

TCAP

Spring 2015

Item Release

Grade 6 Science

Item # 1

Which factor is a biotic element of an Arctic tundra?

- A strong wind
- B cold temperature
- C snowy owl
- D frozen soil

TNS50262_C

Item # 2

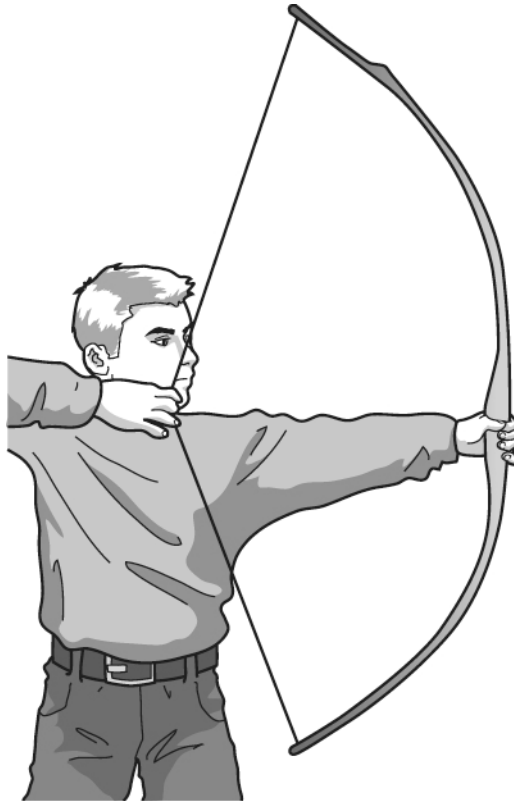
Which best explains why cold-water currents flow beneath warm-water currents?

- A Cold water is more dense than warm water.
 - B Cold water contains less pollution than warm water.
 - C Warm water contains more oxygen than cold water.
 - D Warm water has more potential energy than cold water.
-

TNS50569_A

Item # 3

The energy of a bow changes when the string is pulled back.



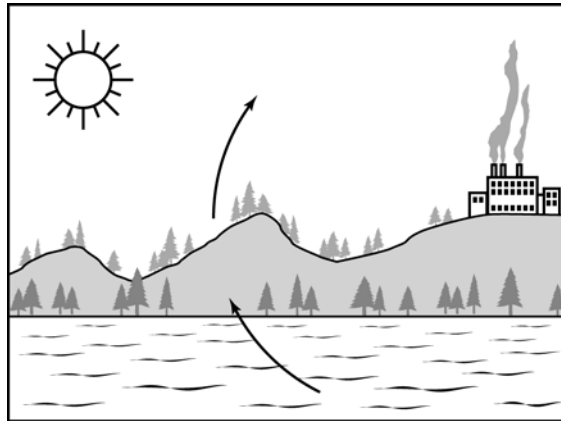
Which change will occur in the bow after the string is released?

- A Nuclear potential energy will decrease.
- B Elastic potential energy will decrease.
- C Chemical potential energy will increase.
- D Gravitational potential energy will increase.

TNS10531_B

Item # 4

The arrows in the diagram represent air movement.



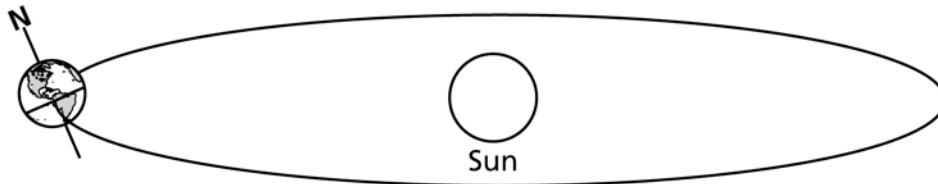
This air movement is a result of

- A** the waves pushing against the land.
- B** the sun heating the land and water differently.
- C** water evaporating from plant leaves.
- D** particles of pollution entering the air.

TNS50266_B

Item # 5

The diagram shows the positions of Earth and the sun at one point in time.



In six months, which season will begin in the Southern Hemisphere?

- A spring
- B summer
- C fall
- D winter

TNS40383_D

Item # 6

A circuit contains a battery, wires, and a buzzer. The diagram represents the energy transformations that occur in the circuit.

Chemical Energy \rightarrow ? \rightarrow Sound Energy

Which type of energy is needed to complete the diagram?

- A Gravitational Energy
- B Light Energy
- C Electrical Energy
- D Heat Energy

TNS30659_C

Item # 7

When a lamp is turned on, only about 10% of the energy is transformed into light. What happens to the rest of the energy?

- A The remaining energy is destroyed.
 - B Energy that is not transformed into light becomes thermal energy.
 - C The rest of the energy is changed into a solid state of matter.
 - D Energy is recycled back into the electrical circuit.
-

TNS30784_B

Item # 8

The blades of a wind turbine are moving. The wind that moves the blades is caused by the

- A density currents generated in oceans.
- B atmosphere being unevenly heated.
- C formation of cumulus clouds.
- D buildup of greenhouse gases.

TNS40386_B

Item # 9

Which best demonstrates a transformation of chemical energy into mechanical energy?

