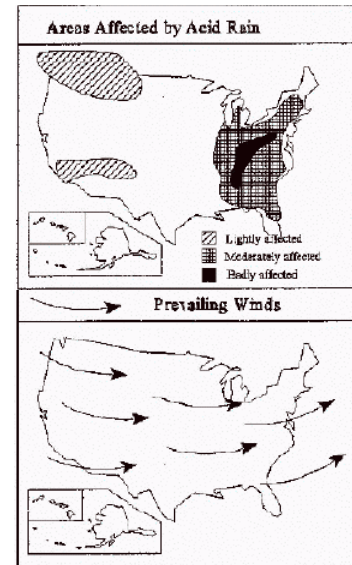


Name: _____

Date: _____

Earth T4

- Why is it important to know terms such as geosphere, biosphere, and hydrosphere?
 - You cannot understand the concepts with them
 - It is a convenient and short way to describe a concept
 - Scientists have a code that they use, and you must know it to know science
 - Terms like these are commonly used in daily life
- In the carbon cycle, how does carbon enter living organisms?
 - Decomposers release carbon dioxide
 - Photosynthesis by plants
 - Humans burn coal
 - Respiration by animals
- What relationship is there between the power plants and areas affected by acid rain?
 - there does not appear to be a relationship
 - areas of heavy emission always have the most badly affected area
 - SO₂ emissions are usually located north of the damage they do
 - that areas badly affected are close to many sources of heavy SO₂ emissions
- The map of prevailing winds is included to show:
 - that the weather is very changeable over most of the USA
 - that sulfur emissions make the wind blow
 - that acid rain cannot travel
 - that wind may be carrying sulfur away from its source
- Plants are mainly composed of carbon, hydrogen and oxygen. Where do plants get the elements they use for growth?
 - Plants get all three elements, carbon, oxygen and hydrogen, from the soil.
 - Plants get carbon from soil, and the water provides hydrogen and oxygen.
 - Plants get carbon from nutrients in the soil and oxygen and hydrogen from the air.
 - Plants get carbon and oxygen from the air and hydrogen from water.
- Which of the following would be the best title for the list?
 - Human Influences on the Carbon and Nitrogen Cycles
 - The Benefits of Using Land for Agriculture
 - Natural Causes of Change in the Atmosphere
 - Atmospheric Problems Caused by Human Activities
- What is the cause of increased atmospheric levels of carbon dioxide in terms of the carbon cycle?
 - More carbon is being stored in plant and animal tissue
 - Carbon is being added to the atmosphere faster than it is being removed
 - The carbon cycle is unaffected because the number of carbon atoms on Earth remains the same
 - Ocean organisms will have to remove more carbon from the atmosphere in order to keep the cycle in balance
- According to the graph, which of the following statements best describes the concentration of carbon dioxide in the atmosphere?
 - It has increased since the Industrial Revolution
 - It has decreased since the Industrial Revolution
 - It has remained the same since the Industrial Revolution
 - There is no carbon dioxide in the atmosphere
- Which of the following is the best explanation for the increase of carbon dioxide concentrations in the atmosphere since 1850?
 - There are many more cows now than in 1850
 - Since 1850, the burning of fossil fuels has increased
 - The age of dinosaurs is past so carbon is no longer being stored in coal beds
 - There is more pollution, which keeps carbon dioxide from being removed from the atmosphere
- Based on the graph above, which of the following statements is an inference?
 - The concentration of carbon dioxide is measure in ppm
 - There was more carbon dioxide added to the atmosphere in 1970 than in 1910
 - In 1950, the atmosphere had a carbon dioxide concentration of approximately 311 ppm
 - The destruction of rainforests has contributed to the rise in carbon dioxide levels in the atmosphere
- Which item below best explains why animal manure can be used as a fertilizer for crops and gardens? The plant uses the
 - carbon from the dead plant matter to make sugar
 - nitrogen to make proteins and DNA
 - oxygen for cellular respiration
 - hydrogen to form carbohydrates
- Common human activities have a dramatic effect on the carbon cycle. How have recent changes in the carbon cycle affected life?
 - The carbon cycle traps carbon that could be used for human respiration.
 - Increases in global temperature affect climate, agriculture and rainfall patterns.
 - The amount of available oxygen will decrease due to the increase in carbon dioxide levels.
 - The carbon cycle has no direct effect on human life because it deals mostly with plants.



- Burning fossil fuels.
- Removal and/or burning of forests.
- Production and use of fertilizers.
- Loss of soil nutrients.
- Land clearing for crops.
- Draining wetlands.
- Cultivation of plants that host nitrogen fixing bacteria.



