Name _____ Teacher _____

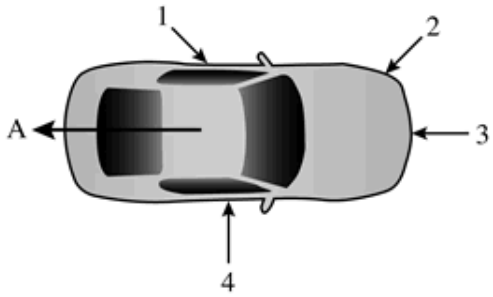
Date _____ Section _____

GRADE 8 3D 9 WEEKS

Instructions:

1.

Forces that act on objects can affect their speed and direction.



A car is traveling down the street in direction A. Which of the forces shown in the figure above would affect ONLY the speed of the car?

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

2.

A soccer ball that is kicked will stay in motion until an equal force is exerted on the ball and it stops rolling. Which of these forces, when exerted on the ball, would be equal to the force of the kick and stop the ball from rolling?

A. Gravity and friction
B. Friction and inertia
C. Inertia and gravity
D. Magnetism and friction

3.

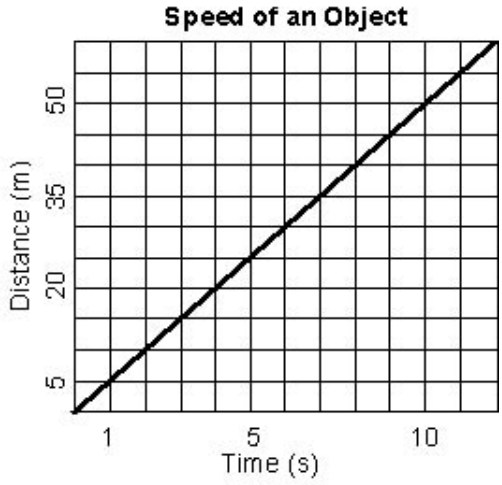
The swing shown above is attached to the tree with knots. When a person sits on the swing, which of the following forces helps keep the swing from falling?

A. Friction
B. Tension in ropes
C. Gravity
D. Weight of student

4.

Which of the following objects is MOST likely to be slowed by the force of gravity?

A. A car rolling up a hill
B. A ball rolling on flat ground
C. An airplane flying on a level course
D. A skydiver falling toward Earth



5.
What is the speed of the object represented by the graph?

A. 0.5 m/s
B. 2 m/s
C. 5 m/s
D. 10 m/s

6.
What object's motion would most likely be represented by the graph?

A. The rotation of the moon around the Earth
B. The movement of a football being thrown down the field
C. An airplane touching down on a runway
D. The movement of a car at the start of a race

7.

Alex places 2 cubes side-by-side on a ramp made of wood. Cube #1 is ice and Cube #2 is wood wrapped with sandpaper. The cubes are the same size and the same mass and are placed at the same height on the ramp. When Alex released the two cubes, the ice cube slid down the ramp, but the sandpaper cube did not move. What accounts for this difference?

A. The ice cube moved because the forces of friction and gravity were balanced.

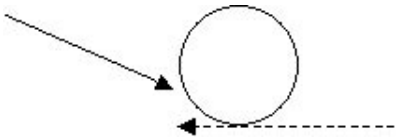
B. The sandpaper block did not move because the forces of friction and gravity were unbalanced.

C. The ice cube moved because the ice and ramp did not produce any friction which resulted in balance.

D. The sandpaper block did not move because the forces of friction and gravity were balanced.

8.

John is an outstanding forward on his club select soccer team. He is known for his ball control and speed. After a game, he often makes a sketch of moves that were successful. The dotted line on his sketch shows the direction the ball was moving when he kicked it. The direction of his kick is the solid arrow.



How did the motion of the ball change when John kicked it?

A. The ball continued moving in the same direction and its speed increased.

B. The ball continued moving in the same direction and its speed decreased.

C. The ball changed directions and its speed increased.

D. The ball came to a complete stop.

9.

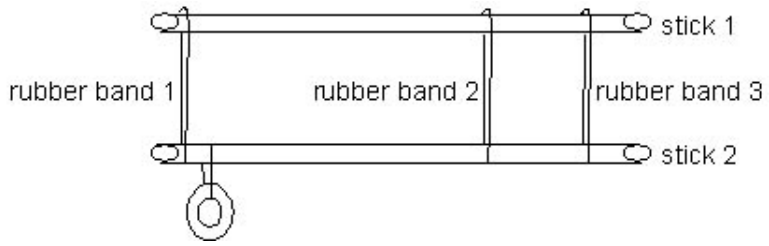
Jason was designing an experiment to see how fast a toy car could travel down a ramp. Which changes would result in the car traveling faster?

