.com/nie. Follow us on Twitter at Twitter.com/TBTimesNIE. To learn how to sponsor a classroom or education supplement or receive NIE resources at your school, go to tampabay.com/nie, email ordernie@tampabay.com or call 800-333-7505, ext. 8138.

Teachers can order free class sets of this teaching poster by emailing ordernie@tampabay.com.

Newspaper in Education staff

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This publication incorporates the following Next Generation Sunshine State Standards: Science: SC.3.N.1.1-7; SC.3.N.3.1-3; SC.4.N.1.1-8; SC.5.N.1.1-6; SC.5.N.2.1-2; SC.5.E.7.3-7 ; SC.6.E.7.5; SC.6.E.7.6; SC.6.E.7.7 **Language Arts foundational skills:** LAFS.3-5.RF.3.3; LAFS.3-5.RF.3.4 **Language Arts reading informational text:** LAFS.3-5.RL.1.1; LAFS.3-5.RL.1.2; LAFS.3-5.RL.1.3; LAFS.3-5.RL.1.4; LAFS.3-5.RL.1.5; LAFS.3-5.RL.1.6; LAFS.3-5.RL.1.7; LAFS.3-5.RL.1.9 **Language Arts writing**: LAFS.3-5.W.1.1; LAFS.3-5.W.1.2; LAFS.3-5.W.1.3; LAFS.3-5.W.1.4; LAFS.3-5.W.1.5; LAFS.3-5.W.1.6; LAFS.3-5.W.1.7; LAFS.3-5.W.1.8; LAFS.3-5.W.1.9 **Speaking and Listening:** LAFS.3-5.SL.1.1; LAFS.3-5.SL.1.2; LAFS.3-5.SL.1.3; LAFS.3-5.SL.1.4; LAFS.3-5.SL.1.5; LAFS.3-5.SL.1.6 **Language Arts language standards:** LAFS.3-5.L.1.1; LAFS.3-5.L.1.2; LAFS.3-5.L.1.3; LAFS.3-5.L.1.4; LAFS.3-5.L.1.5; LAFS.3-5.L.1.6

Credits

Written by Jodi Pushkin, *Times* staff
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Weather vs. climate

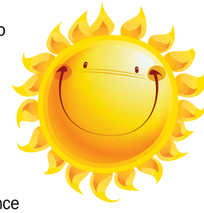
"Climate is what we expect; weather is what we get."

– author Mark Twain

Sometimes people confuse the terms "weather" and "climate." The terms are not interchangeable. According to NOAA, "Weather is a specific event or condition that happens over a period of hours or days." A thunderstorm or hurricane is an example of weather.

"Climate refers to the average weather conditions in a place over many years (usually at least 30 years). "You could describe the summer climate of the Tampa Bay area as being hot and humid. The average climate around the world is called global climate.

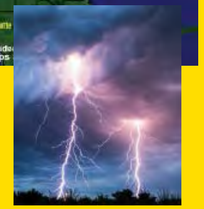
The experts at NOAA provide a great way to remember the difference.



"Here's an easy way to remember the difference between weather and climate: Climate helps you decide what clothes to buy, and weather helps you decide what clothes to wear each day."

Sources: National Oceanic and Atmospheric Administration and NASA

Lightning: What you need to know



- ***NO PLACE*** outside is safe when thunderstorms are in the area!
- If you hear thunder, lightning is close enough to strike you.
- When you hear thunder, immediately move to safe shelter: a substantial building or a car with windows up.
- Stay in the safe shelter at least 30 minutes after you hear the last sound of thunder.

Indoor lightning safety

- Stay off corded phones, computers or other electrical equipment that puts you in direct contact with electricity.
- Avoid plumbing, including sinks, baths and faucets.
- Stay away from windows and doors, and stay off porches.
- Do not lie on concrete floors, and do not lean against concrete walls.

Outdoor tips

If you are caught outside ***with no safe shelter anywhere nearby,*** the following actions may reduce your risk:

- Immediately get off elevated areas such as hills, mountain ridges or peaks
- Never lie flat on the ground
- Never seek shelter under an isolated tree
- Never use a cliff or rocky overhang for shelter
- Immediately get out and away from ponds, lakes and other bodies of water
- Stay away from objects that conduct electricity (barbed wire fences, power lines, windmills, etc.)

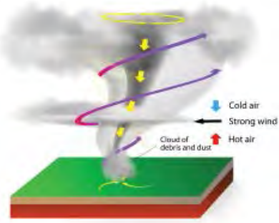
Know the difference

Tornado watch:

Tornadoes are possible. Review and discuss your emergency plans. Be ready to act quickly if a warning is issued or you suspect a tornado is approaching.