- 13) Burning fossil fuels adds carbon dioxide to the atmosphere. How will this affect the carbon cycle?
- The number of carbon atoms on Earth will increase
 - The number of carbon atoms on Earth will decrease
 - The number of carbon atoms in the atmosphere will increase
 - The number of carbon atoms in the atmosphere will decrease
 - The carbon cycle will be unaffected
- 14) Which of the following is NOT an effect of acid rain?
- Disintegration of buildings, statues, tombstones
 - Death and stunting of trees
 - Increase in temperature
 - Loss of aquatic life in rivers and streams
- 15) Why is the use of fossil fuels decreasing slightly?
- Alternative sources of power, such as hydroelectric power, are becoming more available and efficient.
 - Automobiles are using less gasoline because of the increasing price of oil.
 - Available fossil fuels in the earth are just about gone.
 - Global warming decreases our need to burn fuel for heat in cold weather.
- 16) What physical symptoms are associated with a reduction of ozone in the upper atmosphere?
- fever
 - nagging cough
 - difficult breathing
 - skin cancer
- 17) Utah has burn days in which it is illegal to burn fires for home heating. Which type of pollutant are the authorities trying to reduce?
- carbon monoxide
 - nitrogen oxides
 - sulfur dioxide
 - particulates
- 18) Jill and Holly designed an experiment that tested the gases that cause acid rain. They had a liquid that was clear, but turned red in acids. The stronger the acid became, the redder the solution. They collected gases from a bike pump, a propane bottle, a car, and a diesel truck. They bubbled the gases through the liquid. Then they compared the color of the solutions. According to the data collected, which gas causes the greatest amount of acid rain?
- bike pump
 - propane
 - car exhaust
 - diesel truck exhaust
- 19) According to the data, which conclusion is best supported by the experiment?
- Cars that run on propane do not create acid rain.
 - Diesel trucks do not cause acid rain.
 - There is no acid in the air
 - Cars and trucks both cause acid rain.
- 20) Which type of air pollution can be deadly in a very short period of time?
- carbon monoxide
 - nitrogen oxides
 - sulfur dioxide
 - particulate
- 21) What harmful effect is associated with the "ozone hole"?
- skin cancer
 - heart attacks
 - ocean saltiness
 - loss of hair
- 22) What does the ozone layer protect living things from?
- ultraviolet rays
 - meteors and meteorites
 - bad weather
 - excessive heat
- 23) Which of the following resources would provide the most accurate and least biased information on the carbon cycle?
- National Geographic
 - Astronomy Today
 - Sierra Club Infoletter
 - Local Newspaper
- 24) Why do most climatologists now accept the theory that there is a hole in the ozone?
- Companies that produce CFCs told them so.
 - It is easy to detect just by looking towards the sky at sunset.
 - There is data to support it from more than one source.
 - The president of the United States mandated their agreement.

SOURCE OF GAS	COLOR CHANGE
Bike pump	No color change
Propane	No color change
Car exhaust	Dark red
Diesel truck exhaust	Light red

25) (1) In the early 1970s, scientists first proposed that chlorofluorocarbons (CFCs) could destroy the ozone layer. (2) Since then, scientists have confirmed that CFCs destroy ozone by breaking up the chemical bonds. (3) In the mid-1980s, atmospheric studies identified an extremely thin area of ozone over Antarctica and a global thinning of the ozone layer. (4) The thinning of the ozone is significant because this layer filters and absorbs harmful radiation that influences crop production and causes eye and skin damage. Which sentence has relevant data to support the argument that CFCs contribute to the thinning of the ozone?

- A. 1
- B. 2
- C. 3
- D. 4

26) Which substance is considered the main cause of the "ozone hole"?

- A. carbon dioxide
- B. chlorofluorocarbons
- C. methane
- D. water vapor

27) The ocean water near the equator absorbs more heat throughout the year than ocean water near the North Pole. Which of the following **best** explains this difference?

- A. The equator is closer to the Sun.
- B. The equator has higher sea levels.
- C. The equator receives more direct sunlight.
- D. The equator rotates more quickly on Earth's axis.

28) Acid precipitation, global warming, and ozone depletion are problems that are a direct result of air pollution. Because air pollution is difficult to control, government agencies and scientists have met to discuss ways to reduce global air pollution. Which of the following best describes why global discussions of air pollution issues are important?

- A. Air pollution problems affect people living on every continent.
- B. Government agencies are mostly at fault for not decreasing air pollution.
- C. Scientists have required that governments take action to decrease air pollution.
- D. Science findings have indicated that these problems are mostly caused by the greenhouse effect.

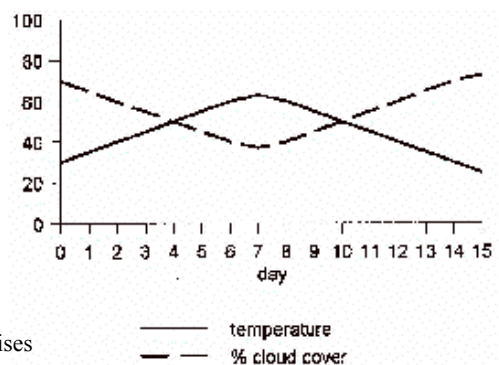
29) The data table above shows the consumption of fossil fuels since 1000 AD. What probably accelerated the use of fossil fuels since 1900?

	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200
% available	92%	92%	91%	91%	90%	89%	88%	87%	86%	83%	67%	60%	?

- A. Increase of available fossil fuels in Earth
- B. Better procedures for extracting coal from the earth.
- C. Importance of coal and oil to our society
- D. Industrial Revolution.