- A a marble rolling down a track
 - B a lantern burning fuel
 - C a match lighting a candle
 - D a motorcycle using gasoline
-

TNS30675_D

Item # 10

A new organism has been discovered in an isolated forest area. This new organism is multicellular and receives nutrition from dead trees. How will this organism most likely be classified?

- A producer
 - B decomposer
 - C scavenger
 - D predator
-

TNS30514_B

Item # 11

The table below describes objects in space.

Objects in Space

Object	Description
1	A solid body, moving through space, smaller than an asteroid
2	Small bodies that orbit the sun beyond Neptune, composed of frozen gases, ice, and dust
3	Rocky and metallic objects that orbit the sun, smaller than planets
4	A large, gaseous mass in space, generates its own light

Based on the information in this table, which object is correctly identified?

- A Object 1 is a planet.
- B Object 2 is a moon.
- C Object 3 is a galaxy.
- D Object 4 is a star.

TNS30641_D

Item # 12

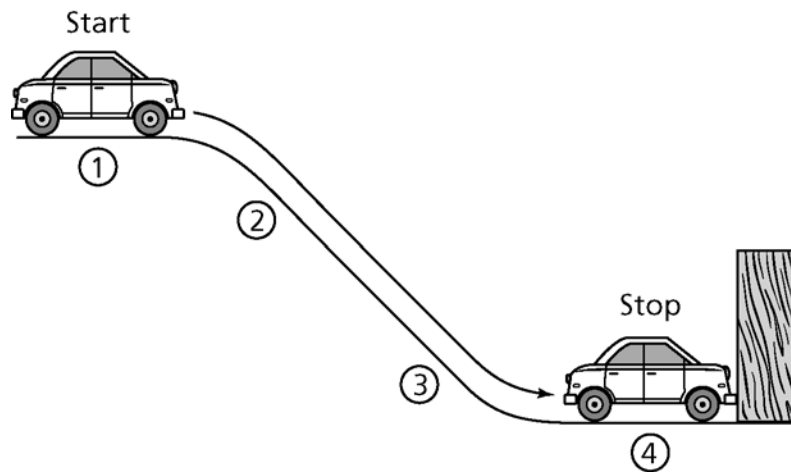
Which of these is the best example of an assistive technology that helps people overcome a disability?

- A a computer program that can change text into spoken words
 - B an oven that contains a fan that moves hot air around
 - C a television with a button that can lower the volume
 - D a telephone that records digital voice messages from callers
-

TNS60282_A

Item # 13

The diagram shows a toy car on a ramp.



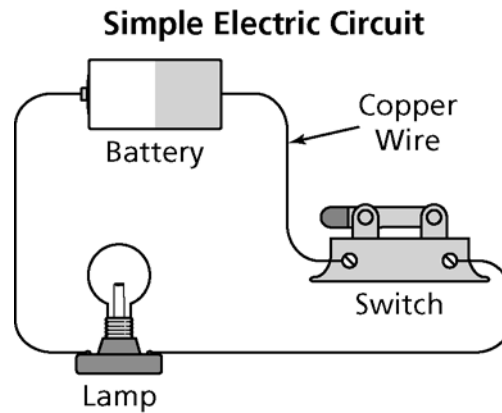
At which point on the ramp will the toy car have the greatest kinetic energy?

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

TNS60651_C

Item # 14

The drawing shows a simple electric circuit.



When the switch is in the “off” position, the lamp stays dark. Flipping the switch to the “on” position completes the circuit so that the lamp lights up. How does flipping the switch to the “on” position cause the lamp to light up?

- A by multiplying the amount of energy, where it produces a brighter light
 - B by reducing the amount of energy, where it remains in the battery
 - C by allowing electrical energy to reach the lamp, where it is transformed into light energy
 - D by allowing chemical energy to reach the lamp, where it is transformed into electrical energy
-

TNS60584_C

Item # 15

The table below shows some weather conditions on a Wednesday.

Wednesday Weather

Condition	Afternoon	Evening	Night
Temperature (°F)	30	28	22
Wind (miles per hour)	4	4	6
Relative Humidity	68%	85%	100%

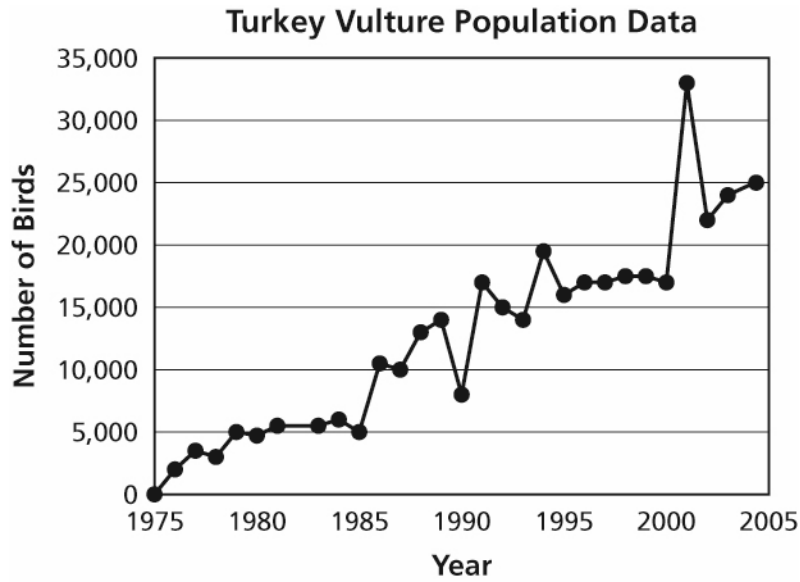
Based on the data in the table, which weather prediction is best for Thursday?