A. decrease the angle of the ramp, increase the mass of the car, and increase the traction between the car's tires and the surface of the ramp by adding sand paper to the ramp

B. increase the angle of the ramp, reduce the mass of the car, and decrease the friction between the car's tires and the surface of the ramp by spraying cooking oil on the ramp

C. decrease the angle of the ramp, reduce the mass of the car, and increase the traction between the car's tires and the surface of the ramp by adding sand paper to the ramp

D. increase the angle of the ramp, increase the mass of the car, and decrease the friction between the car's tires and the surface of the ramp by spraying cooking oil on the ramp.



10.

Susan designed a mobile for her bedroom. A portion of her design is shown in the diagram. She used two sticks that were equal in length and mass, two identical rubber bands, and a metal washer with a mass of 50g. She hung the washer from a string glued in place on stick 2. What happened when she hung this portion of the mobile from her ceiling?

A. Rubber band 1 stretched longer than rubber band 2 or rubber band 3.

B. Rubber band 2 stretched longer than rubber band 1 or rubber band 3.

C. Rubber band 3 stretched longer than rubber band 1 or rubber band 2.

D. The rubber bands stretched the same amount.

11.

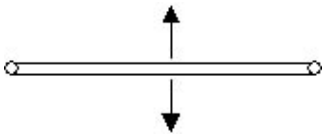
In order for an object such as a communications satellite to maintain a constant orbit around the Earth, what must be true? The forward motion of the satellite must

A. vary slightly due to the tilt of the Earth's axis.
B. be greater than the Earth's rotational speed.
C. constantly overcome frictional forces.
D. be in balance with Earth's gravitational pull.

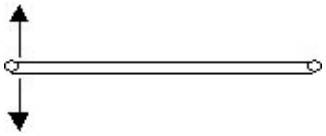
12.

Carly and Gina are trying out for the school's drill team. In part of the try-out routine, they are to work together to spin a 3m flagpole at an equal speed. Carly and Gina know they each have to apply an equal amount of force to the flagpole, but disagree how to do it. Which diagram below would illustrate their work to the spinning flagpole?

A.

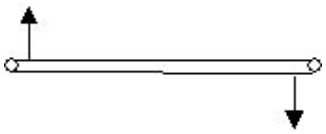


B.



C.

D.



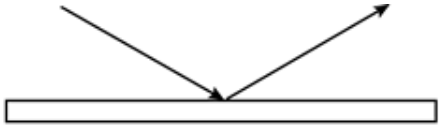
13.

The arrow in the figure below represents a ray of light striking a mirror.

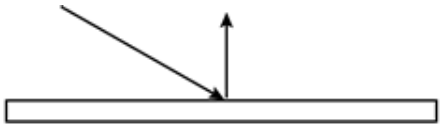
Which of the following correctly shows how a light ray would be reflected from the mirror shown above?

A.

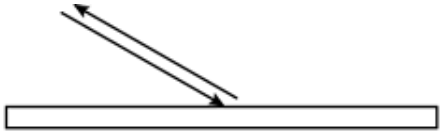
B.



C.



D.



14.

Medium	State of Matter
Air	Gas
Water	Liquid
Oil	Liquid
Metals	
Lead	Solid
Iron	Solid
Steel	Solid
Mercury	Liquid

Sound will travel the fastest through which of these mediums?

A. Water
B. Oil
C. Steel
D. Mercury

15.

Which of these functions do the respiratory, digestive, and circulatory systems carry out by working together?

A. Protecting the inner organs
B. Supplying cells with oxygen
C. Providing the body with energy
D. Supporting the body structure

16.

Which of the following is MOST LIKELY to result from an increase in the amount of solar energy reaching Earth?

A. Falling sea levels caused by melting polar ice caps
B. Increased amount of water moving into the atmosphere
C. Reversal in the direction of ocean currents in the tropics
D. Fewer clouds as high temperatures dry out the atmosphere

17.

A scientist analyzing past climates finds evidence that a certain region that was once very warm and wet became cooler and drier over time. Which of the following situations could MOST LIKELY be the cause of this climate change?

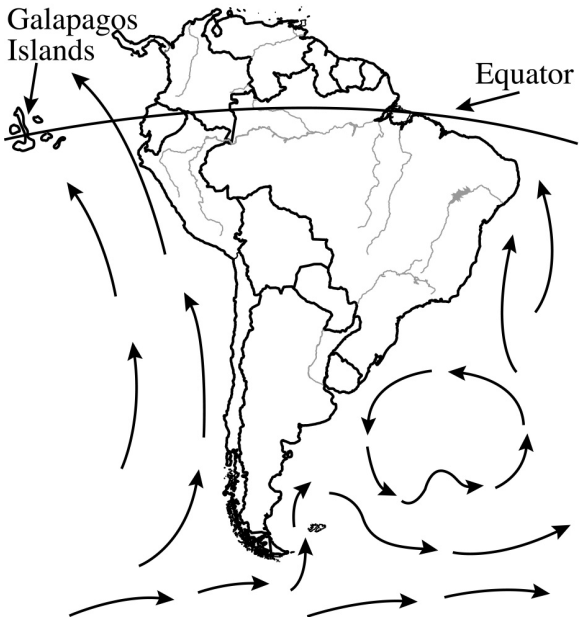
A. The water table could have dropped in the area.
B. Ocean evaporation rates could have increased in the area.
C. An ocean current could have changed direction away from the area.
D. An increase in the total amount of water on Earth caused more rain in the area.

