

Atmosphere

Using your textbook, read about the composition of the atmosphere.

Select the BEST letter of the choice that best completes the statement.

- Most of Earth's atmosphere is composed of
 - oxygen and hydrogen.
 - hydrogen and nitrogen.
 - nitrogen and oxygen
 - carbon and ozone
- Water vapor in the atmosphere is the source of
 - clouds and rain.
 - pollution.
 - carbon dioxide.
 - wind.
- The amount of energy the atmosphere absorbs depends in part on its level of
 - nitrogen.
 - argon.
 - nitrogen dioxide.
 - carbon dioxide.
- Solid particles in the atmosphere include salt and
 - leaves.
 - ozone.
 - dust.
 - lightning.
- Ozone in Earth's atmosphere is important because it
 - causes rain to fall.
 - absorbs harmful radiation.
 - absorbs harmful pollution
 - helps clouds form.

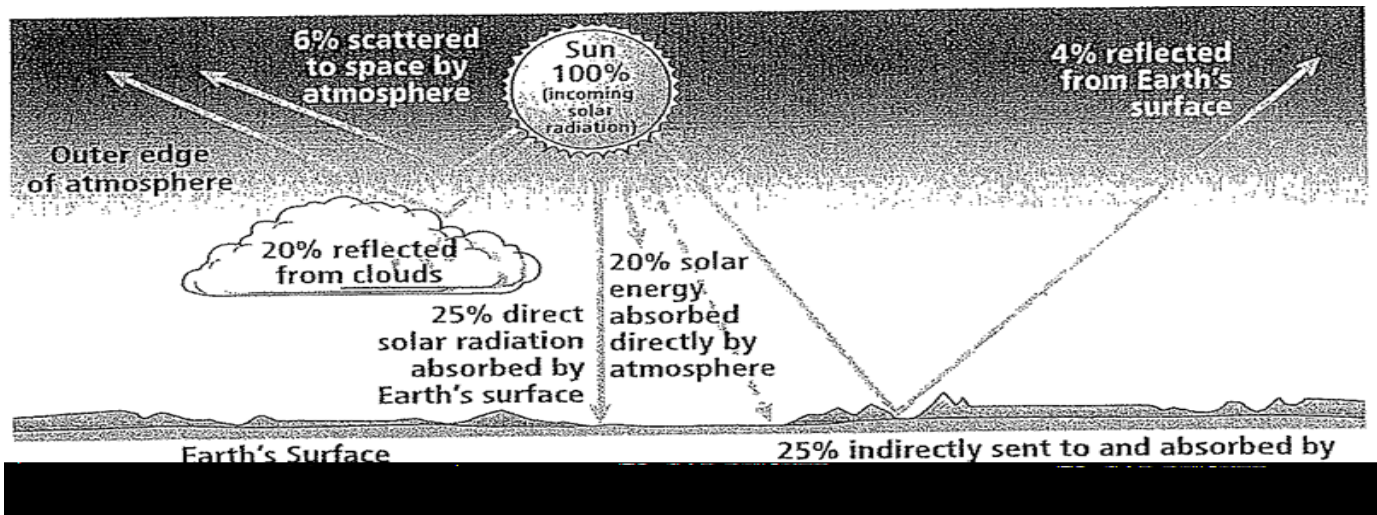
Using your textbook, read about the structure of the atmosphere.

MATCH the table by SELECTING the BEST layer of the atmosphere that matches each description.

- | | | |
|-----------|--------------------------------------|------------------|
| A B C D E | 6. Contains concentrated ozone | (A) Exosphere |
| A B C D E | 7. Layer just above the stratosphere | (B) Mesosphere |
| A B C D E | 8. Most weather occurs here | (C) Thermosphere |
| A B C D E | 9. Outermost layer of the atmosphere | (D) Troposphere |
| A B C D E | 10. Between mesosphere and exosphere | (E) Stratosphere |

SECTION 11.1 *Atmospheric Basics, continued*

In your textbook, read about how the atmosphere is heated. Examine the diagram below. Then answer the questions.



