

Warm Up -Atmosphere Unit

Turn your measuring homework in -place in your class' bin

1.) What is weather? -the state of the earth's atmosphere at a particular place and time

2.) What do you know about the earth's atmosphere? -the atmosphere is a thin layer of gases that surround the planet

3.) What do you want to learn about the atmosphere?

Sep 9-1:51 PM

Key Vocabulary

- Each person needs 1 piece of plain notebook paper

-Fold your paper long-ways, or "hotdog" style

-Draw 8 evenly-spaced lines across the front fold of your paper (this should make 9 sections)

-Cut along those lines on the front fold only! Do NOT cut both sides of your paper

Front-Vocab word	
Inside flap: picture	Definition
Inside flap: picture	Definition

Sep 9-1:59 PM

Key Vocabulary

Air Pressure -the force exerted by air, whether compressed or unconfined, on any surface in contact with it

Altitude -the height of anything above a reference level, especially above sea level on earth

Atmosphere -the gaseous mass or envelope surrounding the earth, or any celestial body, and retained by the earth's gravitational field

Composition -the combining of distinct parts or elements to form a whole

Density -the measure of how much mass per volume: m/v

Sep 9-2:09 PM

Key Vocabulary

Ozone -a form of oxygen (O₃) found in the troposphere; can be good or bad

Ozone Layer -layer of O₃ in the atmosphere that absorbs UV rays and prevents it from reaching Earth's surface

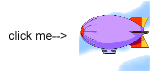
Properties -Scientific properities are energy, matter, space, and time

Temperature -a measure of the warmth of coldness of an object of substance with reference to some standard value

Sep 10-8:30 PM

The Air Around You

The Earth's atmosphere is the covering of gases that surrounds Earth. The **atmosphere** (also called the air) is a very thin covering.



Weather is the condition of the Earth's atmosphere at a particular place and time. **The troposphere is the layer of the Earth where weather occurs.**

The History of our Atmosphere

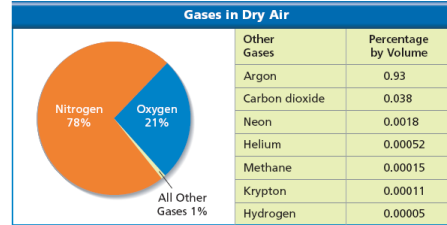
Sep 22-8:26 PM

Composition of the Atmosphere

Earth's atmosphere is made up of nitrogen, oxygen, carbon dioxide, water vapor, and many other gases, as well as particles of liquids and solids.

Oxygen is the second most abundant gas; it makes up about 21% of the atmosphere.

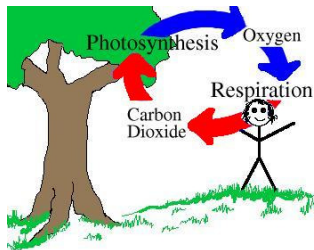
Nitrogen is the most abundant gas in the atmosphere; it makes up 78% of the atmosphere.



-- Copy the pie chart and list the other gases present in our air. You don't have to include the percentages.

Sep 22-8:39 PM

Carbon dioxide is essential to life. Plants must have carbon dioxide to produce food. When the cells of animals break down food to produce energy, they give off carbon dioxide as a waste product. That carbon dioxide is then transported to our lungs where we get rid of it by exhaling.



Sep 22-8:48 PM

Warm Up

- 1.) What instrument do we use to measure air pressure?
- 2.) What do you think happens to the air pressure and temperature as altitude increases?
- 3.) What do you think the air is like on top of Mt. Everest?

Sep 11-2:56 PM

Properties of Air

Air consists of atoms and molecules, which have mass. Because air has mass, it also has other properties, including density and pressure.

Pressure: The force pushing on an area or surface. The weight of the atmosphere exerts a force on surfaces. Air pressure is the result of the weight of a column of air pushing down on an area.

Barometer (buh rahm uh tur): an instrument that is used to measure air pressure. Two common kinds of barometers are mercury barometers and aneroid barometers.

A denser substance has more mass per unit volume than a less dense one. So denser air exerts more pressure than less dense air.

WHAT?!?!?

Let me quickly explain...

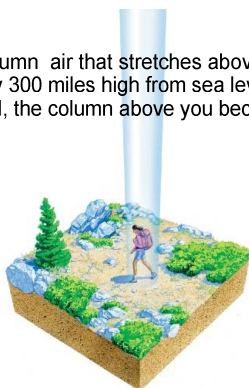
Sep 22-9:01 PM

Sep 25-10:56 PM

Think of a column air that stretches above you that is approximately 300 miles high from sea level. As you move to higher ground, the column above you becomes less.

Click paragraph above for demo...

Click picture for 7 minute video...



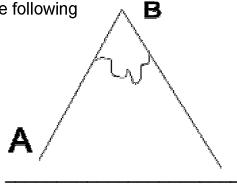
3 Main Points!!!