18.

Because the Earth is a sphere, different regions receive different amounts of the Sun's energy. Which of the following is a direct result of this?

A. Most large rivers flow towards the ocean.
B. Warm ocean currents originate in the tropics.
C. Sea level rises when global temperatures rise.
D. Greenhouse gases are more concentrated at the poles.

19.



The Galapagos Islands are located in the Pacific Ocean at the equator, off the coast of Ecuador. Unlike most equatorial regions, they are not warm and humid. Which statement below BEST explains the cool, dry climate of the Galapagos?

A. Tropical winds bring air masses from the west.
B. Clouds produced in the Amazon rainforest block sunlight.
C. The Humboldt Current brings ocean water from Antarctica.
D. Evaporation from the warm ocean carries moisture away from the islands.

20.

Which of the following has the largest influence on the temperature of a land region?

A. composition of the soil
B. distance from the sun
C. percentage of ground covered by asphalt
D. percentage of cloud cover

21.

Radiant energy is the basis of what cycle?

A. water cycle
B. nitrogen cycle
C. lunar cycle
D. rock cycle

22.

Johnathan and his family went to the beach for summer vacation. During the day, the high temperatures averaged 32 °C and the nighttime low temperatures averaged 18 °C. The water temperature ranged only from 20-22 °C regardless of the time of day.

What accounts for this difference?

A. The land warms more slowly than the ocean, but cools more quickly.
B. The water warms and cools more slowly than the land.
C. The land stores thermal energy from the sun longer than the water.
D. The constant movement of the water prevents it from warming as quickly as the land

23.

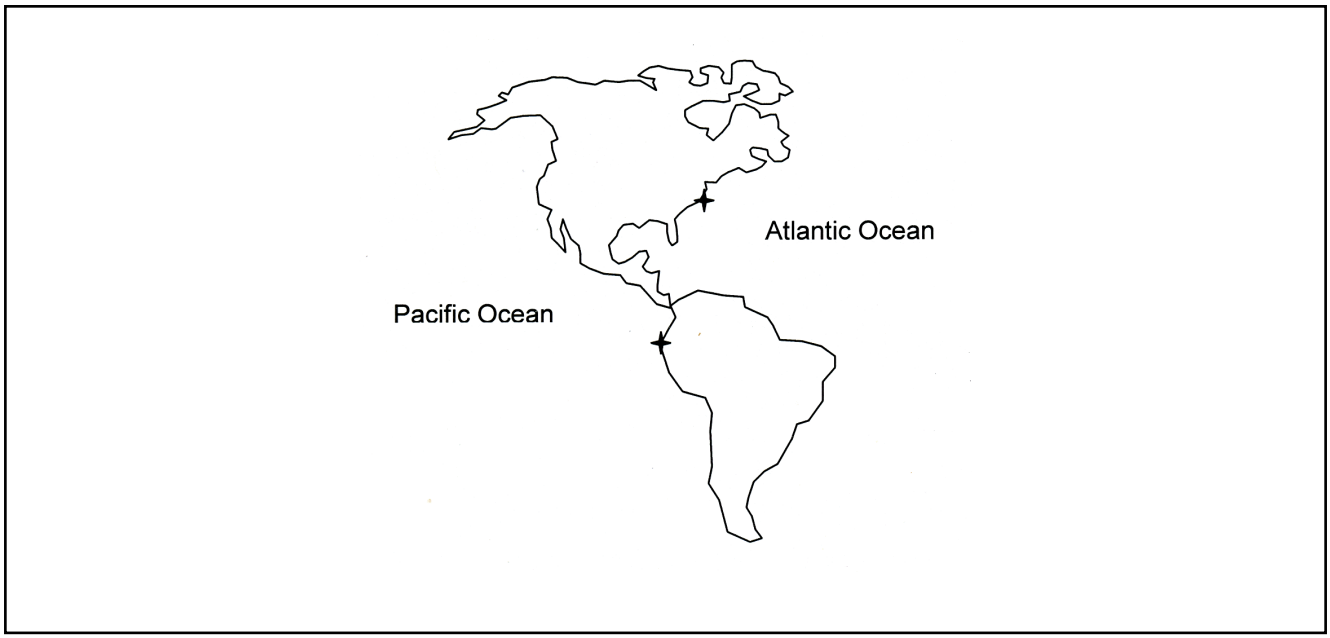
A large volcanic eruption can send tons of ash high into Earth's atmosphere. What changes are most likely to occur?

A. A temperature change results in increased ocean water evaporation and heavy precipitation
B. The ash blocks out some of the sun's energy causing lower than normal temperatures.
C. Areas covered by ash will cause increased solar radiation and increased evaporation.
D. The trade winds will strengthen causing the ash to be distributed worldwide.

24.

