Brandon Valley School District

District Learning Plan

April 6-10, 2020

Grade 6 Science

Brandon Valley School District Distance Learning Plan

LESSON/UNIT: WEATHER/CLIMATE **SUBJECT/GRADE: Science/6th** **DATES: April 6 - 10**

What do students need to do? **Link to BV instructional video for week of April 6-10, 2020**	**For Science this week, you will read two NEWSELA articles and complete three worksheets.** **Monday (4/6):** ● GLOBAL WINDS (*Worksheet*) Read the worksheet and complete the answers on the ANSWER DOCUMENT **Tuesday (4/7):** ● Read *Newsela article*, How to read a weather map and answer the four questions on ANSWER DOCUMENT **Wednesday (4/8):** ● AIR PRESSURE (*Worksheet*) Part 1: Read the worksheet **Thursday (4/9):** ● AIR PRESSURE (*Worksheet*)Part 2: Re-read the worksheet and complete the answers on the ANSWER DOCUMENT **Friday (4/10):** No School
What do students need to bring back to school?	Answer Document (Choose one way to submit from the list below) 1. Complete answer document electronically through GOOGLE CLASSROOM 2. Complete answer document by paper and pencil and submit to BVIS
What standards do the lessons cover?	MS-ESS2-4 Develop a model to describe the cycling of water through Earth's systems driven by energy from the sun and the force of gravity. MS-ESS2-5 Collect data to provide evidence for how the motions and complex interactions of air masses results in changes in weather conditions MS-ESS2-6 Develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates. (All Days) MS-ESS3-3 Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment MS-ESS3-5 Ask questions to clarify evidence of the factors that may have caused a change in global temperatures over the past century
What materials do students need? What extra resources can students use?	Need: 1. Two Newsela articles (PDF or Online) 2. Three worksheets (PDF or Online) 3. Answer document (PDF or on Google Classroom) 4. Paper and Pencil Extra: 1. https://my.mheducation.com/login (Student online textbook- Chapter 14) 2. http://studyjams.scholastic.com/studyjams/jams/science/index.htm (Weather & Climate)

What can students do if they finish early?	***(Optional - With parent or guardian permission and supervision)*** **PICK A TOPIC FROM THE WEEK AND CREATE AN EXPERIMENT**: 1. Create a **PROBLEM**: What question are you trying to answer? 2. Create a **HYPOTHESIS**: Come up with an educated guess for the question 3. Create an **EXPERIMENT**: What are the Materials needed and Procedures for the experiment? 4. What are the **RESULTS**: What data or information were you able to collect? 5. **CONCLUSION**: Was your hypothesis right or wrong? What did you learn based on the data? 6. Send a picture to your science teacher
Who can we contact if we have questions?	**Brandon Valley Intermediate School** **Principal-** Mr. Skibsted- Nick.Skibsted@k12.sd.us **Assistant Principal**- Mr. Pearson- Rick.Pearson@k12.sd.us **Science Teachers:** Mr. Putnam- Mike.Putnam@k12.sd.us (blue team) Ms. Grieve- Tami.Grieve@k12.sd.us (silver team) Ms. Schindling- Kayla.Schindling@k12.sd.us (red team) Mr. VanHeel- Jeremy.VanHeel@k12.sd.us (white team)
Notes: Feel free to reach out if you have any questions!	

Instructional materials are posted below (if applicable)