11. What is the source of all energy that reaches Earth?
 - A) Clouds
 - B) Sun
 - C) Ozone

12. What percentage of the Sun's energy does Earth's surface absorb?
 - A) 4%
 - B) 20%
 - C) 50%
 - D) 25%

13. A percentage of the Sun's energy is scattered or reflected into space. What causes this loss of solar energy? The loss of energy is
 - A) Scattered by the atmosphere
 - B) Reflected from clouds
 - C) Reflected from Earth's surface
 - D) All the above

14. Earth's surface is heated by energy from the Sun. For the most part, the rereleased energy from the surface heats the atmosphere. This method by which energy is transferred from Earth's surface to the air above it starts when particles of air on Earth's surface collide with one another and transfer energy to other particles of air in the very lowest part of the atmosphere by?

| | | |
|---------------|---------------|--------------|
| A) Conduction | B) Convection | C) Radiation |
|---------------|---------------|--------------|

15. This method is the transfer of energy by the flow of a heated substance. Heated air near earth's surface rises, expands, and starts to cool down. When it cools below the temperature of the surrounding air, it increases in density and sinks, and reheats. Thus, repeating the process of?

| | | |
|---------------|---------------|--------------|
| A) Conduction | B) Convection | C) Radiation |
|---------------|---------------|--------------|

SECTION 11.2 *Properties of the Atmosphere*

Using your textbook, read about heat, temperature, and moisture in the atmosphere. Use each of the terms below just once to complete the passage.

A. *Temperature*B. *Fahrenheit*C. *Heat*

Heat and temperature are not the same. (16)_____ is a measure of how rapidly or slowly molecules move. In contrast, (17)_____ is the transfer of energy that takes place because of temperature differences. Temperature can be measured in degrees Fahrenheit, degrees Celsius, or kelvins. The most commonly used temperature scale in the United States is (18)_____.

A. *Water vapor*B. *Dew point*C. *Condensation*

The atmosphere's temperature plays a role in the formation of rain. Rain drops form when (19)_____ in the atmosphere cools and turns from a gas to a liquid. This change in state is called (20)_____. Air must be saturated before condensation can occur. Saturation is the point at which the air holds as much water vapor as it possibly can. The (21)_____ is the temperature to which air must be cooled at constant pressure to reach saturation. Until this temperature is reached, condensation cannot occur, and rain cannot fall.

A. *Altitude*B. *Lifted condensation level*

Temperature in the lower atmosphere generally decreases with increased (22)_____. As air rises, it cools and eventually reaches the temperature at which condensation occurs. The height above the surface at which condensation occurs is the (23)_____.

SECTION 11.2 *Properties of the Atmosphere, continued*

Using your textbook, read about air pressure and wind.

For each statement below, SELECT (A) *true* or (B) *false*.

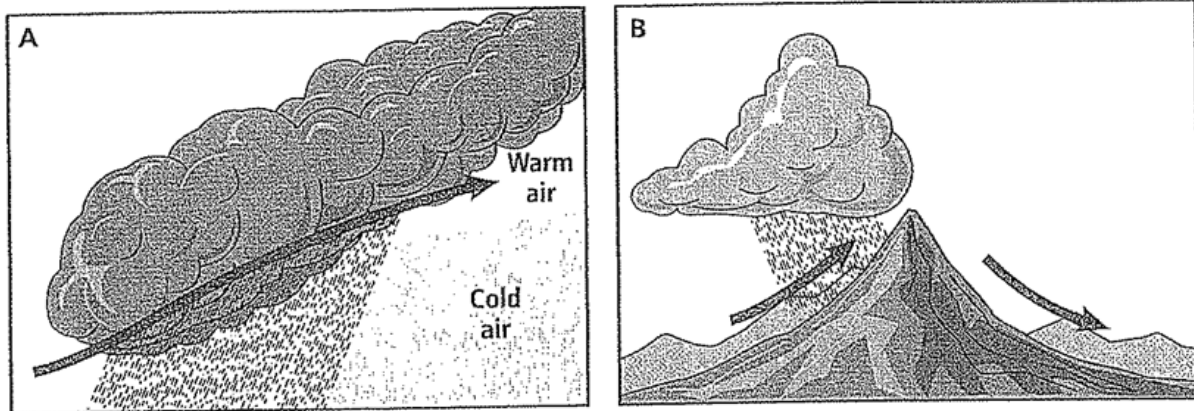
- A B **24.** is denser near Earth's surface than high in the atmosphere
- A B **25.** Particles of air in the atmosphere exert pressure on Earth's surface
- A B **26.** Air pressure is greater at the top of a mountain than at lower elevations
- A B **27.** In the Troposphere as air temperature increases, generally air pressure increases, to
- A B **28.** Wind is the movement of air from an area of low pressure to an area of high pressure
- A B **29.** As you move upward from Earth's surface, wind speeds increase because the air meets with less friction from Earth's surface