- A** warm with a possibility of rain
- B** cold with a possibility of snow
- C** hot with clear skies
- D** cool with gusty winds

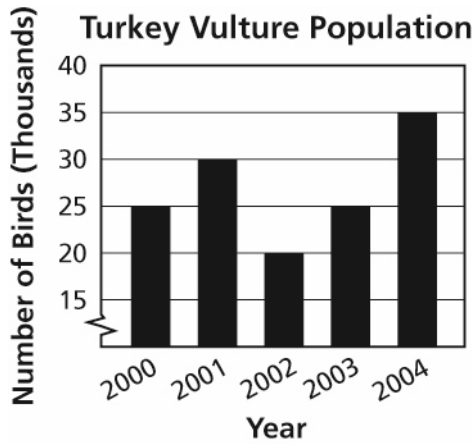
TNS50267_B

Item # 16

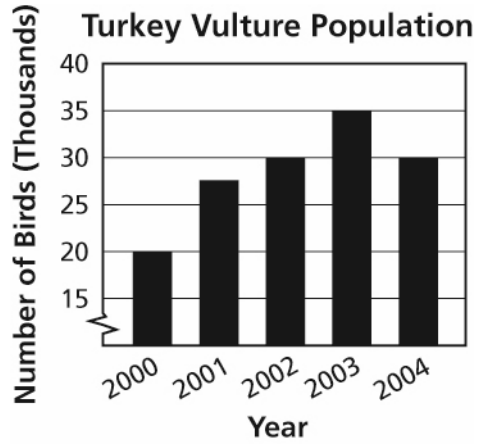
This line graph shows the changes in the turkey vulture population over a thirty-year period.



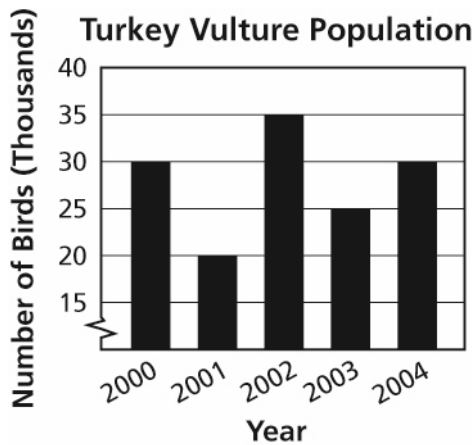
Which graph best shows the data from 2000 to 2004?



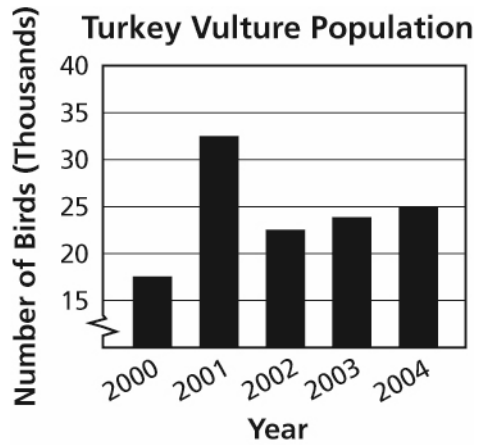
A



C



B



D

Item # 17

The diagram shows the movement of air during a thunderstorm.



The rising and falling of air during a thunderstorm directly results from

- A** lightning.
- B** precipitation.
- C** heat convection.
- D** cloud formation.

TNS10725_C

Item # 18

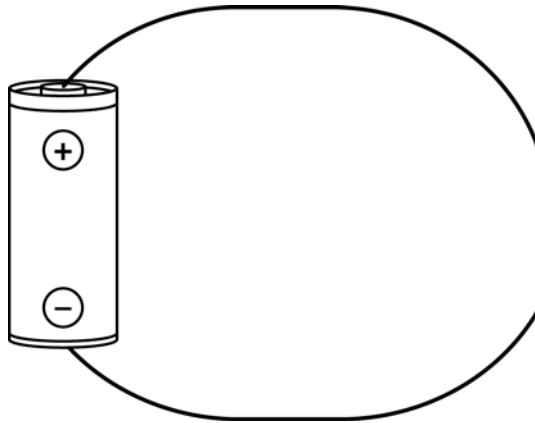
The sun appears to observers in Tennessee as the brightest star in the sky. The sun appears brighter than other stars because it is

- A the largest star in the universe.
 - B the hottest star in the universe.
 - C able to radiate more energy than other stars.
 - D closer to Earth than other stars.
-

TNS40405_D

Item # 19

A diagram of an incomplete circuit is shown below.



What type of object would most likely help energy flow through the circuit?