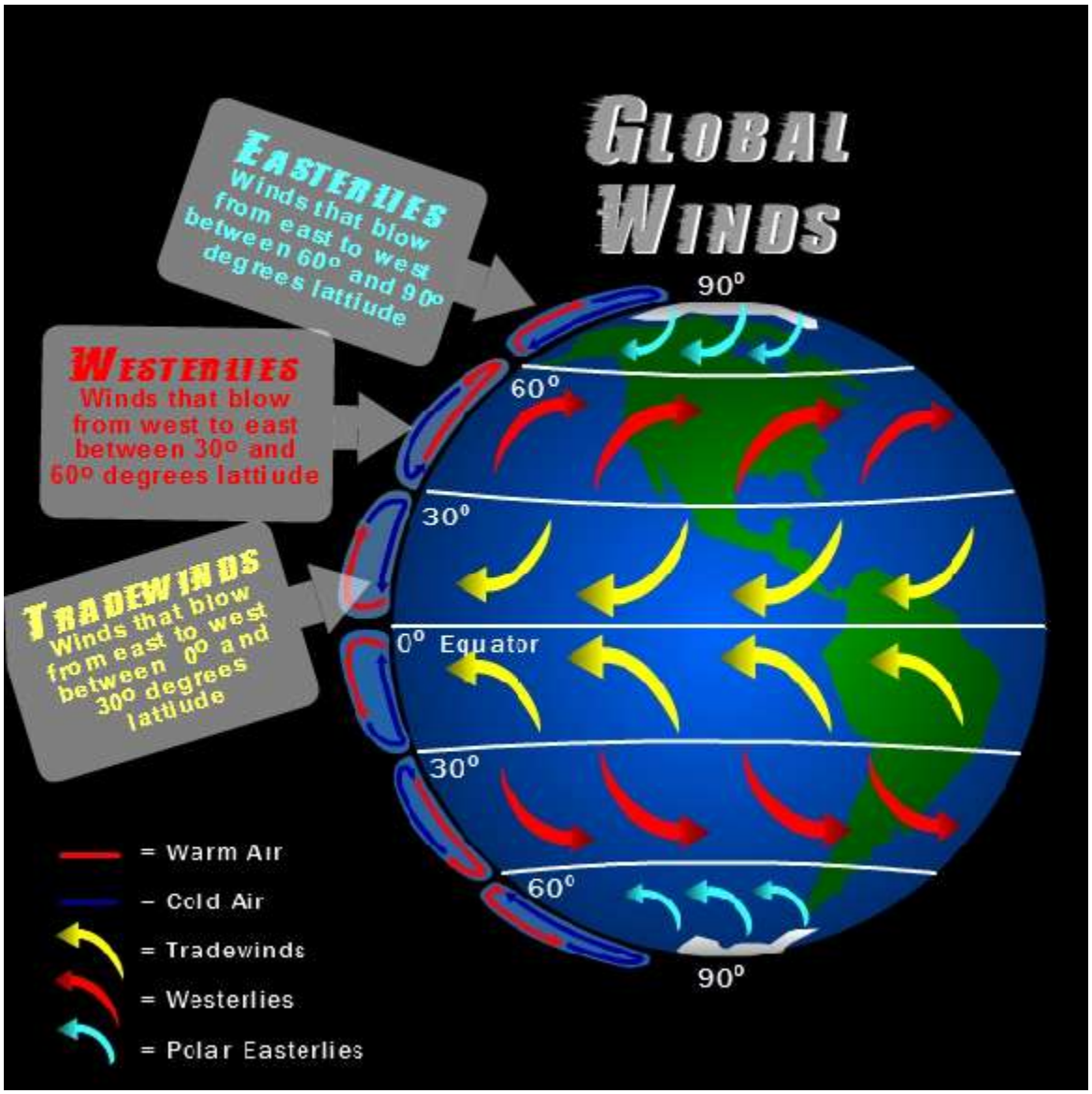
Brandon Valley School District

MS-ESS2-5 Collect data to provide evidence for how the motions and complex interactions of air masses results in changes in weather conditions
MS-ESS2-6 Develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates.
MS-ESS3-5 Ask questions to clarify evidence of the factors that may have caused a change in global temperatures over the past century

Name_____Date_____Period_____

Global Winds

If you combine the Coriolis Effect with the Uneven Heating of Earth, a global wind pattern begins to emerge and take shape. These Global Winds are the dominant prevailing wind patterns that blow in a constant, steady direction across our earth. Global winds are comprised of three prevailing winds: Tradewinds, Westerlies, and Polar Easterlies. A prevailing wind is defined as a wind that blows predominantly from a single general direction. Global Wind Patterns are important because they distribute and circulate heat from the equatorial regions to the polar regions by convection. Think of these winds as the Earth's heating and air conditioning system. Notice these winds become deflected and appear to "curve" as a result of the Coriolis Effect. In the diagram below, notice the location direction of the Tradewinds, Westerlies, and Easterlies.



