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Show What You Know for the Atmosphere Test

1. What is the relationship between altitude and density of air?

When the altitude increases, the density of air will decrease.

2. Would it be more difficult to breathe at in the Sahara Desert or the top of Mount Everest? Why?

It is more difficult to breathe in high altitudes (Mount Everest) because the air is less dense and there is less oxygen available.

3. According to Bill Nye, where is there more pressure - the Sahara Desert or the top of Mount Everest? Why?

There is more pressure in the Sahara Desert because it is at a lower altitude and there is more air pushing down on you.

4. What are the gases found in the atmosphere? List them in order from most abundant to least with the percentages.

The gases found in our atmosphere are nitrogen (78%), oxygen (21&), and trace gases (1%).

5. What are three "SUDDEN CHANGES" that can happen to change the composition of the atmosphere?
   - *Volcanic eruptions*
   - *Forest fires*
   - *Dust/sand storms*

6. What particles can be found in the atmosphere?
   - *Dust*
   - *Salt*
   - *Ash*

7. What are two ways the atmosphere supports life?
   - *The atmosphere keeps temperatures from getting too hold or too cold.*
   - *The atmosphere supports the water cycle.*

8. What is ozone? How can it be both 'good' and 'bad'?

Ozone is a colorless gas that is made up of three oxygen atoms. It can be helpful when in the stratosphere where it blocks ultraviolet radiation from the Sun. It is harmful to humans when they come into contact.

9. What and where is the ozone layer? From what form of radiation does it protect us?

The ozone layer is in the stratosphere. It protects us from ultraviolet radiation.

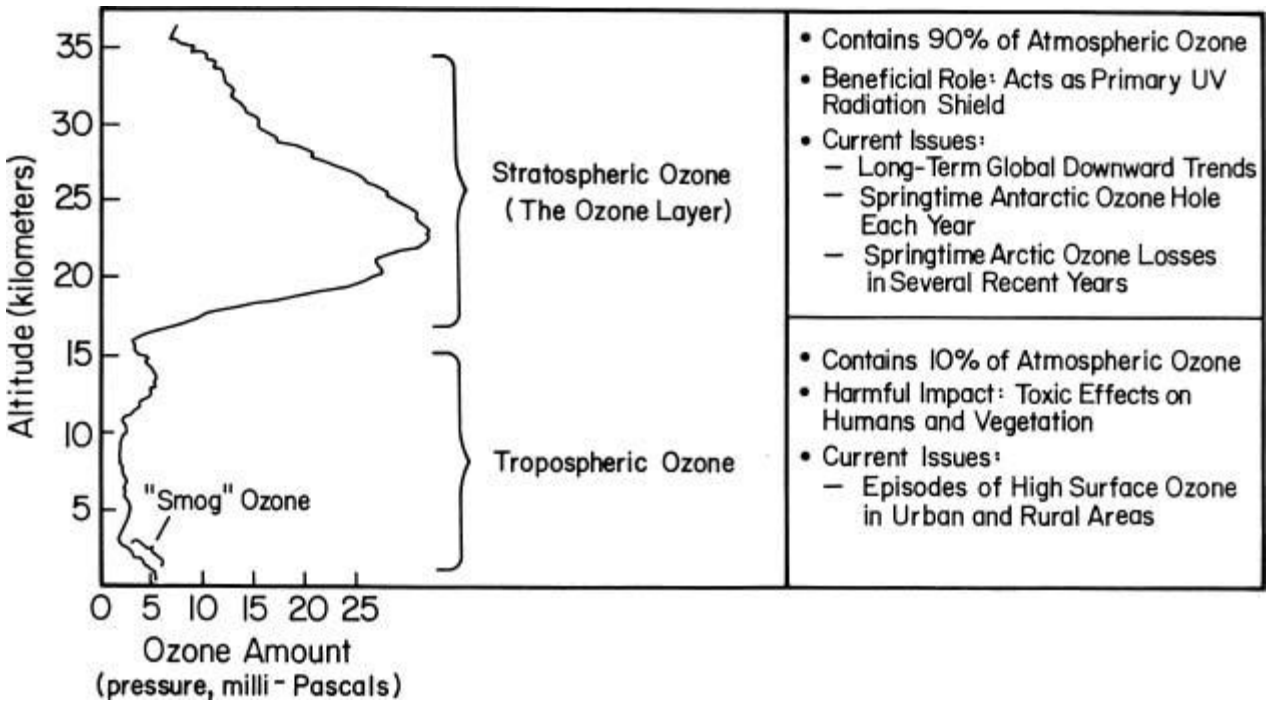
10. Complete the chart below in order beginning with the layer closest to Earth's surface.