- A an object that has a high melting point
- B an object that is a good conductor of electricity
- C an object that is more dense than the battery
- D an object that has more chemical energy than the battery

TNS30724_B

Item # 20

Over several years, astronomers observed the alignment of planets. One year, astronomers observed Jupiter and noticed it appeared larger than normal. What caused Jupiter to appear larger when viewed from Earth?

- A its distance from Earth
 - B its rotation on its axis
 - C its ability to generate light
 - D its distance from the sun
-

TNS30642_A

Item # 21

Which question would best help a student classify an organism as a decomposer?

- A Does it feed on plants?
 - B Does it break down dead material?
 - C Does it use sunlight to make its own food?
 - D Does it have parts that attract pollinators?
-

TNS30671_B

Item # 22

Lighting a match is best described as a transformation of

- A mechanical energy into potential energy.
 - B kinetic energy into potential energy.
 - C chemical energy into light and heat energy.
 - D electrical energy into heat and chemical energy.
-

TNS10454_C

Item # 23

A solar panel absorbs energy from the sun and transforms some of the energy into electrical energy. Which best explains what happens to the remaining energy?

- A The remaining energy increases.
 - B The remaining energy is destroyed.
 - C The remaining energy is absorbed into the air.
 - D The remaining energy changes into other forms.
-

TNS50214_D

Item # 24

The chart describes three bodies found in outer space.

Bodies in Outer Space

Body	Description
1	A rocky object that orbits the sun between Mars and Jupiter and can range in size from a dust particle to almost 1,000 kilometers across
2	A small, frozen mass of dust and gas that orbits the sun and produces a long tail as it passes close to the sun
3	A small piece of debris traveling through space that can range in size from a few millimeters to less than 1 kilometer

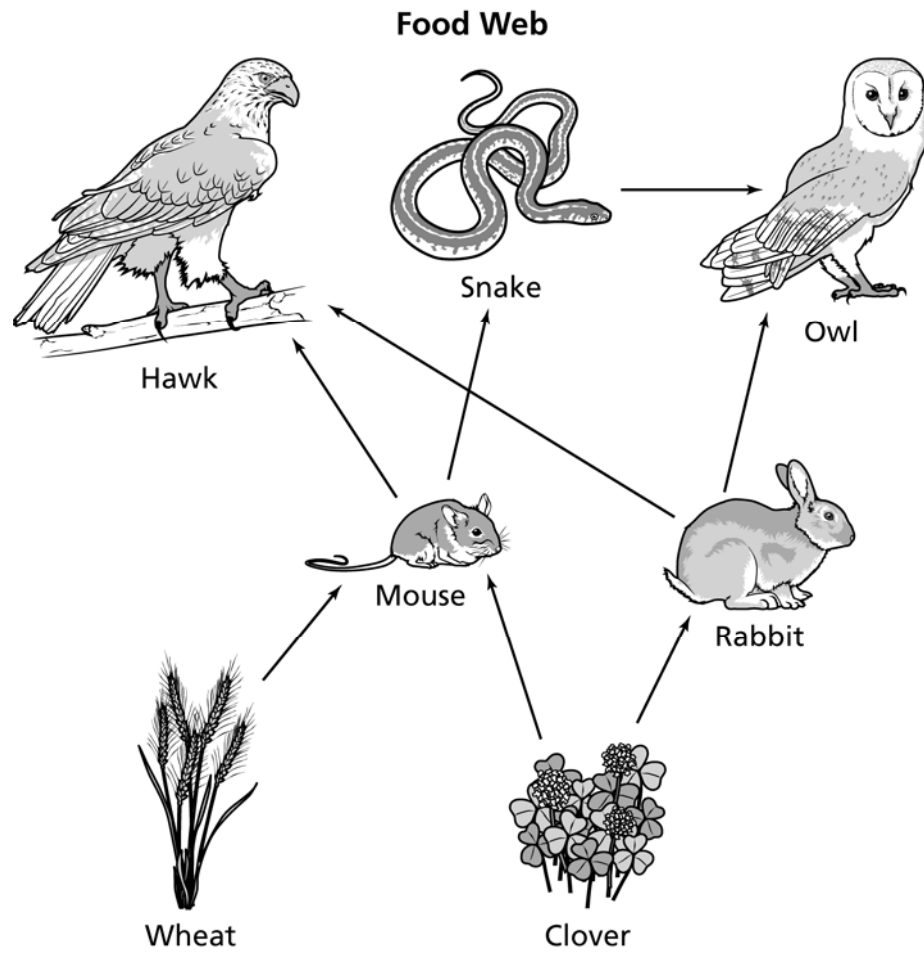
Body 3 is most likely

- A an asteroid.
- B a comet.
- C a meteoroid.
- D a moon.

TNS50259_C

Item # 25

The diagram shows a food web.



Which animal from this food web receives energy directly from producers?