Tornado warning:

A tornado has been sighted or indicated by weather radar. Tornado warnings indicate imminent danger to life and property. Go immediately to an interior room (closet, hallway or bathroom).



Weather:
It's all about change

Weather is the condition of the atmosphere over a short period of time. Weather is the way the atmosphere is behaving, mainly with respect to its effects upon life and human activities.

Most people think of weather in terms of temperature, humidity, precipitation, cloudiness, brightness, visibility, wind and atmospheric pressure, as in high and low pressure.

In most places, weather can change from minute to minute, hour to hour, day to day and season to season. In the Tampa Bay area, weather can change from city to city and county to county. There are a lot of parts to weather.

In Florida, weather includes sunshine, rain, cloud cover, wind, hail, flooding, thunderstorms, steady rains from a cold front or warm front, excessive heat, heat waves and more.

Source: NASA

Rain and floods

Water droplets form from warm air. As the warm air rises in the sky, the air cools. Warm air holds quite a bit of water. That is why the air feels wet, or humid, in the summer. When enough of these droplets collect together, we see them as clouds. If the clouds are big enough and have enough water droplets, the droplets bang together and form even bigger drops. Once the drops get heavy, they fall because of gravity, and then we have rain.

Not including wind-driven rain, raindrops fall between 7 and 18 miles per hour in still air. The range in speed depends on the size of the raindrop. When there is wind or a great deal of heavy rain, flooding can result. Clogged drains in the streets and overflowing rivers and lakes cause floods.

When the flooding happens quickly, it is called a flash flood. Flash floods are the No.1 weather-related killer in the United States. Most deaths due to flooding in the United States are due to people driving their cars into flooded areas. It may only take 12 to 16 inches of water to cause a car to float!

Source: Florida Division of Emergency Management

Lightning

As Benjamin Franklin discovered, lightning is a form of electricity. Lightning is created when cold air and warm air meet. The cold air has ice crystals. The warm air has water droplets.

When the warm air rises, thunderstorm clouds are created. During the storm, the droplets and crystals bump together and move apart in the air. This rubbing makes static electrical charges in the clouds.

Just like a battery, these clouds have a positive and negative end. The positive charges in the cloud are at the top. The negative charges are at the bottom. When the charge at the bottom gets strong enough, the cloud lets out energy. The energy goes through the air to a place that has the opposite charge.

This lightning bolt of energy that is let out is called a leader stroke. The stroke can go from the cloud to the ground. Or, a leader stroke can go from the cloud to another cloud. The main bolt or stroke will go back up to the cloud. It will make a flash of lightning and heat the air.

Source: NASA

Strokes and flashes

Lightning flashes through the Florida sky on an average of 100 days a year. It singes and burns, injures and even kills. As a matter of fact, Florida leads the nation in lightning-related fatalities. But, not all lightning strikes are the same. There are actually three types of cloud to cloud lightning.

- *Ground flashes*
- *Cloud-to-ground lightning*
- *Cloud flashes*

With a partner, research these three types of lightning on the Internet. Find out as much information as you can, and create a trading card character for each one, using the interactive Trading Card Creator located on the Readwritethink website: http://www.readwritethink.org/files/resources/interactives/trading_cards_2/. Share what you have learned with your class.

Source: National Oceanic and Atmospheric Administration National Severe Storms Laboratory

Thunder

A lightning bolt takes only a few thousandths of a second to split through the air. Although the loud thunder that follows the lightning bolt is commonly said to come from the bolt itself, the grumbles and growls we hear in thunderstorms actually come from the rapid expansion of the air surrounding the lightning bolt.

As lightning connects to the ground from the clouds, a second stroke of lightning will return from the ground to the clouds. When that happens, the heat from the electricity of this return stroke raises the temperature of the surrounding air to around 54,000 degrees Farenheit.

Since this happens so quickly, the heated air has no time to expand. The heated air is compressed, and then it explodes outward, forming a shock wave of compressed particles in every direction, which, in turn, creates a loud, booming burst of noise.

Source: Library of Congress

Tornadoes and waterspouts

A tornado, or twister, is a powerful column of winds twisting around a center of low atmospheric pressure. A tornado looks like a large funnel; the narrow end moves over the earth.

The powerful winds inside a tornado spiral upward and inward. These winds create a vacuum that sucks up anything the tornado passes over. When the funnel touches a structure, such as a house or car, the strong winds have the ability to tear it apart. The winds inside a twister can reach speeds of up to 500 miles an hour.