1. What happens if you combine the Coriolis Effect with the Uneven Heating of Earth?

2. What are Global Winds?

3. What are the three types of prevailing winds?

4. What are prevailing winds?

5. Why are these global winds important?

	Blow East to West? Blow West to East? Blow East to West?	Blow between 0°-30°? Blow between 30°-60°? Blow between 60°-90°?
Tradewinds		
Westerlies		
Easterlies		

How to read a weather map

By NOAA SciJinks on 09.04.19
Word Count **973**
Level **MAX**

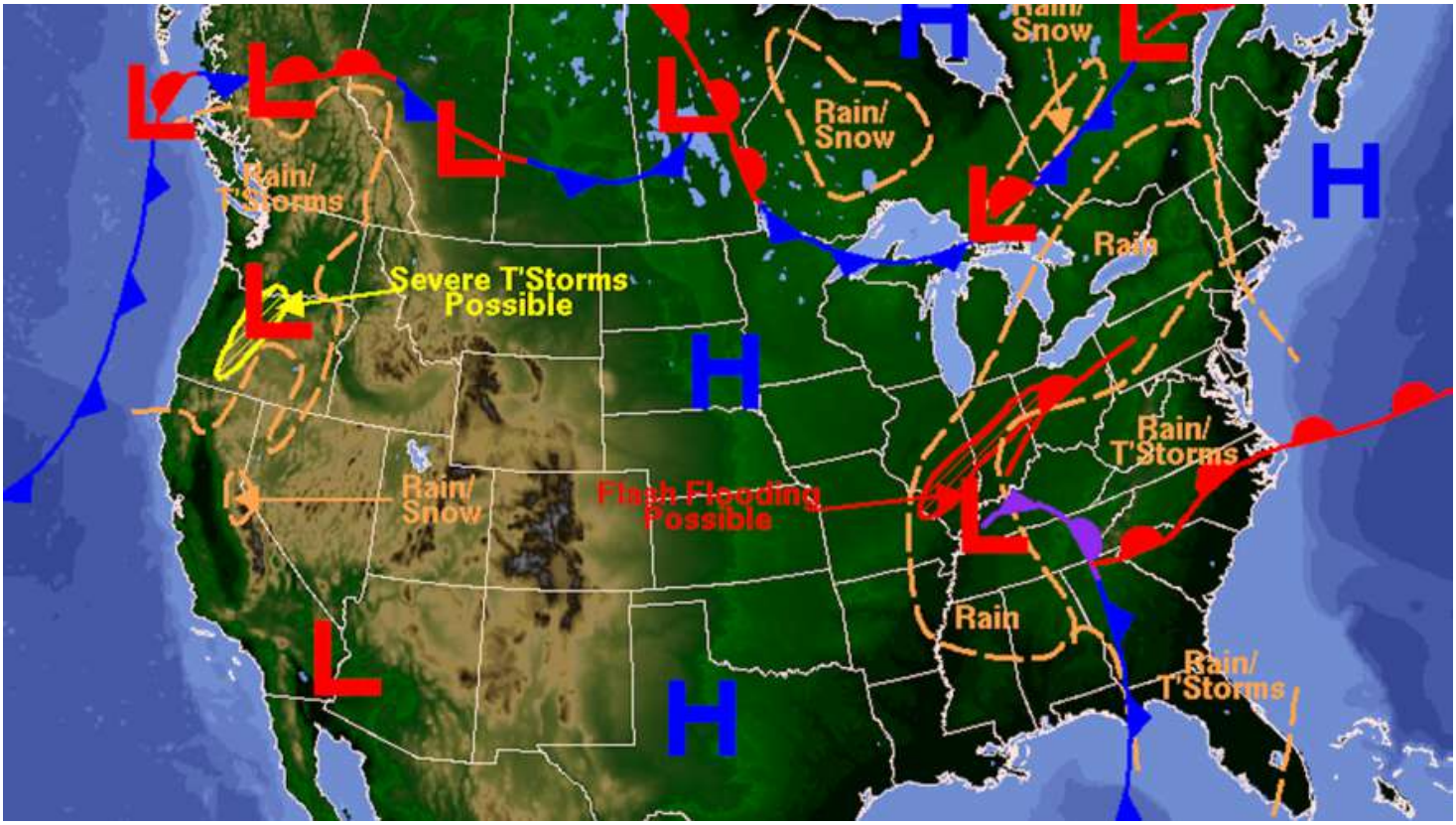


Image 1. Meteorologists use information from weather satellites and ground stations to make weather maps like this one. Photo by: NOAA

If you've looked at a weather forecast on your TV, computer or phone, you've probably seen a weather map.

Meteorologists at the National Weather Service use information from ground stations and weather satellites to make these maps. Words like "rain" and "snow" are pretty obvious. But what exactly do the symbols on a weather map tell you about the weather?

