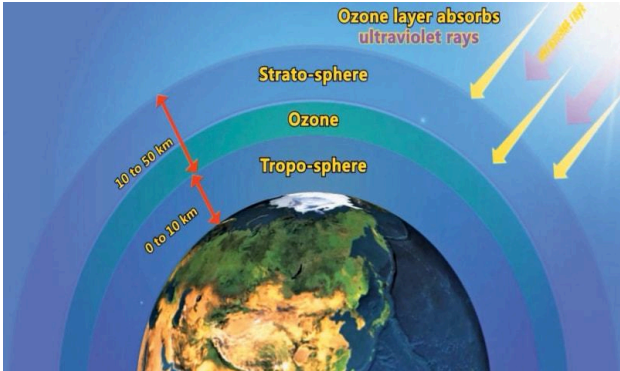


Coevolution of Life and Earth Test

1. Read the information about an event in Earth’s history on the card, below.



Over two billion years ago, early organisms called blue-green algae began using energy from the Sun to turn molecules of water (H₂O) and carbon dioxide (CO₂) into carbon-based molecules and oxygen (O₂). This process is known as photosynthesis. Some of the created oxygen began to build up in the atmosphere. As oxygen in the atmosphere increased, CO₂ decreased.

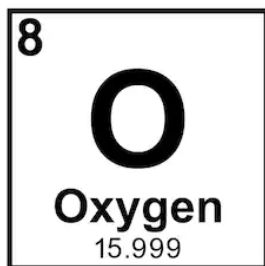
High in the atmosphere, some oxygen (O₂) molecules absorbed energy from the Sun's ultraviolet (UV) rays and came apart to form single oxygen atoms. These atoms came together with oxygen (O₂) to form ozone (O₃) molecules, which are very good at absorbing UV rays. The thin layer of ozone that surrounds Earth acts as a shield, protecting the planet from UV light.

The amount of ozone needed to shield Earth from deadly UV radiation, wavelengths from 200 to 300 nanometers (nm) in length, is believed to have been present 600 million years ago. At this time, the oxygen level was approximately 10% of its what it is, today. Before this time, life was only in the ocean. The ozone allowed organisms to live on the land.

2. Demonstrate your ability to argue from evidence by filling in the table, below. Use your packet to help you fill in the table.

Claim	Evidence	Reasoning
I believe the event on the card, above, would have occurred between the events on cards _____ and _____.	<u>Information from the cards</u> that tells me the event, above, happened between the events on cards _____ and _____ is...	Based on my evidence, I think the event, above, happened between the events on cards _____ and _____ because...

3. Read the information about an event in Earth's history on the card, below.



Some scientists think a rise in oxygen levels paved the way for complex life to form. In 2014 scientists found evidence of oxygen levels on Earth **before** Snowball Earth happened. They studied chromium in ancient rocks, and figured out that until 800 million years ago, atmospheric oxygen levels were just one-hundredth of today's levels.

Scientists think that level of oxygen is far too low to support complex animal life. In today's low-oxygen environments there is less ecosystem complexity, so it is reasonable to expect that an oxygen rise **after** Snowball Earth melted paved the way for animals and ecosystems to become more complex.

But there's a problem with that idea. Other experiments in 2014 showed that some animals can survive with much less oxygen than previously thought. Sponges, one of the oldest kinds of animal, need just 0.5% of today's oxygen levels. That suggests oxygen wasn't enough of a trigger.

4. Using the information from 1) the event on the card, above, 2) the information from the event on card G, and 3) any other cards you think relate to complex life, say whether you agree with the given claim citing evidence from the cards and explaining your reasoning.

Claim	Evidence and Reasoning
A rise in oxygen levels caused complex animal life to form.	<p>I (circle one: agree or disagree) with the claim, because on the cards it says...</p> <p>This makes me think that the formation of complex animal life was caused by... because...</p>

5. List one way, according to your created timeline, that the planet Earth caused a change in life.

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6. List one way, according to your created timeline, that life caused a change in planet Earth.

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Reflection on Learning:

Write in complete sentences. At least one paragraph of reflection is required for each question. This paragraph may be written, typed, or spoken directly to the teacher. (Writing should be done on a separate sheet of paper and stapled to this test. Typing should be submitted to Google Classroom.)

- What did you figure out about the BIG IDEA?
- What evidence, from your work, demonstrates that you are proficient at the SCIENCE SKILL?
- How can understanding the SCIENCE CONCEPT help us explain things, other than the BIG IDEA, that we see and experience in the world around us?