



High School Science Virtual Learning

Earth Science

Earth's Atmosphere

April 17, 2020



High School Earth Science

Lesson: April 17, 2020

Objective/Learning Target:

Students will be able to describe the properties of Earth's atmosphere and its influence on the conditions that enable life to exist on Earth.



Let's Get Started:

Read this article: [Link to Article](#)

Thought Questions:

1. How did the atmosphere of the early Earth differ from that of today?
2. What other planets in the solar system have atmospheres similar to Earth's?



Let's Get Started: **Answer Key**

1. Question 1- it had hydrogen sulfide, methane and 10 to 200 times as much carbon dioxide as the modern atmosphere does
2. Question 2 - No other planet in the universe has an atmosphere like Earth's. Mars and Venus have atmospheres, but they cannot support life because they don't have enough oxygen.



Lesson Activity: Review of the atmosphere and preview of weather and climate

Directions: Watch the Video “The Atmosphere”

[Link to video](#)

Complete the questions on the following slides.



1. How does the presence of ozone in the stratosphere protect life on Earth?
2. List the five layers (spheres) of the atmosphere.
3. Distinguish between weather and climate.
4. How do convective cells influence weather and climate?
5. How does the coriolis effect influence global convective cells?



Answers

1. How does the presence of ozone in the stratosphere protect life on Earth?
Ozone absorbs harmful radiation from the sun.
2. List the five layers (spheres) of the atmosphere. **Troposphere, stratosphere, mesosphere, thermosphere, exosphere**
3. Distinguish between weather and climate. **Weather is the condition of the atmosphere in the short term while climate is the average weather conditions over a longer period of time.**
4. How do convective cells influence weather and climate? **They redistribute heat throughout the atmosphere affecting temperature, humidity, and wind.**
5. How does the coriolis effect influence global convective cells? **It causes their movement to deflect from a North-South direction toward a more Easterly-Westerly direction.**

Extension: Quiz Questions: The Atmosphere

1. The gas which comprises most of the atmosphere is:
 - a. Oxygen
 - b. Carbon
 - c. Nitrogen
 - d. Helium
2. The top three gases in the atmosphere are
 - a. Nitrogen, Oxygen, and Carbon Dioxide
 - b. Nitrogen, Argon, and Oxygen
 - c. Oxygen, Neon, and Argon
 - d. Helium, Nitrogen, Carbon Dioxide
3. The _____ is the outermost layer of Earth's atmosphere.
 - a. Troposphere
 - b. Stratosphere
 - c. Exosphere
 - d. Thermosphere

4. The layer of the atmosphere where most of the world's weather occurs is:
 - a. Stratosphere
 - b. Troposphere
 - c. Hemisphere
 - d. Thermosphere
5. The boundary between the troposphere and stratosphere is called the:
 - a. Tropopause
 - b. Stratopause
 - c. Mesopause
 - d. Tempopause
6. The tropopause is highest at the north and south poles. (TRUE, FALSE)
7. It is _____ (easier/harder) to breathe on top of Mount Whitney (elevation 14,494 ft/4418 m) than at sea level because there is _____ (less/more) oxygen molecules at the summit.



8. **Moist air weighs less than dry air. (TRUE, FALSE)**
9. **Air pressure is measured with**
 - a. a barometer.
 - b. an altimeter.
 - c. a wind vane.
 - d. an anemometer.
10. **You notice on a barometer that air pressure has been decreasing rapidly. The type of weather that would normally be expected to occur would be:**
 - a. Fog
 - b. Drizzle
 - c. Clear skies
 - d. Thunderstorms
11. **If you feel the heat in the handle of a cooking pot, that heat was transferred to the handle by:**
 - a. Radiation
 - b. Convection
 - c. Conduction

12. Heat travels through empty space by:
- a. Evaporation b. Conduction c. Convection d. Radiation
13. A sunburn is caused by which method of heat transfer:
- a. Radiation b. Convection c. Conduction
14. Light colored objects absorb radiation _____ (faster/slower) and emit radiation _____ (faster/slower) than dark colored objects.
15. At night, temperatures will normally be higher under cloudy skies than under clear skies. (TRUE, FALSE)

16. The hydrologic cycle is:
- a. Evaporation, condensation, precipitation
 - b. Convection, conduction, condensation
 - c. Rain, sunshine, condensation
17. The process of water changing from a liquid to a gas is called _____.
- a. Condensation
 - b. the water cycle
 - c. Evaporation
 - d. Precipitation
18. The brief cloud that forms when you exhale on a cold winter day was formed because of:
- a. Evaporation
 - b. Condensation
 - c. Precipitation
 - d. Runoff



19. There is more water in the atmosphere than in glaciers & icecaps. (TRUE, FALSE)
20. One inch of rainfall over one square mile is how many gallons of water?
- a. 17,400 b. 174,000 c. 1,740,000 d. 17,400,000
21. The region of the atmosphere that reflects radio signals is the _____.
- a. Ozone b. Tropopause c. Stratosphere d. Ionosphere

Answers

- | | | | |
|-----|--------------|-----|----------------|
| 1. | C | 11. | C |
| 2. | B | 12. | D |
| 3. | C | 13. | A |
| 4. | B | 14. | Slower, slower |
| 5. | A | 15. | True |
| 6. | False | 16. | A |
| 7. | harder, less | 17. | C |
| 8. | True | 18. | B |
| 9. | A | 19. | False |
| 10. | D | 20. | D |
| | | 21. | D |



Extension:

Video: Reveal Earth's Atmosphere | National Geographic

[Link to video](#)