The Sierra Nevada Mountain Range is over 400 miles long. The range has many peaks over 14,000 feet and runs two-thirds the length of the state of California. Masses of warm, moist air form over the Pacific Ocean and are pushed westerly by the prevailing winds. Which statement below best describes what happens when the air masses interact with the mountains?

A. As the air mass is pushed over the mountains, it becomes colder, causing the moisture to condense. Precipitation falls on the eastern side of the mountain range.
B. As the air mass is pushed over the mountains, it becomes colder, causing the moisture to condense. Precipitation falls on the western side of the mountain range.
C. The mountains deflect the air mass, causing the warm, moist air to pool in the valleys. This pooling of air causes flooding and landslides.
D. The mountains deflect the air mass to Northern Canada, where extremely cold air causes the moisture to condense and heavy snowfall results.



25.
Quito, Ecuador, and Washington, D.C. both lie 77 degrees west of the Prime Meridian, yet the climate in Quito is relatively stable throughout the year and the climate in Washington, D.C. fluctuates during the seasons.

What mainly accounts for this difference?

A. distance to a large body of water
B. distance to the sun
C. distance from the Prime Meridian
D. distance from the Equator

26.

Dallas, Texas, and San Diego, California, are both located at 32° latitude. The average high temperature in San Diego, a coastal city, varies only slightly during the year, but the average high temperature in Dallas fluctuates with the seasons.

A. distance to a large body of water
B. distance to the sun
C. distance from the Prime Meridian
D. distance from the Equator

27.

Since the Earth is a sphere, the sun's rays strike areas around the equator more directly than areas close to the poles. This results in uneven heating. What is the main way heat from equatorial regions is distributed to other areas?

A. Ocean currents move warm water from equatorial areas toward polar areas.
B. Wind patterns move warmer, tropical air masses to polar areas.
C. Surface heating by radiant energy is transferred into geothermal energy.
D. Equatorial areas reflect a majority of the sun's energy back into upper layers of the atmosphere.

28.

Ocean currents move warm and cold water throughout the oceans, affecting weather systems and climates. Where do warm ocean currents originate?

A. Near the poles
B. Near the equator
C. Near continents
D. Near the middle of oceans

29.

Hurricanes are powerful tropical storms that develop over warm ocean water. Hurricanes draw their energy from the ocean and weaken as they move over land. Which of the following BEST explains how energy is transferred from the ocean to a hurricane?

A. Evaporating water adds heat to the atmosphere.
B. Rising tides change the level of the ocean surface.
C. Waves cause turbulence in the lower atmosphere.
D. Currents carry warm water along the ocean surface.

30.

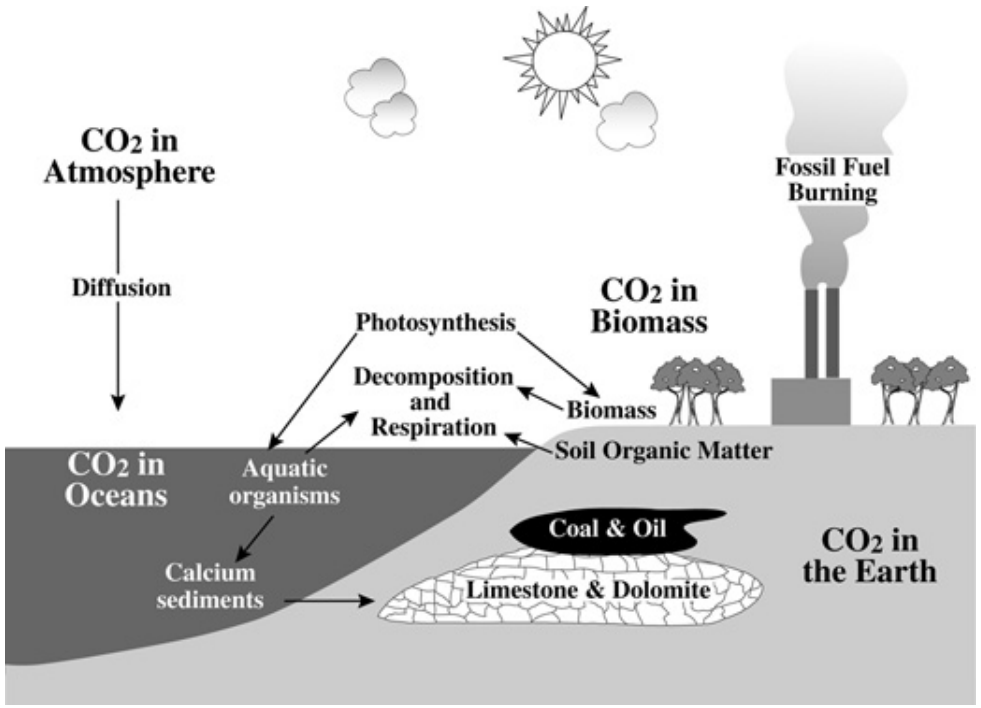
The southeastern region of Texas has mild temperatures with relatively small changes in temperature between daytime and nighttime. Which of these is most responsible for keeping the daily temperature range small?