A waterspout occurs when a tornado forms over a body of water. Water spouts form when high layers of cool air meet warm moist air from a body of water. Winds within a waterspout can spin around at 60-120 miles an hour.

Source: ThinkQuest

Moving water

Did you know people have a lot in common with water? Seriously, they do! Just as you like to move around and sometimes get bored and restless staying in one place too long, water is the same way. Water likes to move. Thanks to gravity, water moves down from the clouds or from a roof. Water also flows down into rivers and creeks and it even moves down in giant waterfalls. Sometimes water sinks into the ground, but most of it ends up filling the oceans, which cover over two-thirds of the planet.

Although you may think the water cycle stops once the water enters the oceans or seeps into the ground, it does not. That is the beauty and wonder of water. The versatile liquid is able to defy gravity and go back into the sky. The secret to this mobility is that water is not always in liquid form. In addition to the ability of water to freeze into solid form, water also can evaporate into an invisible gas, known as water vapor.

Water vapor rises back into the atmosphere and then condenses into tiny droplets that form clouds. From those clouds, water can fall back to the ground as rain or snow.

Source: Southwest Florida Water Management District

Learning with the *Times*

Send in the clouds

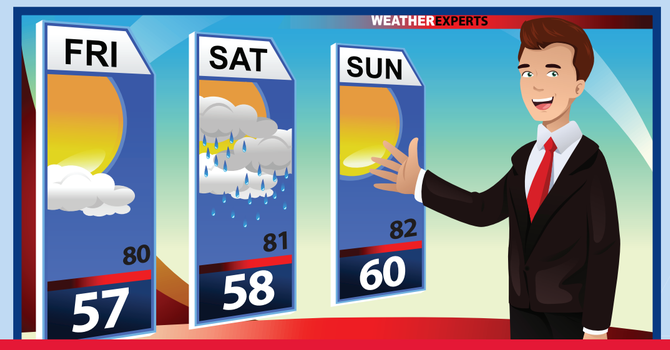
According to the National Weather Service, "Clouds typically form when air rises. The reduction in pressure as air rises causes the air to expand and cool. When air rises, the air's temperature cools and may reach its dewpoint temperature, at which point it becomes saturated. Once saturation is reached, condensation occurs and the water vapor in the air will condense into tiny water droplets. As millions of droplets form, a cloud will begin to take shape." Clouds are very cool and there are a few different kinds. With a partner, and your teacher's help, research clouds on the Internet. List all the different types of clouds, and then choose one type to research. Using the classified ads in the Tampa Bay Times as a model, create a Help Wanted ad for a specific type of cloud, but do not write the cloud's name in the ad. Try to be specific in the details you are looking for in a cloud. Once your ad is complete, see if your classmates can guess which cloud you have described in the ad.

Weather, fair or foul

From rain dances performed by Native Americans to seeding clouds with dry ice to make hail form and fall quickly, the idea of controlling the weather has appealed to a lot of people. Research ways people try to control the weather. Make a list of the different methods you find. Then look in the Tampa Bay Times for stories about and advertisements for events that could be affected by the weather. Look for such things as sports competitions, farming activities or political events. If you could control the weather for each event, what conditions would you prescribe? How might ideal weather for that event interfere with other activities? Discuss these points with your class. Write a creative narrative story for one of the scenarios.

Informational text: Close viewing and reading

Watch Bay News 9 and go to baynews9.com. Make a list of all of the different ways science, technology, engineering and math are used at the television station. Then look for art. What are the different types of art used in a television broadcast? Next, read the Tampa Bay Times and make a list of all of the examples of science, technology, engineering, art and math you can find. Then you can look for art in the newspaper, too [Hint: there is a lot of it.] Use specific examples from all sections of the newspaper on your list. Share what you discover with your class.



THE WORLD OF METEOROLOGY

The Bay News 9 meteorologists are weather experts who enjoy forecasting Florida's weather on a daily basis. The following questions were supplied by Tampa Bay elementary school students.

Q: Why does Florida not get tornadoes?

Mike Clay says, "Florida does have many tornadoes. According to the Storm Prediction Center, we rank fourth in the nation for number of tornadoes. But, many of our tornadoes are weak and don't last very long. The large number of waterspouts that come onshore (then becoming a tornado) push our numbers much higher.

"When we do have significant damaging tornadoes, it is often associated with winter cold fronts or a tropical system nearby. The danger from tornadoes here is not nearly as high as in other states like Oklahoma and Alabama.