In your textbook, read about temperature inversion and relative humidity. Answer the following questions by SELECTING the BEST answer.

- 30.** What is a temperature inversion?
- A. a decrease in temperature with height in the atmosphere
 - B. an increase in temperature with height in the atmosphere
 - C. temperature remains the same with height in the atmosphere
- 31.** What is relative humidity?
- A. The amount of oxygen in the air
 - B. The amount of water vapor in the air
 - C. The number of humans in the air
- 32.** What is the relative humidity of fully saturated air?
- A. 0%
 - B. 50%
 - C. 100%
 - D. 75%
 - E. 25%

SECTION 11.3 *Clouds and Precipitation*

Using your textbook, read about the formation of clouds. Using the diagrams below to help answer the questions



What is happening to the air in BOTH A and B that leads to the formation of clouds?

33. What is causing the air to rise in "A"

- A. Warm Front: collision of a warm air mass with a cool air mass
- B. Cold Front: Cool air mass forces warm air mass to rise

34. What is causing the air to rise in "B"

- A. Cloud is too heavy to go over the mountain and gravity pulls the water out because the cloud sits there
- B. Cloud is too heavy to go over the mountain and is forced to rise which drops the temperature and precipitates

35. What type of cloud formation is shown in "B"

- A. Land Breeze
- B. Sea Breeze
- C. Orographic lifting

36. Select the best answer to HOW condensation nuclei help clouds form.

- A. This is particle that cause gravity to pull down from the sky
- B. These particles in the atmosphere provide objects around which water vapor condenses to form cloud droplets

SECTION 11.3 *Clouds and Precipitation, continued*

In your textbook, read about moisture in the atmosphere and clouds.

For each item in Column A, SELECT the letter of the matching item in Column B.

COLUMN A

COLUMN B

- | | | |
|---------|---|------------------|
| A B C D | 37. All forms of water that fall from clouds | A. stratus |
| A B C D | 38. Low, layered clouds | B. cirrus |
| A B C D | 39. Small cloud droplets join to form larger ones | C. precipitation |
| A B C D | 40. Wispy, high clouds made of ice crystals | D. coalescence |

Using your textbook, read about the movement of water between the atmosphere and Earth's surface.

Circle the letter of the choice that best completes the statement.

41. The constant movement of water between the atmosphere and Earth's surface is
- | | |
|---------------------|--------------------------|
| A. cloud formation. | C. precipitation. |
| B. the water cycles | D. temperature inversion |
42. The process of water changing from a liquid to a gas is
- | | |
|-------------------|-----------------|
| A. condensation. | C. coalescence. |
| B. precipitation. | D. evaporation |
43. As water vapor rises in the atmosphere, it cools and changes into liquid cloud droplets in a process called
- | | |
|-------------------|------------------|
| A. evaporation. | C. condensation. |
| B. precipitation. | D. vaporization |
44. When cloud droplets combine to form larger drops, they fall to Earth as
- | | |
|------------------|-------------------|
| A. ozone. | C. precipitation. |
| B. condensation. | D. water vapor |
45. The energy that drives the water cycle comes from the
- | |
|------------------|
| A. Sun. |
| B. wind |
| C. ocean. |
| D. stratosphere. |