A. Daily high wind speeds
B. Slow moving cool fronts
C. Heat from deserts
D. Moisture from coastal waters

31.

A scientist predicts that evaporation rates will increase across the globe. If the scientist's prediction comes true, which of the following changes would have to occur to keep the amount of water vapor in the atmosphere stable?

A. Decrease in the rate of groundwater flow
B. Increase in the rate of transpiration
C. Decrease in the rate of surface runoff
D. Increase in the rate of precipitation



32.

Which of the following is an immediate effect of deforestation on carbon levels on Earth?

A. The amount of carbon inside the Earth decreases.

B. The amount of carbon in the atmosphere increases.

C. The exchange of carbon between the atmosphere and aquatic plants increases.

D. The exchange of carbon between the atmosphere and oceans decreases.

33.

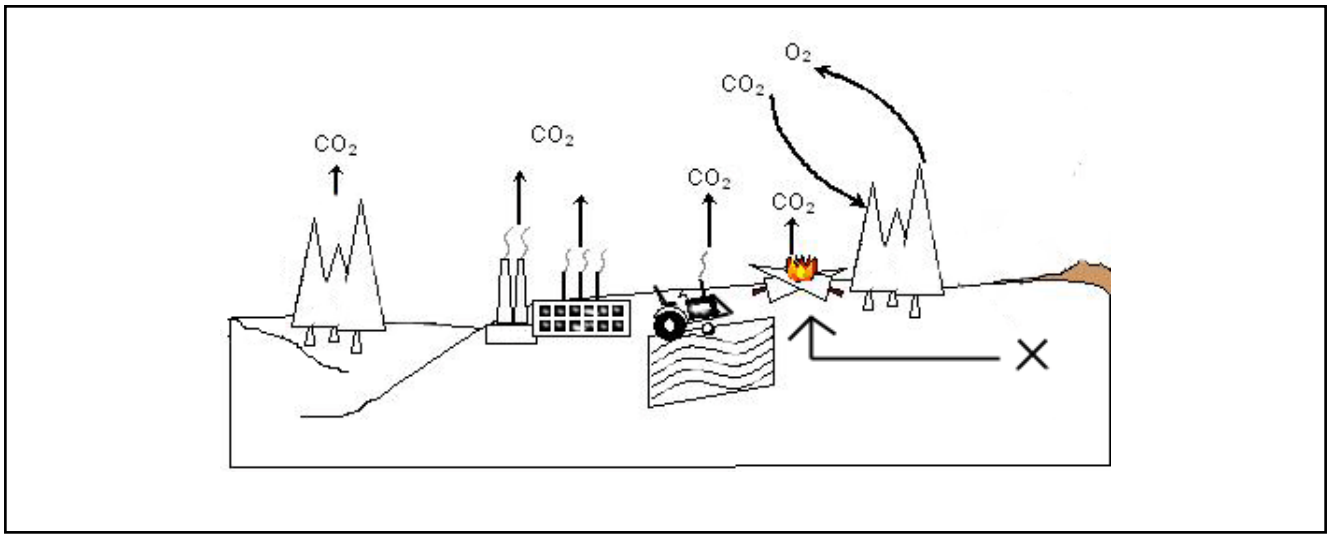
About 75 percent of Earth's surface is currently covered with water. Suppose an ice age occurs in the future. In this ice age, large amounts of water freeze and become part of enlarged polar ice caps. As a result, only 25 percent of Earth's surface would be covered with water. Which of these is MOST LIKELY to result from this ice age?

A. Evaporation would occur at a faster rate.

B. The amount of ground water would increase.

C. Humidity levels in the atmosphere would rise.

D. There would be lower amounts of precipitation.



34.
CO_2 is added to the atmosphere faster than carbon is released through natural processes. What human activity contributes the greatest amount of carbon to the atmosphere?

A. exhaling CO_2 and inhaling O_2
B. photosynthesis
C. burning of fossil fuels
D. polluting the atmosphere with increased air traffic

35.
What other process is shown that is directly related to the carbon cycle?

A. condensation
B. evaporation
C. transpiration
D. photosynthesis

36.
X is the site of a forest fire. What can occur at **X** to positively impact the environment?

A. deforestation
B. reforestation
C. industrial planning and growth
D. continued biomass burning

37.

Slash and burn is a common practice in South America resulting in the destruction of rain forests. After trees are cut down and burned, short-term crops are planted or the land is used for raising livestock. How does slash and burn negatively impact the environment?

A. It is cheaper to burn the piles of logs rather than hauling them off or waiting for them to decay.

B. It increases the amount of land used for agriculture and livestock for underdeveloped countries.

C. It effectively reduces competition among rainforest vegetation.

D. It affects the carbon cycle by contributing to CO_2 levels in the atmosphere and promotes soil erosion.

38.