30) How do cloud cover and temperature appear to be related in the graph?

- A. when temperature rises, cloud cover increases
- B. when temperature rises, clouds stay the same
- C. there appears to be no relationship
- D. when temperature rises, cloud cover decreases



31) What might best explain the results in the graph?

- A. when it is cloudy, the clouds trap the heat and temperature increases
- B. when it is cloudy, it rains more and temperature goes up
- C. when the sky is clear, more sun can reach the earth and the temperature rises
- D. when the sky is clear, more heat escapes

32) As air rises into the atmosphere it expands and cools. Warm air can hold more water vapor than cold air. So as air rises it is unable to hold its water vapor, causing the water vapor to condense. Dewpoint is reached when the air can hold no more water vapor. The air is saturated with water vapor. The following information was taken as warm air rose and cooled. According to this graph, where would clouds form?

Elevation	Air Temperature	Dewpoint
1000 m	10 degrees C	10 degrees C
500 m	15 degrees C	11 degrees C
0	20 degrees C	12 degrees C

- A. 1000 m
- B. 500 m
- C. 0 m
- D. nowhere

33) As air rises into the atmosphere it expands and cools. Warm air can hold more water vapor than cold air. So as air rises it condenses. Dewpoint is reached when the air can hold no more water vapor. The following information was taken as warm air rose and cooled. Ground fog is a cloud that forms at low altitude. According to this graph, at what conditions would form fog at the 0 meter elevation?

- A. A dew point of 10 degrees C
- B. A dew point of 12 degrees C
- C. A temperature of 20 degrees C
- D. A temperature of 12 degrees C

34) Why does the Pacific Ocean current along the west coast of the United States influence the weather in Utah?

- A. It brings cool water coming from the north, which cools the air
- B. It brings cool water coming from the south, which cools the air
- C. It brings warm water coming from the north, which warms the air
- D. It brings warm water coming from the south, which warms the air

- 35) What is the primary energy source that drives all weather events, including precipitation, hurricanes, and tornadoes?
- the Sun
 - the Moon
 - Earth's gravity
 - Earth's rotation

36) Lydia designs an experiment to examine the relationship between barometric pressure and temperature. She measures the temperature and the barometric pressure on Monday and Tuesday. She writes up her report and turns it in on Wednesday, the day it's due. Below are her data and conclusion. Conclusion: A rise in temperature causes a rise in barometric pressure.

Day	Temperature	Barometric Pressure
Monday	27°C	1011 millibars
Tuesday	28°C	1123 millibars

Which of the following statements most accurately evaluates the validity of her conclusion?

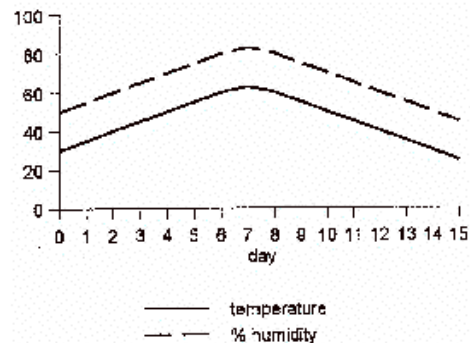
- Her conclusion is valid because she organized the data into a table correctly
 - Her conclusion is valid because she measured temperature and pressure carefully and used metric units
 - Her conclusion is invalid because it is impossible to determine the relationship between temperature and pressure
 - Her conclusion is invalid because nothing in her experiment tests if a change in temperature causes a change in pressure
- 37) Which of the following would improve Lydia's experimental design?
- Test another variable as well
 - Collect data for more days
 - Use a mercurial barometer
 - Measure temperature in Fahrenheit
 - Use data from another geographic region as a control

38) What is the principle cause of the Coriolis Effect?

- isolation
- winds
- ocean currents
- Earth's rotation

39) How do the temperature and humidity appear to be related in the graph?

- when one goes up the other goes up
- when one goes up the other goes down
- they are opposites
- there is no relationship



40) Which explanation best fits the graph?

- as temperature goes up, more water evaporates, raising humidity
- as temperature goes down, more water evaporates, raising humidity
- as temperature goes up, less water evaporates making humidity lower
- as temperature goes down, humidity raises due to more rainfall

41) In the late 1980s the Governor of Utah spent millions of tax dollars to build pumps to lower the level of the Great Salt Lake to protect surrounding property and roads. However the pumps were not greatly used because the lake receded by drought conditions.

Understanding droughts is part of which discipline?

- weather
- meteorology
- astronomy
- climatology
- engineering

42) Why do we experience winter from November through March in Utah?

- The sun is farther from the earth
- The sun is closer to the earth
- The movement of warm maritime air masses from the Pacific
- The calendar is on an equinox
- The angle of incidence of the sun's rays is more indirect

43) Which of the following is the best title for this chart?

- Wind and Ocean Patterns
- The Coriolis Effect
- Patterns of Global Winds
- Patterns of Ocean Currents

44) Air in a tire can be expanded and contracted. If the air is let out of the tire it is expanding. How would you expect the air to feel?

- hot
- warm
- cold
- the same as the temperature of surrounding air