High And Low Pressure Areas

Earth's atmosphere is a jacket of gases that surrounds the planet. Although it seems like these gases could easily float away into space, gravity is constantly pulling the atmosphere toward Earth's surface. The force with which our atmosphere pushes down on a specific location on Earth is called atmospheric pressure.

Atmospheric pressure is mainly dependent on two things: the weight of the atmosphere in a specific location and the temperature of the air. If you're at a low elevation — such as in a valley — there is a lot of atmosphere above you and the weight is very heavy. That means that you

experience higher atmospheric pressure at lower elevations and lower atmospheric pressure in higher elevations.

Warm air can also cause the atmospheric pressure to rise. When the air is warm, gas molecules move around quickly in the air, pushing out on the area around them. This causes high atmospheric pressure. In cold air the gas molecules slow down. This causes low atmospheric pressure.

Water vapor in the atmosphere can also change the atmospheric pressure. Very moist air that has lots of water vapor is actually lighter and less dense than dry air. This is because water molecules are lighter than molecules of nitrogen or oxygen. These are the two most abundant gases in our atmosphere. So, very moist air in the atmosphere can lead to low atmospheric pressure. Very dry air can lead to high atmospheric pressure.

Atmospheric pressure is measured with an instrument on the ground called a barometer. These measurements are collected at many locations across the U.S. by the National Weather Service. On weather maps, these readings are represented as a blue "H" for high pressure or a red "L" for low pressure.

What It Means On The Weather Map

A high-pressure system is a dense air mass that is usually cooler and drier than the surrounding air. A low-pressure system is a less dense air mass that is usually wetter and warmer than the surrounding air.

In general, areas that experience high atmospheric pressure also experience fair weather. Low-pressure systems can cause the formation of clouds and storms. Air usually flows from areas of high pressure to areas of low pressure.

High And Low Pressure Systems: From Space

From high above Earth, satellites such as GOES-16 keep an eye on the weather brought by low-pressure systems. The red "L" on the map above shows a low-pressure system in the Tennessee Valley region.

Cold Fronts And Warm Fronts

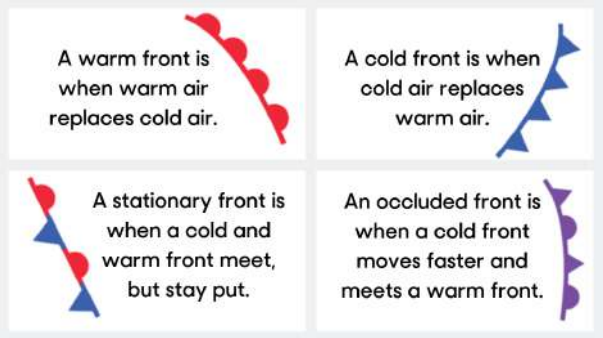
A warm front is the transition area where a mass of warm air moves to replace a mass of cold air. On a weather map, a warm front is usually drawn using a solid red line with half circles. The half circles point in the direction of the cold air that will be replaced. Warm fronts usually move from southwest to northeast. A warm front can initially bring some rain, followed by clear skies and warm temperatures.

A cold front is the transition area where a mass of cold air moves in to replace a mass of warm air. On a weather map, a cold front is usually drawn using a solid blue line with triangles. These triangles point in the direction of the warm air that will be replaced. Cold fronts typically move from northwest to southeast. A cold front can bring cold temperatures, torrential rains and high wind speeds.

A stationary front happens when a cold front and a warm front meet up, but neither moves out of the way. On a weather map, a stationary front is usually drawn using alternating cold front and

warm front symbols. Stationary fronts bring long rainy periods that stay in one spot.

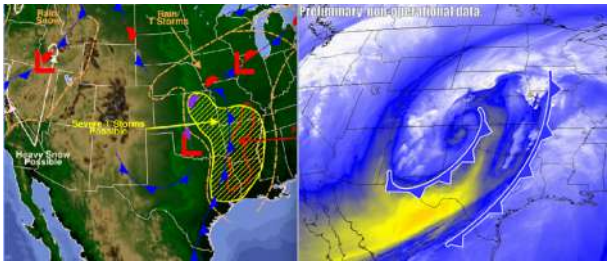
Cold fronts move faster than warm fronts. Sometimes, a cold front catches up to a warm front. When this happens, it's called an occluded front. Occluded fronts are drawn as a solid purple line with half circles and triangles pointing in the direction that the front is moving. An occluded front usually brings dry air.