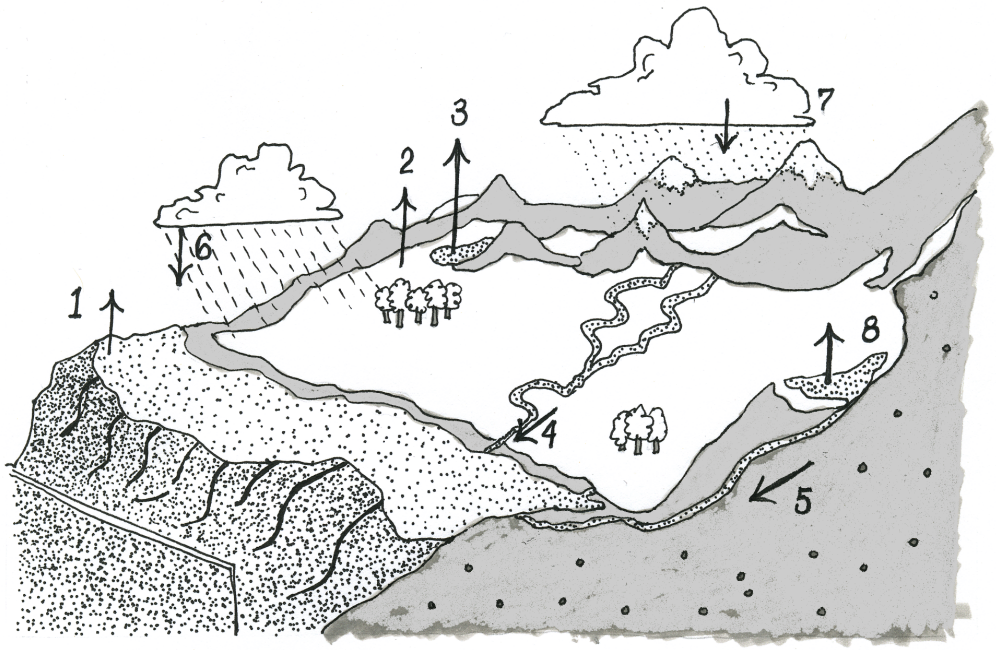
Which of the following can result in an increase in atmospheric carbon dioxide?

A. less biomass burning

B. heating and cooling buildings due to seasonal temperatures

C. planting more trees

D. reduced dependence on fossil fuels by industry



Farmers are constantly in search of better ways to increase crop production. Neighborhood homeowners strive for beautiful lawns and gardens. In both situations, healthy plants are less susceptible to disease and pests. This quest for improving the quality and quantity of plants has made the agriculture industry and private homeowners two major consumers of fertilizer, and the results are not all positive.

Of the 16 elements essential for plant growth and health, nitrogen is the most critical. Plants can utilize two forms of soil nitrogen, ammonium (NH4) and nitrate (NO3). Nitrogen in the form of nitrate is highly soluble in water and consequently highly mobile, making nitrogen contamination of the environment a matter of concern. In both situations, soil nitrogen not used by plants in a timely manner makes its way into the water cycle by runoff or leaching. Leaching is the downward movement of dissolved solids below plant roots into ground water and eventually to neighboring bodies of water.

39.

In the water cycle, where does leaching occur?

A. 1, 2, 3
B. 6, 7
C. 4, 5
D. 8

40.

What can be done to minimize nitrogen pollution?

A. Apply fertilizer at rates over and above the ability of plants to use it.
B. Apply slow release fertilizers at longer intervals
C. Design buildings to be cooled and heated by solar collectors.
D. Install solid particle filters below the roots to prevent nitrates from reaching the water supply.

41.

Cover crops are not grown for harvesting as cash crops are. Farmers generally plant cover crops in winter months after the primary growing season has passed. They choose from a large variety of cover crops, including several species of clover, alfalfa, and other legumes to alternate with their cash crops. Cover crops usually germinate quickly, grow close to the ground, suppress weeds, prevent erosion, and are rich in nutrients. Just before the primary growing season, cover crops are plowed under and tilled into the soil where they retain nutrients before the cash crops are planted. What cycle is positively impacted when farmers plant cover crops?

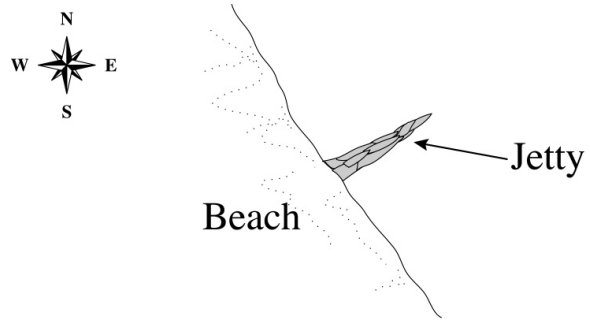
A. water
B. carbon dioxide - oxygen
C. sulfur
D. nitrogen

42.

Two continental plates collide, causing a mountain range to form. As the mountains grow taller, their rate of growth decreases. Which of the following MOST LIKELY causes mountain growth to slow and eventually stop?

