**NOTES: The Atmosphere – Chapter 11 Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Per: \_\_\_\_**

What does the atmosphere do for the Earth?

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Where did the ancient atmosphere originate? (Describe in your own words)

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How did it become the “modern” atmosphere we lived in?
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How is the atmosphere measured?

Temperature - measured by \_\_\_\_\_\_\_\_\_\_\_( Celsius, Farenheit, Kelvin)

Pressure - measured by a \_\_\_\_\_\_\_\_\_\_\_\_(atmospheres, psi, mmHg, cmHg, millibars,etc.)

**There are many ways to analyze the Earth’s atmosphere**

**Analysis of Earth’s atmosphere by Chemical composition** of the lower layers (troposphere, stratosphere, mesosphere) is generally homogeneous (the same composition).

\_\_\_\_\_\_\_\_\_\_ Nitrogen gas (N2)

\_\_\_\_\_\_\_\_\_\_ Oxygen gas (O2)

\_\_\_\_\_\_\_\_\_\_OTHER: ( Argon 0.93%, Carbon dioxide 0.03%, water 0 - 4%, Ne, He, Kr, Xe, H2, O3 -- OZONE)

**Changing Atmosphere** –

Currently \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ adds oxygen and removes carbon dioxide while \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ does the opposite. Carbon Dioxide traps \_\_\_\_\_\_ .

Other things we find in the atmosphere are dust, ice, chemical pollutants (NO, SO and others) and CFC’s

CFC’s are compounds found in Styrofoam and propellant sprays that \_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_ between molecules of oxygen in Ozone (O3), creating “holes”.



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**How is the Ozone critical to Life on Earth?**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

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**By Temperature trends**

**Mnemonic: “TR u ST ME IN TH e EX am ”**

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**Changing Atmosphere** – The chemical composition of the atmosphere is changed by what is added to it and what is taken away.

PHOTOSYNTHESIS\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

RESPIRATION \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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LAYERS OF THE ATMOSPHERE

The layers of the atmosphere are determined by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in relationship to the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is known as the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

A \_\_\_\_\_\_\_\_\_\_ in the temperature line is called a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**T\_\_\_\_\_\_\_\_\_\_\_\_**: The layer we live in. In this layer we see a cooling trend as we rise in altitude. This is the normal lapse rate. It is the layer closest to the Earth’s surface and contains most of the water (due to its position next to the oceans) found in the atmosphere. The Earth’s weather and life is found in this layer.

**S\_\_\_\_\_\_\_\_\_\_\_\_\_**: This layer is “thinner” (less dense) than the troposphere below it. It has the majority of the ozone found in this layer. The ozone absorbs much of the UV energy that comes from the sun. In this layer we see a warming trend as we increase the altitude.

**M\_\_\_\_\_\_\_\_\_\_\_\_\_:** This layer is even thinner (Less dense) than the stratosphere below it. There is less than 1/10 of 1% of the air molecules in this layer. There is a cooling trend as the altitude increases. Air temperature reaches its coldest at the top of the mesosphere (-90 degree C).

**T\_\_\_\_\_\_\_\_\_\_\_\_:** This layer is extremely thin, the atoms and molecules in this layer are constantly bombarded with energy from the sun. This causes the atoms and molecules to become ions. The temperature trend here increases with altitude ( temperature is a measure of the average kinetic energy of atoms/molecules), but there are so few molecules that we wouldn’t encounter enough to transfer heat to our skin.

**\_\_\_\_\_\_\_\_\_\_\_**: This layer fades out to space. Earth’s gravity can’t always hold on to the molecules here.

*Other “hidden” layers that overlap are. . .*

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Found at the top of the Stratosphere, this layer especially protects us against radiation.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Found at the top of the Mesosphere and Bottom of Thermosphere, this layer is Ionized (charged

 with energy) and can transmit/reflect electronic signals sent from earth to other areas on earth.

\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_ is at the top of the Thermosphere, and officially marks the “end” of what matter belongs to earth via gravity.

YOU WILL NEED TO CREATE A DRAWING (8.5 by 11 inches) OF THE NEXT IMAGE IN THE POWERPOINT – IN COLOR.

It is also on the website

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What happens to the number of molecules as altitude increases? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**By Mass -** \_\_\_\_\_\_\_\_\_\_\_ of the mass is in the troposphere alone!



**By Density – Pressure \_\_\_\_\_\_\_\_\_\_\_ with altitude. So,**

The closer to the surface you are, the \_\_\_\_\_\_\_\_ dense the air

 and the \_\_\_\_\_\_\_\_\_the air pressure. In a closed container, as

temperature increases, the pressure \_\_\_\_\_\_\_\_\_\_\_\_. In nature,

High pressure weather = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ weather. And…

Low pressure weather= \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ weather. Why? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Find out on your own:**

**By Mass**

\_\_\_\_\_\_\_\_\_\_\_ of the mass is in the troposphere

\_\_\_\_\_\_\_\_\_\_\_ of the mass is in the stratosphere

\_\_\_\_\_\_\_\_\_\_\_ of the mass is in the mesosphere, thermosphere and exosphere combined

**By density** The closer to the surface you are the \_\_\_\_\_\_\_\_\_\_ dense the air and \_\_\_\_\_\_\_\_\_the air pressure. The troposphere has the greatest density and the exosphere has the least density.