Layer Name	What does the name mean?	2 Facts
Troposphere	*Turning or changing*	• *Where we live* • *Where weather occurs*
Stratosphere	*Spreading out*	• *Ozone layer is found here* • *Temperatures get warmer as you get higher*
Mesosphere	*Middle*	• *Meteors burn up when they pass through this layer* • *Found in the middle of the atmosphere*
Thermosphere	*Heat*	• *Has the warmest temperatures in the atmosphere* • *Auroras are light shows*
Exosphere	*Outside*	• *Gradually fades into space* • *Satellites orbit the Earth*

11. What concern do scientists have with the ozone layer? What is one cause of this concern?

Scientists are concerned that the ozone layer is getting thinner which they call a 'hole'. Gases such as carbon dioxide and CFCs (Styrofoam, aerosol cans, refrigerant) break down the ozone gas causing it to thin out.

The following graph measures the amount of ozone in the atmosphere. Use the graph to answer the following questions.



12. At which altitude do you find smog ozone?
Smog ozone is found at about 2-3 km.

13. What percent of ozone do you find in the stratosphere where the ozone layer is found?
About 90% of ozone is found in the stratosphere.

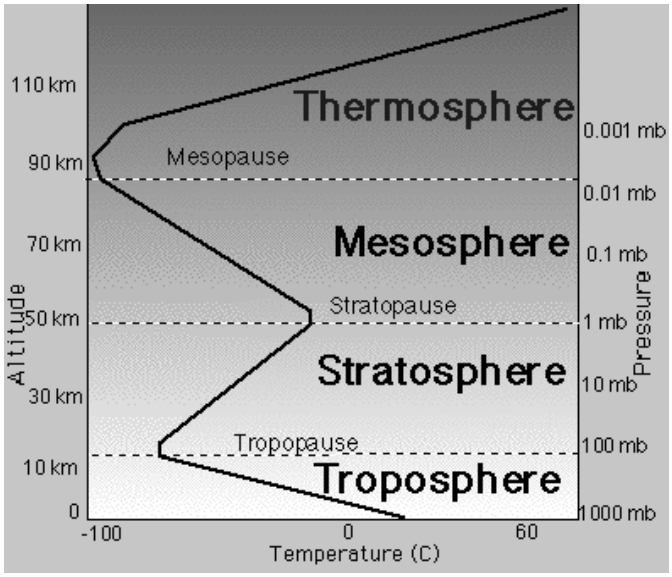
14. What are the effects of tropospheric ozone?
Tropospheric ozone has a toxic effect on humans and vegetation.

15. At which altitude does stratospheric ozone peak?
Stratospheric ozone peaks at about 23 km.

16. How is the amount of ozone measured in this graph?
Ozone is measured in milli-Pascals.

17. What are some current issues with stratospheric ozone?
There are long-term downward trends in the amount of ozone in this layer. There is a 'hole' that appears over Antarctica each spring.

The graph below shows the temperatures of the atmosphere in each layer. Use the image below to answer the following questions:

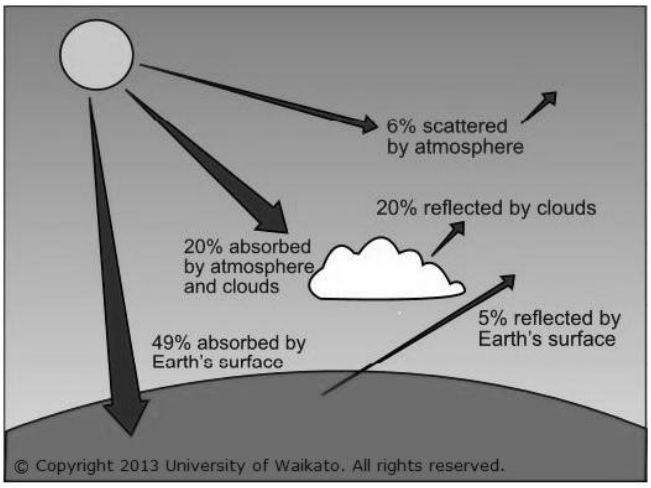


18. In which layer do you find the lowest temperatures?
The lowest temperatures are found in the thermosphere.

19. The temperature drops with higher altitudes in the troposphere. How does the temperature change in the stratosphere?
As you go higher in the stratosphere, the temperatures rise.