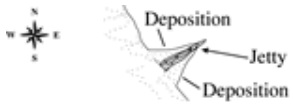
A. Younger rocks tend to be heavier.
B. Steeper slopes erode at a faster rate.
C. Rocks added later have softer surfaces.
D. Weathering occurs slowly at high altitudes.

43.



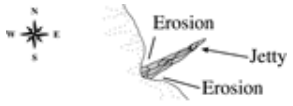
The drawing above shows a coastline as seen from the air. The structure jutting out into the water is called a jetty. Jetties are walls that block waves to protect beachfront property. The current along this beach flows from north to south. Ten years after the jetty is built, the coast is surveyed again. Which of the following shows what the coastline MOST LIKELY looks like?

A.

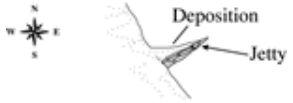


B.

C.



D.



44.

A new plate boundary forms in the middle of an ocean. The two plates begin to split apart. Which of these landforms is MOST LIKELY to form as a result?

A. A high underwater mountain range that runs along the center of the boundary
B. A submarine trench running along the boundary
C. Underwater mountain ranges on either side of the boundary
D. Mid-ocean ridges on either side of the boundary

45.

A geologist's logbook contained the following observations:

- The corresponding rock layers on either side of the formation are the same age

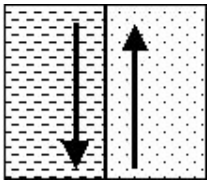
- The ocean floor is wider now than in the past.

- There is evidence of recent volcanic activity.

What type of formation is the geologist studying?

A. a mid-ocean ridge
B. a trench
C. island
D. coral reef

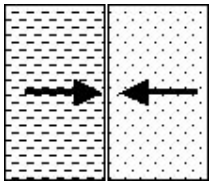
46.



The diagram shows forces acting on rock layers. What landform will result from these actions?

A. fault
B. mountain
C. valley
D. volcano

47.



The diagram shows forces acting on rock layers. What landform will result from these actions?

A. fault
B. mountain
C. valley
D. volcano

48.

A developer has bought 100 acres of beachfront property. Before a new resort can be built, the land is cleared of vegetation. What is a likely result of this action?

A. increased amounts of sand lost to beach erosion
B. higher amounts of red algae north of the construction zone
C. larger clumps of kelp washing ashore at high tide
D. increased number of fish in coastal areas

49.

The movement of continents is ongoing. What does this movement cause?

A. periodic flooding along river valleys
B. erosion of mountain peaks
C. formation of mountains
D. succession of species on volcanic islands

50.

Moving bodies of water change over time. Which order below sequences the creeks from youngest to most mature?

A. Town Creek, Oak Mill Creek, Montoya Creek, Evan's Creek

B. Oak Mill Creek, Town Creek, Evan's Creek Montoya Creek

C. Evan's Creek, Town Creek, Oak Mill Creek, Montoya Creek

D. Oak Mill Creek, Evan's Creek, Town Creek, Montoya Creek

51.

All continental plates are moving, but not all mountain ranges are increasing in elevation. What accounts for this?

A. Only mountain ranges with volcanic peaks are getting taller

B. Not all plate movement produces compressional forces.

C. Some plates are being subducted at a faster rate than mountain building can occur.

D. Plate tectonics acts to maintain equilibrium. Erosion happens at the same rate as mountain building.

52.

Larry is a corn farmer in West Texas. Since there is no surface water on Larry's land, he has an irrigation system that pumps thousands of gallons of water from an underground aquifer. After many years of pumping water at full capacity, the concrete pad under his irrigation equipment no longer sits on the surface of the ground but one side juts up nearly a foot off the ground.

A. The water table is lower than when the well was drilled. The land has subsided as a result.

B. Heavy rains have saturated the soil. The land now has a greater volume.

C. The mass of the irrigation equipment is too heavy for the concrete pad to support.

D. The soil has a high pH resulting from years of exposure to the ground water. The concrete pad is slowly being dissolved.

53.

Which of the following has contributed the MOST to the rise in global temperatures in modern human history?

A. Development of hydroelectric generators and power plants

B. Increased reliance on nuclear power plants and nuclear fuel

C. Widespread strip mining of coal and other minerals

D. Release of greenhouse gases from burning fossil fuels

54.

The paving of open land with asphalt, concrete, and other waterproof materials seems to increase the pollution of nearby bodies of water. The increase is greater in areas that have more precipitation and more traffic. This is a long-term increase that lasts long after the construction is finished. Which of the following BEST explains the increase in pollution?

