Composition and Structure of Earth's Atmosphere

Earth Science   Mr. Traeger

Name: _____   Period: ____   Date: _____

Purpose
The purpose of this activity is to become more familiar with the composition and structure of Earth's atmosphere.

Materials
- Temperature/Elevation Sounding
- Textbook Section 22.1

Part 1: Composition and Basics of the Atmosphere

1. How was the Earth's atmosphere thought to have formed?

2. What is the basic chemistry of the Earth's atmosphere? Draw a pie chart below to detail the relative percentages of each gas.

3. What is air pressure caused by?

4. How does air pressure change as you go higher in the atmosphere? How does this affect the temperature of the air?

5. Analyze the graphic on page 548. Describe the pathways (sources and sinks) of carbon dioxide (CO_2), water (H_2O), and oxygen (O_2) throughout the atmosphere.

Part 2: Heat and Temperature in the Atmosphere

1. What are the three methods of heat transfer? Describe them.

2. What is the difference between heat and temperature?

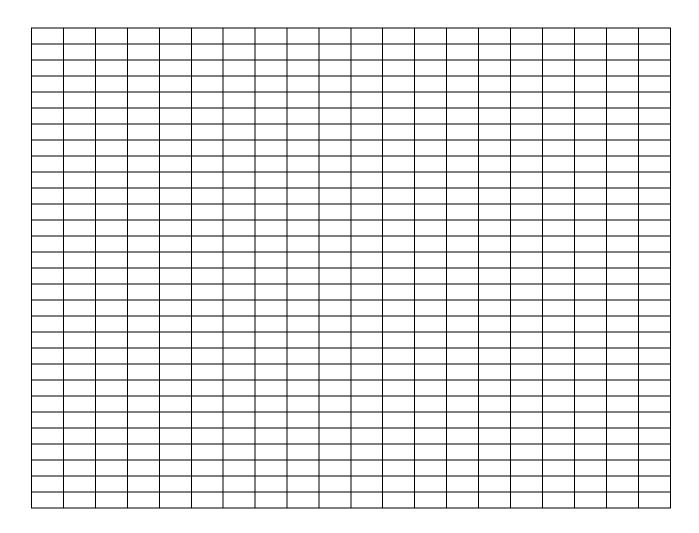3. What is a temperature inversion in the atmosphere? How does this contribute to air pollution?

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Part 3: Structure of the Atmosphere

1. Make a graph of the following data table. Place Temperature (°Celsius) on the x-axis and Height above ground (kilometers) on the y-axis.

T	20	-50	-60	-57	-40	-20	-10	-15	-40	-70	-90	-100	-90	-10	60	?
H	0	10	15	20	30	40	45	50	60	70	80	90	100	110	115	120

2. Now, analyze your graph. What happens to temperature as height increases? What happens to air pressure as height increases? What does air pressure have to do with temperature?

3. What criteria would you use to divide the atmosphere into vertical layers? Use these criteria to draw layers (in pencil) on your graph. Remember that **Tr**aeger **St**udies **Me**ga **Th**understorms **Ex**uberantly!

4. Now look at pages 552 to 553 of your textbook. Did your layers match the criteria that the book outlines? If so, label and draw the different layers on your graph. Highlight the major characteristics of each layer.