- A Hawk
- B Snake
- C Owl
- D Mouse

TNS50423_D

Item # 26

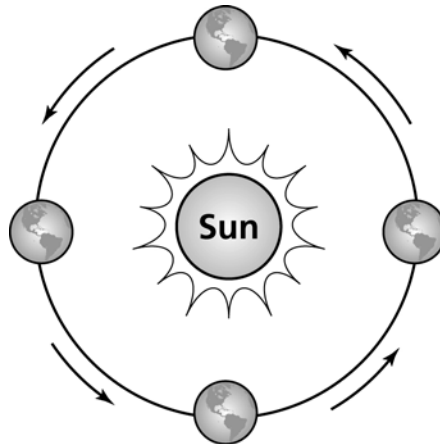
Scientists developed a new antibiotic for patients to use to treat an illness caused by bacteria. Which of these is an unintended consequence of people using more antibiotic than needed to treat the illness?

- A lower costs for treating patients
 - B patients recovering more quickly
 - C fewer people becoming ill
 - D bacteria that resist antibiotics
-

TNS60281_D

Item # 27

The diagram represents the revolution of Earth around the sun.



What should be added to the diagram to better demonstrate how seasons are caused on Earth?

- A** rotation of the moon
- B** planets nearest Earth
- C** tilt of Earth
- D** size of the sun

TNS30506_C

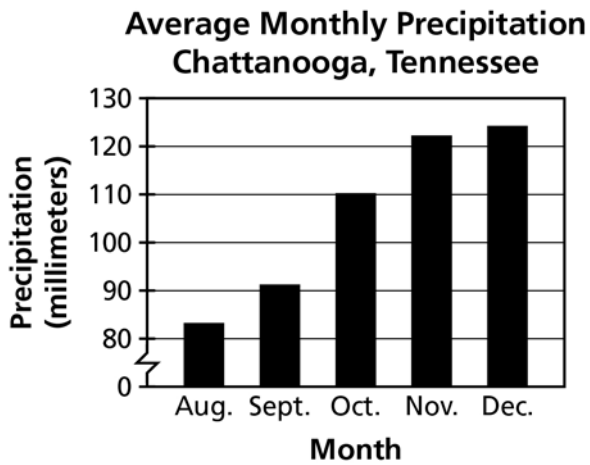
Item # 28

This table shows the average monthly precipitation amounts in Chattanooga, Tennessee, for five months.

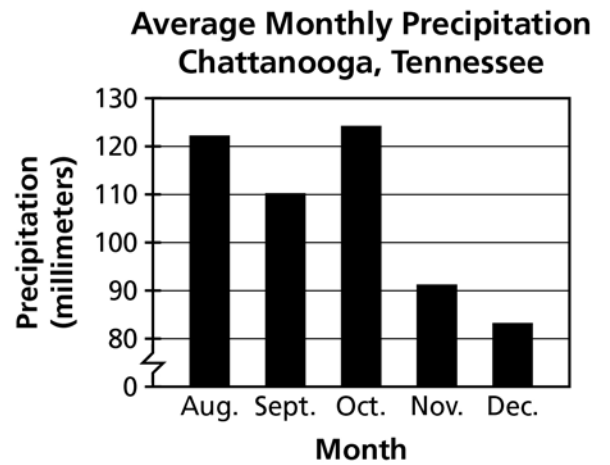
**Average Monthly Precipitation
Chattanooga, Tennessee**

Month	Precipitation (millimeters)
Aug.	91
Sept.	110
Oct.	83
Nov.	124
Dec.	122

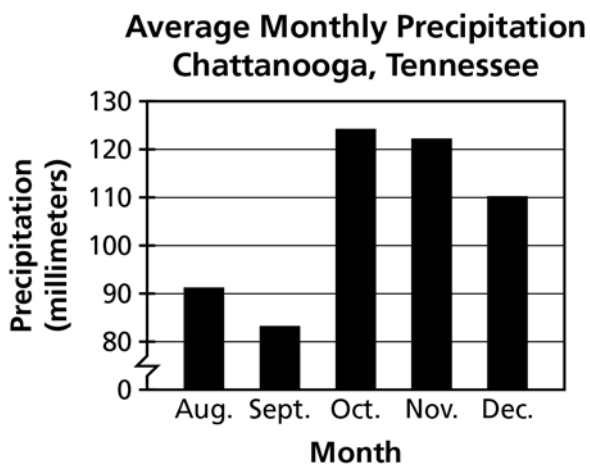
Which graph best displays the data from the table?