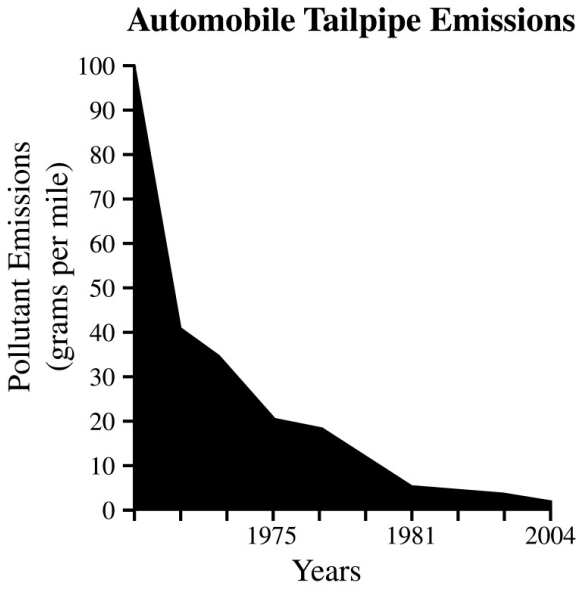
A. Pollution is absorbed from the soil into the pavement and runs off into rivers.

B. Pollutants running over pavement wash into rivers instead of filtering through soil.

C. Polluted rain soaks through asphalt and concrete into the soil.

D. Pollutants in the pavement dissolve in rain and are carried into groundwater.

55.



The graph shows that the amount of pollutants emitted by automobiles has changed over time. These changes are MOST LIKELY the result of —

A. a decrease in the number of people who carpool

B. the recent invention of gas-electric hybrid cars

C. an increase in the average automobile size

D. the development of cleaner fuels with gasoline additives

56.
Which of the following tools of modern agriculture is MOST LIKELY to increase the erosion of topsoil?

A. Effective chemical fertilizers
B. Improved pest management
C. Efficient mechanical harvesters
D. Genetically engineered crops

STOP

Answer Key

#	Item ID	Key	TEKS	Stimulus
1	C083130130	C	8.7A - 8C4	-
2	C083130217	A	8.7A - 8C4	-
3	C083130271	B	8.7A - 8C4	-
4	C083130332	A	8.7A - 8C4	-
5	C081058608RX	C	8.7A - 8C4	C081058608RXp
6	C081058609RX	D	8.7A - 8C4	C081058608RXp
7	C081058610RX	D	8.7A - 8C4	-
8	C081058611RX	C	8.7A - 8C4	-
9	C081058612RX	D	8.7A - 8C4	-
10	C081058613RX	A	8.7A - 8C4	C081058613RXp
11	C081058614RX	D	8.7A - 8C4	-
12	C081058676RX	D	8.7A - 8C4	-
13	C083140438	B	8.7B - 8C4	-
14	C083323147	D	8.7B - 8C4	-
15	C083225392	C	8.10B - 8C5	-

#	Item ID	Key	TEKS	Stimulus
16	C083225440	B	8.10B - 8C5	-
17	C083225442	C	8.10B - 8C5	-
18	C083225443	B	8.10B - 8C5	-
19	C083225445	C	8.10B - 8C5	-
20	C081058680RX	D	8.10B - 8C5	-
21	C081058681RX	A	8.10B - 8C5	-
22	C081058682RX	B	8.10B - 8C5	-
23	C081058683RX	B	8.10B - 8C5	-
24	C081058684RX	B	8.10B - 8C5	-
25	C081058685RX	D	8.10B - 8C5	C081058685RXp
26	C081058686RX	A	8.10B - 8C5	-
27	C081058687RX	A	8.10B - 8C5	-
28	C083135893	B	8.12B	-
29	C083135895	A	8.12B	-
30	C083323258	D	8.12B	-
31	C083135950	D	8.12C - 8C5	-
32	C083135951	B	8.12C - 8C5	C08CARBON

#	Item ID	Key	TEKS	Stimulus
33	C083225469	D	8.12C - 8C5	-
34	C081058592RX	C	8.12C - 8C5	C081058592RXp
35	C081058593RX	D	8.12C - 8C5	C081058592RXp
36	C081058594RX	B	8.12C - 8C5	C081058592RXp
37	C081058595RX	D	8.12C - 8C5	-
38	C081058596RX	B	8.12C - 8C5	-
39	C081058597RX	C	8.12C - 8C5	C081058597RXp
40	C081058598RX	B	8.12C - 8C5	C081058597RXp
41	C081058599RX	D	8.12C - 8C5	-
42	C083182340	B	8.14A - 8C5	-
43	C083218733	D	8.14A - 8C5	-
44	C083218738	D	8.14A - 8C5	-
45	C081058623RX	A	8.14A - 8C5	-
46	C081058624RX	A	8.14A - 8C5	-
47	C081058625RX	B	8.14A - 8C5	-
48	C081058626RX	A	8.14A - 8C5	-

#	Item ID	Key	TEKS	Stimulus
49	C081058627RX	C	8.14A - 8C5	-
50	C081058677RX	D	8.14A - 8C5	C081058677RXp
51	C081058678RX	B	8.14A - 8C5	-
52	C081058679RX	A	8.14A - 8C5	-
53	C083175386	D	8.14C - 8C5	-
54	C083175387	B	8.14C - 8C5	-
55	C083175390	D	8.14C - 8C5	-
56	C083175391	C	8.14C - 8C5	-