**Our Atmosphere**

**Earth Science, Mr. Lanik**

The atmosphere that surrounds the Earth today contains a number of unique chemicals (gases) that are necessary for the survival of (most) living things on our planet. The gases that make up the atmosphere are held close to the Earth’s surface by the force of gravity, and the densities of these gases vary depending on their height above the Earth’s surface. Temperature, air density, and air pressure play significant roles in the movement of gases through the atmosphere, for the same reasons that the movements of the waters of the ocean depend on temperature and density variations within the sea. Air pressure decreases rapidly as you move away from the Earth’s surface, but the relationship between air temperature and elevation is more complicated. Scientists have divided the atmosphere into four different regions, or layers, based on the varying air temperatures above the Earth’s surface.

I) In the space below, make a diagram that shows

a) The locations of the Troposphere, Stratosphere, Mesosphere, and Thermosphere above the Earth’s surface (in miles)

b) The average air temperature in each region.

Page 480 of the text might be useful

II) Now, let’s do some internet research and find information about the **10** most common gases found in our atmosphere today. Use the table below to record your work. List the gases in order from highest percentage of the atmosphere to lowest percentage of the atmosphere. Note that you might need to include many decimal places in recording these percentages!

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| **Name of Gas** | **Chemical Formula** | **Percentage of the Atmosphere** | **Is this a Green-house Gas?** |
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Note that there is a difference between “Dry” air and the air that surrounds us everyday. What is this difference? Why is it difficult for scientists to state exactly how much water is in the air?

III) Let’s use the data that we have gathered on the chemical composition of the atmosphere to make a Pie Chart. The Pie Chart will provide us with a visual representation of the gases found in the air.

Go to the website “Create a Graph” at

<https://nces.ed.gov/nceskids/createagraph/default.aspx>

and click on the “Pie” icon. Title the graph “Composition of the Atmosphere by Gas” and enter the data that you gathered about the 12 most common gases in the atmosphere. The “Data” tab on the right allows you to name and assign numerical “percentage” values to your chart.

Your pie chart should include the names of the 12 most common gases in the atmosphere, as well as each gas’ percentage of the total amount of gas in the atmosphere. Once you are satisfied with your preview, save a copy of the final pie chart to your hard drive.

Use the information that you have gathered to answer the questions on the next page.

Questions

1) Which two gases are most abundant in our atmosphere? How much (what percentage) of the atmosphere is made up by these two gases?

2) Which gas is produced during plant respiration? Reduced?

3) Which gas is produced during animal respiration? Reduced?

4) If energy from the sun was blocked for a long period of time by thick cloud cover, what changes might happen to the composition of gases in the atmosphere? Why?

5) If these changes in the chemical make up of the atmosphere happened, how might life on Earth be impacted? Explain.

6) The temperature of the oceans is increasing. How might rising ocean temperatures change the chemical composition of the atmosphere? Explain.