20. Why do you think the temperature gets so warm at the top of the thermosphere?
As you near the Sun, the air particles become more heated.

The following illustration shows what happens to the Sun's energy when it enters our atmosphere. Use the image to answer the following questions.



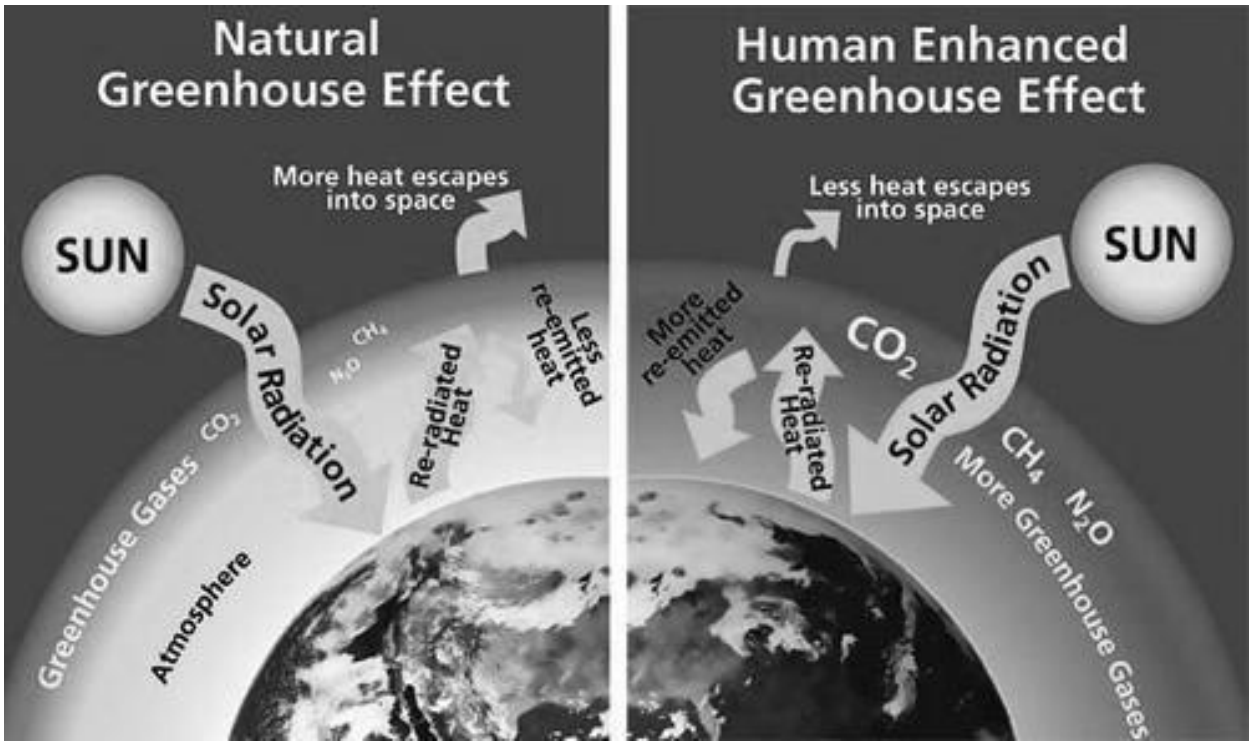
21. According to this diagram, list three ways the Sun's energy interacts with Earth and its atmosphere.

The energy from the Sun can be absorbed by Earth's surface, absorbed by the clouds, reflected by clouds, reflected by Earth's surface, or scattered by the atmosphere.

22. According to this diagram, what percent of the Sun's energy never reaches Earth's surface?

46% of the Sun's energy is absorbed, reflected, or scattered by the clouds and atmosphere before it can reach the surface of the Earth.

The following diagram illustrates the greenhouse effect that occurs naturally and because of human actions. Use the diagram to answer the following questions.



23. What greenhouse gases are identified in this diagram?

Greenhouse gases include carbon dioxide (CO_2), nitrous oxide (N_2O), and methane (CH_4).

24. What is an important similarity between the two images?

Greenhouse gases work the same way both naturally and due to human influence, heat is trapped close to Earth's surface.

25. Identify **two** important differences between the two greenhouse effects.

- *When the greenhouse effect has been enhanced by human activity, there are more greenhouse gases in the atmosphere.*

- *When there are more greenhouse gases in the atmosphere, less heat is able to leave Earth's atmosphere.*