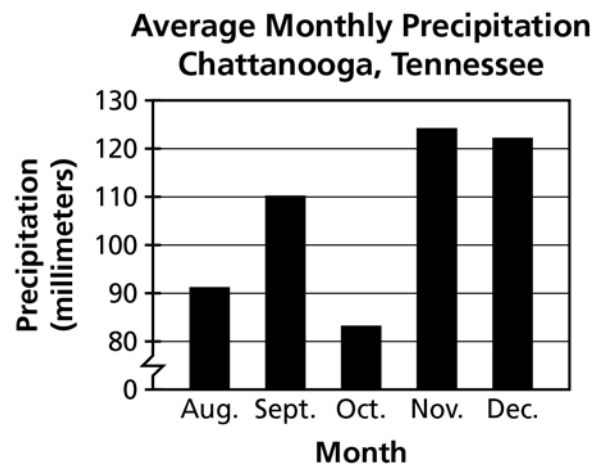
A



C



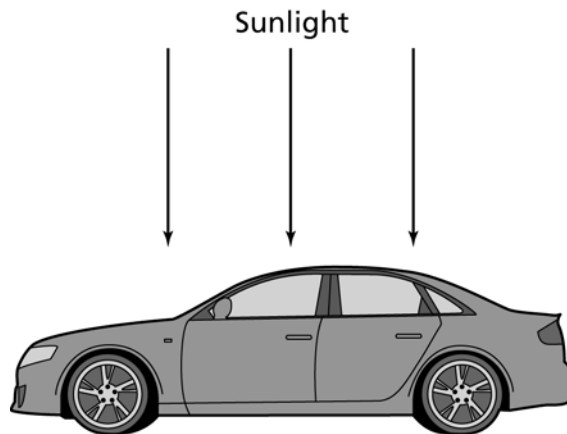
B



D

Item # 29

Sunlight strikes the surface of a car, causing the temperature of the car to increase.



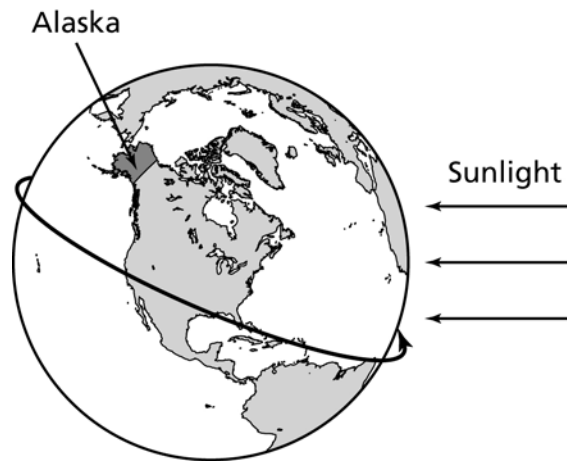
Which best explains the energy transformation that occurs when sunlight strikes a car?

- A Solar energy is changed into electrical energy.
- B Solar energy is changed into thermal energy.
- C Solar energy becomes chemical energy.
- D Solar energy becomes mechanical energy.

TNS30721_B

Item # 30

The diagram represents Earth rotating on its axis.



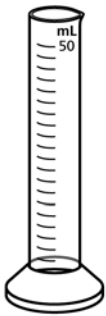
As Earth rotates, how long will it take Alaska to return to this same position?

- A one day
- B one week
- C one month
- D one year

TNS40406_A

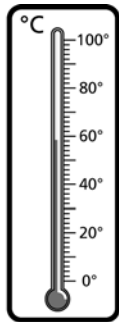
Item # 31

A student wants to compare the rates at which 10 milliliters of water will evaporate at three different air temperatures. Which set of tools is best to use for this investigation?



Graduated
Cylinder

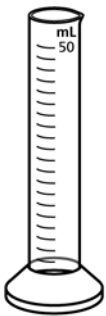
A



Thermometer

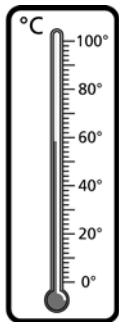


Clock

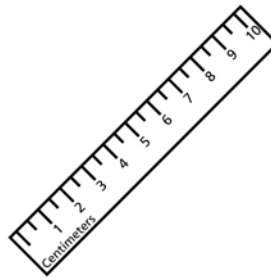


Graduated
Cylinder

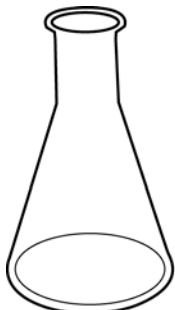
B



Thermometer



Ruler



Flask

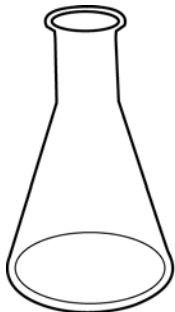
C



Barometer



Stopwatch

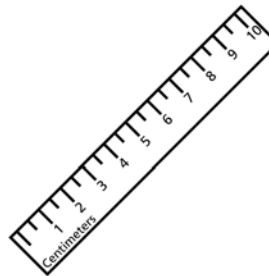


Flask

D



Barometer



Ruler

Item # 32

A table of current conditions is shown below.

Current Conditions

Relative Humidity	62%
Dew Point	22°C
Cloud Cover	Sunny
Wind	SSE at 32 kilometers per hour

Which condition best shows heat convection is happening in the atmosphere?

- A** Relative Humidity
- B** Dew Point
- C** Cloud Cover
- D** Wind

TNS50566_D

Item # 33

After Earth has completed one revolution around the sun, approximately how much time has passed?

- A 24 hours
 - B 28 days
 - C 52 weeks
 - D 100 years
-

TNS30710_C

Item # 34

An astronomer observed four celestial bodies with a telescope. The table shows some properties of the objects.

Celestial Body Properties

Object Name	Diameter (kilometers)	Approximate Distance from Earth (kilometers)
Moon	3,474	384 thousand
Mars	6,794	55 million
Jupiter	142,984	800 million
Io	3,630	800 million

Which celestial object appeared smallest to the astronomer?