Cold Fronts And Warm Fronts: From Space

GOES-16 and other weather satellites are also on the lookout for cold fronts and warm fronts and the weather they produce. Below, you can see the comparison of a cold front on a forecast map and a cold front in a satellite image.

Weather Satellites



Information from weather satellites, such as the GOES-R series and JPSS, will help improve our understanding of Earth's weather.

For example, the GOES-R series provides information about atmospheric water vapor and cloud height right now. This can help meteorologists monitor and track severe weather events as they happen. Severe weather events include storms and hurricanes. JPSS satellites survey the entire planet. They continuously provide global atmospheric temperature and water vapor information. This information is needed to create reliable weather forecasts up to seven days in advance!

JPSS and the GOES-R series work together for weather applications. JPSS is critical for getting ready for severe weather events. GOES-R monitors severe weather as it unfolds for real-time warnings.

Quiz

1 One conclusion a reader could make after reading the article is that many factors can cause high atmospheric pressure.

Which of the following statements accurately paraphrases evidence from the article to support the conclusion?

(A) Higher atmospheric pressure is felt at higher elevations, when the air is cold and moist.

(B) Higher atmospheric pressure is felt at higher elevations, when the air is warm and dry.

(C) Higher atmospheric pressure is felt at lower elevations, when the air is cold and moist.

(D) Higher atmospheric pressure is felt at lower elevations, when the air is warm and dry.

2 Read the conclusion below.

Warm fronts and cold fronts that collide without moving can cause unpleasant weather conditions.

Which sentence from the article provides the BEST support to the statement above?

(A) A cold front can bring cold temperatures, torrential rains and high wind speeds.

(B) Stationary fronts bring long rainy periods that stay in one spot.

(C) Sometimes, a cold front catches up to a warm front.

(D) An occluded front usually brings dry air.

3 Read the section "Weather Satellites."

What does this section explain that other sections DO NOT?

(A) what weather satellites can help meteorologists do

(B) what type of weather satellites look at cold fronts

(C) how far in advance weather forecasts can reliably be made

(D) how many weather satellites are found in space

4 How does the section “High And Low Pressure Systems: From Space” relate to the Introduction [paragraphs 1-2]?

(A) The section “High And Low Pressure Systems: From Space” further explains the idea that warm and cold fronts can be seen on weather maps, which was stated in the introduction.

(B) The section “High And Low Pressure Systems: From Space” contradicts the idea that warm and cold fronts can be seen on weather maps, which was stated in the introduction.

(C) The section “High And Low Pressure Systems: From Space” supports the idea that scientists uses weather satellites to help them make weather maps, which was mentioned in the introduction.

(D) The section “High And Low Pressure Systems: From Space” opposes the idea that scientists uses weather satellites to help them make weather maps, which was mentioned in the introduction.

How Does Air Pressure Relate to Weather?

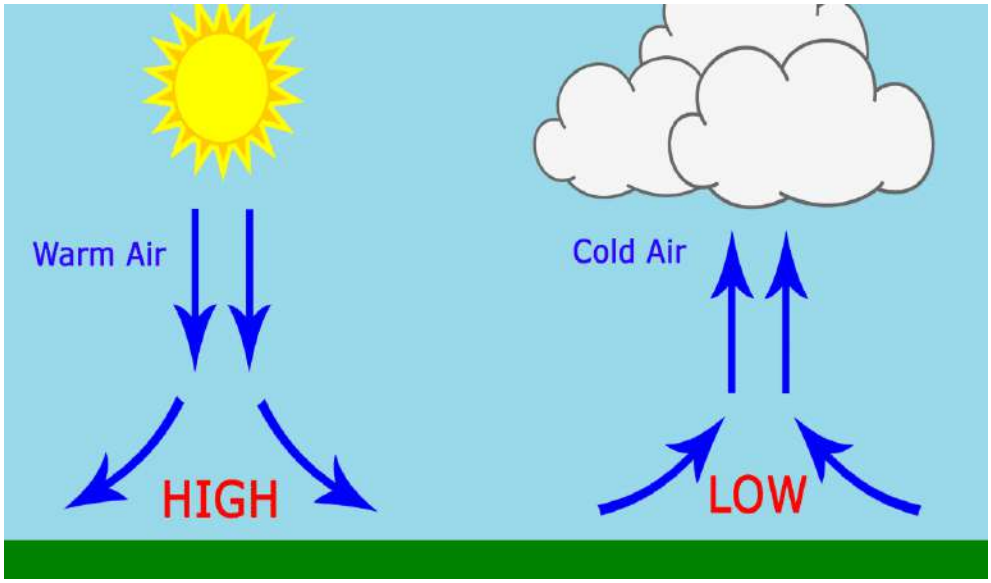
Air pressure is a term used to describe air molecules, which are tiny invisible particles of air. In between all the tiny invisible air particles are empty spaces. When the air molecules bump into each other, they create pressure. The amount of pressure created will depend on how many times the molecules bump into each other.

