Bingo: The Evolution of Earth’s Atmosphere

Directions: Answer each true or false question below.

Questions

1. True or False: Earth's second atmosphere was made mostly of nitrogen and methane.

2. True or False: The second atmosphere on Earth developed from gases that came from volcanoes and outgassing of Earth's interior.

3. True or False: Stromatolites began photosynthesis on Earth about 3.5 billion years ago.

4. True or False: Photosynthesis was important to the evolution of Earth's atmosphere because it led to increased carbon dioxide.

5. True or False: Reaction of water vapor with ultraviolet light was the first means of free oxygen becoming available on Earth.

6. True or False: Over geologic time, Earth's atmosphere evolved from a water vapor and carbon dioxide rich atmosphere to an oxygen-rich atmosphere.

7. True or False: Once photosynthesis began, free oxygen began accumulating at high levels immediately in the atmosphere.

8. True or False: Earth's atmosphere was very oxygen rich by the beginning of the Archean Eon.

9. True or False: Earth's atmosphere during the Hadean was dominated by water vapor and carbon dioxide.

10. True or False: Once free oxygen accumulated in the atmosphere, the ozone layer was destroyed, allowing life outside of the oceans.

Answers

1. False
Feedback: Earth's second atmosphere was made mostly of water vapor, with smaller amounts of carbon dioxide and methane. These gases came from outgassing from volcanoes.

2. True
Feedback: Earth's second atmosphere was made mostly of water vapor, with smaller amounts of carbon dioxide and methane. These gases came from outgassing from volcanoes.

3. False
Feedback: Stromatolites first emerged about 2.7 billion years ago.

4. False
Feedback: Photosynthesis gives off oxygen and consumes carbon dioxide. It led to an increase in oxygen and a decrease in carbon dioxide.

5. True
Feedback: Water vapor in Earth's early atmosphere was attacked by ultraviolet light and broken down into free oxygen and hydrogen.

6.True
Feedback: Earth's earliest atmosphere was from volcanic gases like water vapor and carbon dioxide; later it evolved into an oxygen-rich atmosphere.

7. False
Feedback: Free oxygen first began to combine with iron in the oceans; once all the iron had been reacted, then oxygen began building up in the atmosphere.

8. False
Feedback: Earth's atmosphere was not very oxygen rich until the end of the Proterozoic Eon.

9. True
Feedback: Earth's early atmosphere was made mostly of carbon dioxide and water vapor from volcanic outgassing.

10. False
Feedback: Accumulations of free oxygen in the atmosphere allowed the development of the ozone layer.