- A Moon
- B Mars
- C Jupiter
- D Io

TNS50253_D

Item # 35

Leeches usually live in freshwater ecosystems. Leeches feed on the blood of other animals, such as fish. The leeches do not kill the fish, but the fish are weakened by the leeches. Which best describes the relationship between leeches and fish?

- A predator-prey
 - B consumer-scavenger
 - C producer-decomposer
 - D parasite-host
-

TNS50413_D

Item # 36

Four objects in the solar system are described in the chart.

Solar System Objects

Object	Size (kilometers)	Composition	Description of Object Movement
Q	12,104	Iron and rock	Takes 225 days to go around the sun and is in a nearly circular pattern
R	5,150	Rock and ice	Revolves around Saturn once every 16 days
S	40	Ice, dust, and frozen gas	Comes very close to the sun once every 2,400 years and then travels far back into space
T	200	Nickel and iron	Revolves around the sun once every 3.68 years

Based on the information in the chart, which object is most likely a comet?

- A Q
- B R
- C S
- D T

TNS50258_C

Item # 37

When a student pressed the button on a battery-powered flashlight, the light bulb began to glow. The first step in this energy transformation is mechanical. What are the next steps in this energy transformation?

- A electrical to light to chemical
 - B chemical to electrical to light
 - C chemical to light to electrical
 - D electrical to chemical to light
-

TNS10639_B

Item # 38

In addition to rain, which other factor most helps plants grow all year in a tropical rain forest?

- A low humidity
 - B warm temperatures
 - C cloudy summers
 - D windy conditions
-

TNS10520_B

Item # 39

Which condition will most likely lead to the formation of winds on Earth?

- A the shifting of tectonic plates
 - B geothermal activity
 - C the rotation of Earth on its axis
 - D uneven heating of Earth's surface
-

TNS30716_D

Item # 40

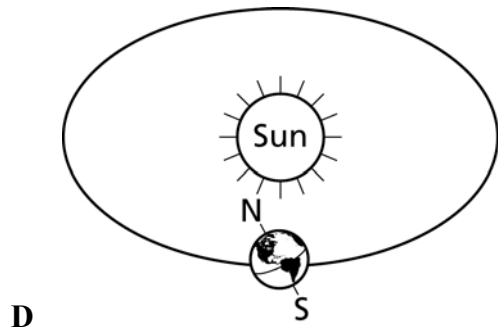
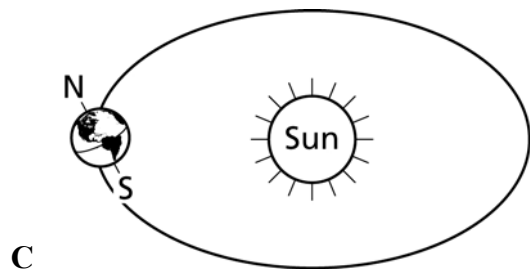
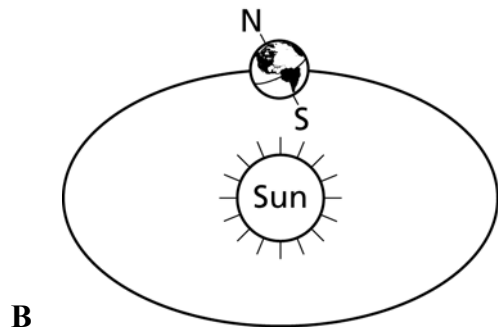
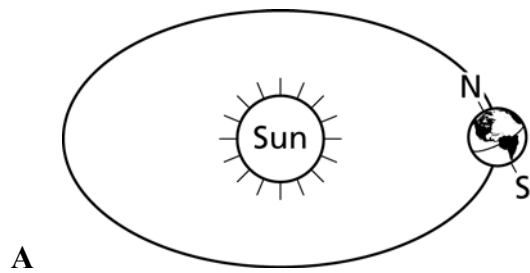
A glass company claims to have created a new type of window glass that reduces the amount of light and thermal energy allowed into a room. Which is the most likely way for the company to test this new window glass?

- A Determine the density of the new glass and compare it to other types of glass.
 - B Compare the indoor temperature of rooms with the new glass to rooms with other types of glass.
 - C Determine which type of glass is less expensive to manufacture.
 - D Compare the materials used to produce the new glass to the materials of other types of glass.
-

TNS21104_B

Item # 41

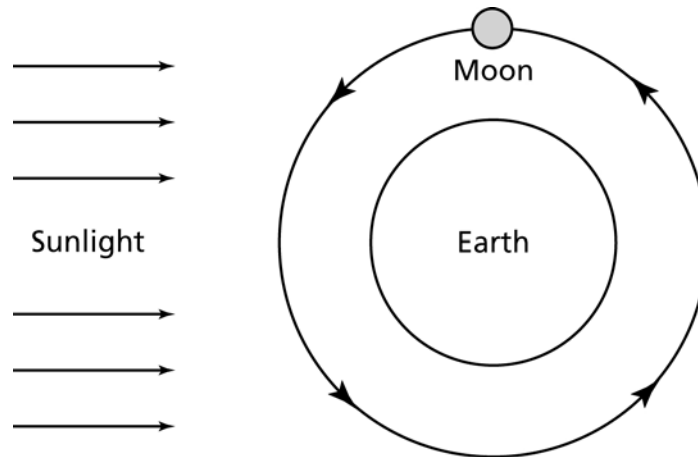
Which diagram best shows when summer is starting in the Southern Hemisphere?