Q: Why doesn't it snow in Florida?

Juli Marquez says, "Many people would probably say because it doesn't get cold enough! But the answer is actually more detailed than that.

"First, it can get cold enough in Florida during the winter months but the freezing temperatures usually occur after a cold front has passed through the area and we have cold, dry air and clear skies. So, conditions have to be just right for it to snow in our state.

Second, how often you see snow in Florida depends on where you live. Snow has occurred in North Florida more times than the Central or Southern parts of our state. As recently as January of this year, there was snow and ice in the Florida panhandle. Roads and schools were closed there.

"What about snow in Tampa Bay? Here are some examples:

"On January 9, 2010, snow and sleet mixed with rain in parts of the Tampa Bay area to Orlando. In January 1996, snow and sleet were reported just north of Tampa Bay. And on December 23, 1989, snow fell in parts of North Florida and Central Florida.

"Looking back to January 17 to 19, 1977, there were reports of snow and flurries across the state. Most locations around Tampa Bay had at least a trace of snow but up to 1 to 2 inches of snow fell from near Tampa to Orlando. That year, snow fell in South Florida for the first time on record! Snow was seen as far south as Homestead and Miami Beach."

Q: What inspired you to become a meteorologist?

Josh Linker says, "When I was a child, the weather always fascinated me. It could change so quickly. I wanted to know why.

"Growing up in New York, I experienced my share of wild weather, from blizzards, to heat, to cold, and to, yes, even hurricanes. In fact, two of them stand out as meteorological inspirations for me.

"The first was Hurricane Gloria in 1985. I remember the eye of the storm coming right over my house. We actually went outside because we thought the storm was over. While we were looking at the mess in our yard, the ferocious wind picked up again and we ran inside. The second half of the storm had arrived. I remember finding that to be so incredible.

"The second one was Hurricane Bob, in 1991. This one wasn't quite as bad for our area but I was just about to go to college and that sealed the deal for me to study meteorology so I could learn about the changes and help others be prepared when bad weather comes quickly."

Q: How does the green screen work and how do you know where to point?

Brian McClure says, "The green screen is where meteorologists present their forecasts. It's one of the coolest features in a TV station. What you first need to know is that we build weather graphics using computers in the weather center. The meteorologist then stands in front of a green wall. A special camera is pointed at the meteorologist and wall. We tell the camera to only show the weather graphics where the color green is located. Since the wall is green the graphics will show up.

"Since the meteorologists aren't green, the graphics aren't displayed on us, but rather it appears we're in front of a large TV screen. In reality, it's just a blank green screen. This is also why meteorologists can't wear green clothing, because the graphics will appear on top of us and make us look invisible!

"In recent years Bay News 9 has been on the leading edge of technology and we're now using touchscreens instead of just green screens. Think of these like huge tablets. It gives us the capability to interact with and draw on the images that you see us present on TV. We were one of the first stations in the world to start doing this.

"At first it's difficult to know where to point. It takes practice. The best way I know to describe it is to stand in front of a mirror and then try to determine which way is west and which way is east. You will find that it's backwards. We have a monitor in front of us and one on each side of us that we can watch. This helps us know exactly where we're pointing. After many years of practice it becomes easy and something that we are now very comfortable with doing. But it definitely is confusing when you first try.

Q: I wonder why lightning is silent but thunder is loud.

Diane Kacmarik says, "Lightning is not actually silent; thunder is the sound that lightning makes! Thunderstorms cause electric charges to build up in and around the storm. A lightning bolt is the electricity released from the electric charges. You can see the lightning. It heats up the air to 54,000 degrees! That's hotter than the sun!

"The air that the lightning passes though is so hot that it explodes. The sound of the explosion is thunder. You see the lightning first, because the speed of light is fast. The speed of sound is slower. The light reaches your eyes first then the sound reaches your ears after. That's why you don't hear and see them together unless lightning strikes dangerously close!"

WEATHER experiments

Make it rain

Measuring the amount of moisture, or humidity, in the air can tell you if precipitation is likely. Hygrometers measure relative humidity, the amount of moisture in the air. You can make a simple one with a glass jar.

Materials needed

- glass jar
- hot water
- ice cubes

Directions

1. With the help of an adult, pour approximately two inches of very hot water into the glass jar.

2. Cover the jar with the plate and wait a few minutes before you start the next step.

3. Put the ice cubes on the plate.

The cold plate will create moisture in the warm air, which is inside the jar. Condensation and water droplets will form.

Source: This experiment was taken from Weather Wiz Kids. For more experiments, go to weatherwizkids.com.