- As altitude increases, air pressure decreases
- As altitude increases, temperature decreases
- As air pressure decreases, so does density

Sep 25-11:31 PM

Sep 10-3:59 PM

Use your notes and this picture to answer the following questions.



1. Where is altitude or elevation greatest?
2. Where is air pressure greatest?
3. Where does air have less mass?
4. Where are oxygen molecules farther apart?
5. Where is the temperature the coldest?
6. Where would air seem the heaviest?
7. Where might a hiker have the most difficulty breathing?
8. If air pressure is constantly pushing down why doesn't it crush things such as a tin can or hollow objects?
9. As you move toward sea level, from B to A, what will happen to the air pressure and the air temperature?

1. B
2. A
3. B
4. B
5. B
6. A
7. B
8. Because air is pushing from all directions and is balancing out.
9. Both will increase and become greater

Sep 10-4:35 PM

As altitude increases, temperature decreases. At higher altitudes the air is thinner and colder than at lower altitudes. The air drops 3° for every 1,000 feet of altitude above sea level. (This rule is not accurate for altitudes above 40,000 ft)

Calculate the temperature at each altitude given.

Temperature	Altitude	Temperature @ altitude
32°	1,000 feet	29°
47°	3,300 feet	37°
66°	2,600 feet	58°
76°	39,999 feet	-44°
21°	16,900 feet	-29°

(answers are rounded)

Sep 10-4:44 PM

Warm Up!

- 1.) When referring to UV radiation, what does the "UV" stand for? ultraviolet
- 2.) Where does UV radiation come from? the sun
- 3.) What could happen if you are exposed to too much UV radiation? sunburn, skin cancer, eye damage
- 4.) What might protect us from UV radiation? Sunscreen, hats, sunglasses, ozone

Sep 8-8:54 PM

Ultraviolet Radiation background information:

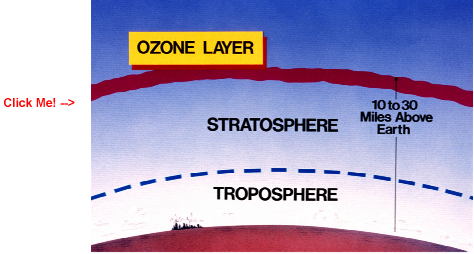
Sunlight is the greatest source of UV radiation. Man-made ultraviolet sources include several types of UV lamps. UV radiation is commonly used in industrial processes and in medical and dental practices for a variety of purposes, such as killing bacteria, creating fluorescent effects, welding, phototherapy and sun tanning.

Sep 8-9:14 PM

The sun radiates energy in a wide range of wavelengths, most of which are invisible to human eyes. The shorter the wavelength, the more energetic the radiation, and the greater the potential for harm. Living things and the cells they are made of are protected from large amounts of UV radiation by a chemical called **ozone**. A layer of ozone in the upper atmosphere absorbs UV radiation and prevents most of it from reaching the Earth. Without the layer of ozone in the stratosphere to protect us from excessive amounts of UV-B radiation, life as we know it would not be the same. Ozone can be good or bad, depending on where it is found.

Sep 8-9:14 PM

Most oxygen molecules have two oxygen atoms. Ozone is a form of oxygen that has three oxygen atoms in each molecule instead of the usual two.



The diagram shows a cross-section of the Earth's atmosphere. At the bottom is the Earth's surface. Above it is the Troposphere, indicated by a dashed blue line. Above the Troposphere is the Stratosphere, indicated by a solid blue line. At the top of the Stratosphere is the Ozone Layer, highlighted in a yellow box. A vertical line indicates the height of the Ozone Layer as '10 to 30 Miles Above Earth'. A red arrow points to the Ozone Layer with the text 'Click Me! ->'.

Sep 25-9:58 PM

Good vs. Bad

Good ozone (stratospheric ozone)- shields us from the sun's UV rays. It is found 10-30 miles above Earth's surface in the stratosphere.

Bad ozone (tropospheric ozone)- found in the lower atmosphere, near the ground, is formed by cars, power plants, chemical plants and other sources that react in the presence of sunlight. It is a greater concern in areas with higher temperatures and higher pollution.

Sep 8-9:24 PM

Who is at the highest risk for damage from the ozone?

- Children who spend a lot of time playing outdoors in the summer.
- Anyone who has asthma or other respiratory disorders.
- Adults of all ages who work vigorously outside.

Ozone is like sunburn for the lungs. The only difference is that the lungs have no nerves, so you can't feel the pain.

Sep 8-9:24 PM

Dear 16 Year Old Me

This is a video about skin cancer and how it can affect us. The video will also discuss ways we can work to prevent skin cancer and what signs to look out for.

This video can be emotional, especially if you've known someone affected by skin cancer. If at any moment you want/need to leave the room due to the video, please do.

Sep 10-9:51 PM

Sep 9-2:18 PM