Evolution of Earth's Atmosphere Graph

Name:
Period:

Procedure

Figure 1 below illustrates the composition of the atmosphere at different times in the planet's history. Plot the percentages of the gases on the graph provided. Your graph should be a **cumulative** graph.

First observe that the amount of carbon dioxide in the atmosphere 4.5 billion years ago was 80 percent. Plat that number in the appropriate space on the graph. The next gas in the chart is nitrogen. Using a different color, plot a point 10 points higher on the graph at 80+10=90%. Proceed with the other gases in this manner. Use a different color to plot the points for each graph.

After all the points are plotted, connect the points for each gas, producing a curve for each. Color the areas representing different gases. For example, the area beneath the line drawn for the carbon dioxide represents the proportion of carbon dioxide in the atmosphere. Shade this space with the color you used when plotting the points. Label all gases

Once the graph is complete give it a name and plot the geological events as a timeline on the graph.

Composition of Earth's Atmosphere from Earth's formation until present

Billions of years before present

	4.5	**4.0**	**3.5**	**3.0**	**2.5**	**2.0**	**1.5**	**1.0**	**.5**	**present**
Carbon Dioxide	80%	20%	10%	8%	5%	3%	1%	.07%	.04%	.025%
Nitrogen	10	35	55	65	72	75	76	77	78	78
Hydrogen	5	3	1	.5	0	0	0	0	0	0
Oxygen	0	0	0	0	0	1	5	10	15	21
Other	5	42	34	26.5	23	21	18	12.93	6.96	.975

Major Geological Events in Earth's History

Geological Event	**Billions of Years Ago**
Origin of Earth	4.5
Formation of oldest known bedrock	3.9
First evidence of organic matter in rocks	3.7
Photosynthesis evolves in plants	3.0
Limestone deposits become common	1.8
Many fossils of marine invertebrates	.55
Earliest land plants	.44
Earliest land animals	.40
Dinosaurs dominant	.17

Use the graph to answer the following questions

1. How old is the Earth?

2. What gas has made up the largest portion of Earth's atmosphere for most of Earth's history?

3. Which gas appeared in the atmosphere about the time when limestone deposits became common?

4. How does the appearance of photosynthetic plants relate to the increase in atmospheric oxygen and the decrease in carbon dioxide?

5. If the trends seen in the graph continue, how will Earth's atmosphere change in the next 500 million years?