Air pressure tells us a lot about weather conditions and the type of weather that may be headed in our direction. Air has weight and a meteorologist can predict and forecast the weather using a barometer, which is a special tool used for measuring air pressure.

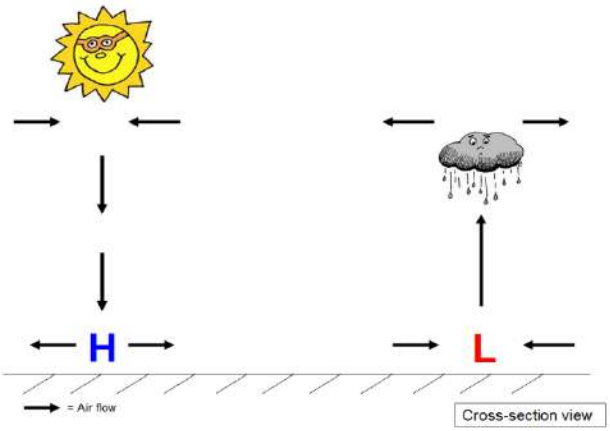
When the air pressure is high, the air is heavier and will sink this causes more force to push the air in a downward motion to the ground, which causes high pressure readings on the barometer. If the meteorologist forecasts a high-pressure system is on its way that usually means clear skies and cool temperatures. When air pressure is high or continually rising, the weather over the next day or two will be dry and on the cooler side.

If the air pressure is low, the air is lighter and will rise, and as the air rises, it will cool and humidity in the air will become visible as clouds and precipitation will accumulate. If the meteorologist forecasts a low-pressure system is on its way you can expect to see warmer weather, rain, and storms. As the air pressure drops, storms will become stronger and more intense such as hurricanes and tornadoes.

Air pressure is an important part of forecasting weather and in some areas can make the difference between life and death. For example, during hurricane season, coastal residents know a hurricane is brewing when air pressure drops dramatically, and they board up their houses and seek safe shelter inland. Residents of the Midwest and Central Plains areas know a tornado is imminent when air pressure drops dramatically, and they take shelter in their cellars.



Name_____
Date_____ Period_____



Short Answer Questions

1. Explain air pressure.

2. Describe weather conditions during periods of high air pressure.

3. How do air molecules produce pressure?

4. Explain how air pressure helps predict the weather.

5. Describe weather conditions during periods of low air pressure.

6. What precautions do coastal resident take during periods of low pressure?

7. What effect does air pressure have on storms?

Distance Learning - 6th Grade Science - April 6th - April 9th

Monday, April 6th - (Global Winds Worksheet)

Directions- *After reading the information on Global Winds, answer the following questions below.*

1. What happens if you combine the Coriolis Effect with the Uneven Heating of Earth?

2. What are Global Winds?

3. What are the three types of prevailing winds?

4. What are prevailing winds?

5. Why are these global winds important?

	Blow East to West? Blow West to East? Blow East to West?	Blow between 0°-30°? Blow between 30°-60°? Blow between 60°-90°?
Tradewinds		
Westerlies		
Easterlies		

Tuesday, April 7th- (NEWSELA- How To Read A Weather Map)

Directions- *After reading the article answer the questions and circle the letter that correlates with the response you chose*.

1.	**A**	**B**	**C**	**D**
2.	**A**	**B**	**C**	**D**
3.	**A**	**B**	**C**	**D**
4.	**A**	**B**	**C**	**D**

Wednesday, April 8th & Thursday, April 9th - (Air Pressure Worksheet)

Directions- *After reading the information on Air Pressure, answer the following questions below.*

1. Explain air pressure.

2. Describe weather conditions during periods of high air pressure.

3. How do air molecules produce pressure?

4. Explain how air pressure helps predict the weather.

5. Describe weather conditions during periods of low air pressure.

6. What precautions do coastal residents take during periods of low pressure?

7. What effect does air pressure have on storms?