TNS30713_C

Item # 42

This diagram shows the moon revolving around Earth.



Which moon phase is shown in this diagram?

- A last quarter
- B first quarter
- C waning gibbous
- D waxing crescent

TNS50184_A

Item # 43

A coniferous forest biome has long, cold, snowy winters. It contains pine and spruce trees, elk, moose, and gray wolves. Which factor is an abiotic element in this biome?

- A moose
 - B spruce trees
 - C snow
 - D gray wolves
-

TNS30638_C

Item # 44

The moon orbits Earth about once each

- A day.
- B hour.
- C month.
- D year.

TNS40380_C

Item # 45

Which diagram best shows a total lunar eclipse as viewed from Earth?



A



B



C

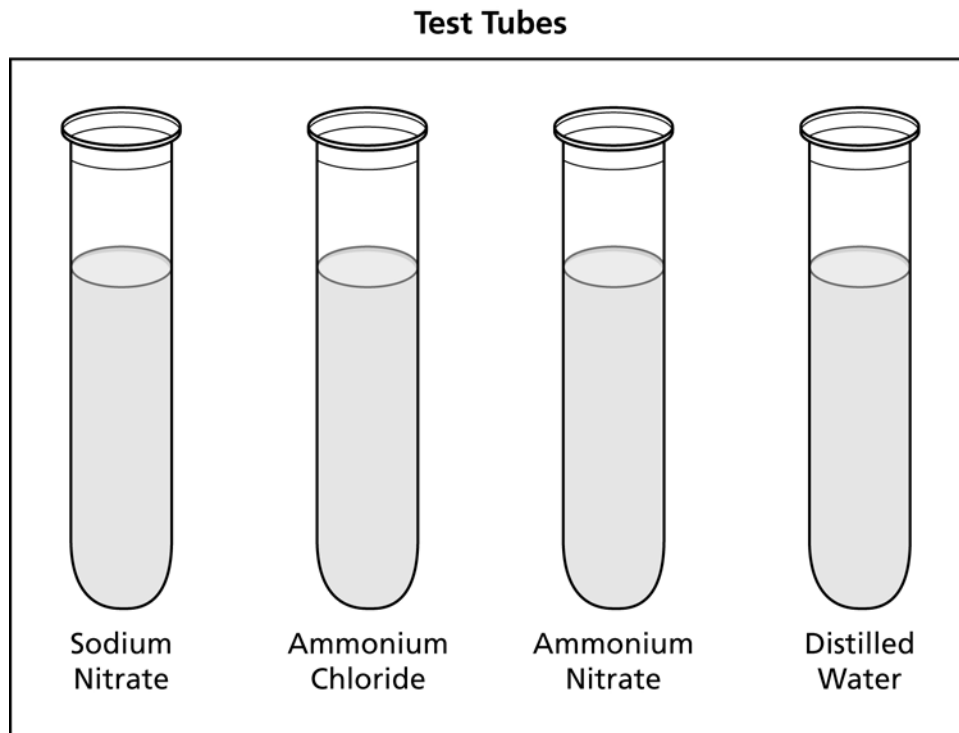


D

TNS40384_A

Item # 46

Students need to determine which fertilizer is best to use on bean plants. The students place four liquids in test tubes as shown below.



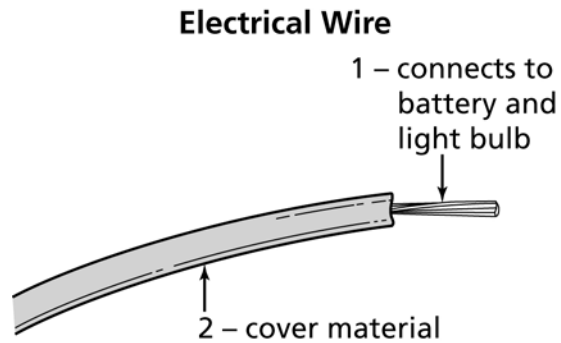
Which liquid should the students use on their control group?

- A Sodium Nitrate
- B Ammonium Chloride
- C Ammonium Nitrate
- D Distilled Water

TNS40436_D

Item # 47

A student uses a wire to conduct electricity from a battery to a light bulb. The wire is covered by a material that does not conduct electricity outside of this path. The picture shows this wire.



Which materials are most likely used in this wire?

- A 1 – steel, 2 – aluminum
- B 1 – copper, 2 – plastic
- C 1 – wood, 2 – rubber
- D 1 – iron, 2 – silver

TNS50221_B

Item # 48

Which set of abiotic factors is typical in rain forest biomes?

- A warm temperatures and large amounts of precipitation
 - B hot temperatures and very little precipitation
 - C cool temperatures and low amounts of precipitation
 - D extremely cold temperatures and freezing precipitation
-

TNS50404_A

Item # 49

Wind causes the blades of a windmill to turn.

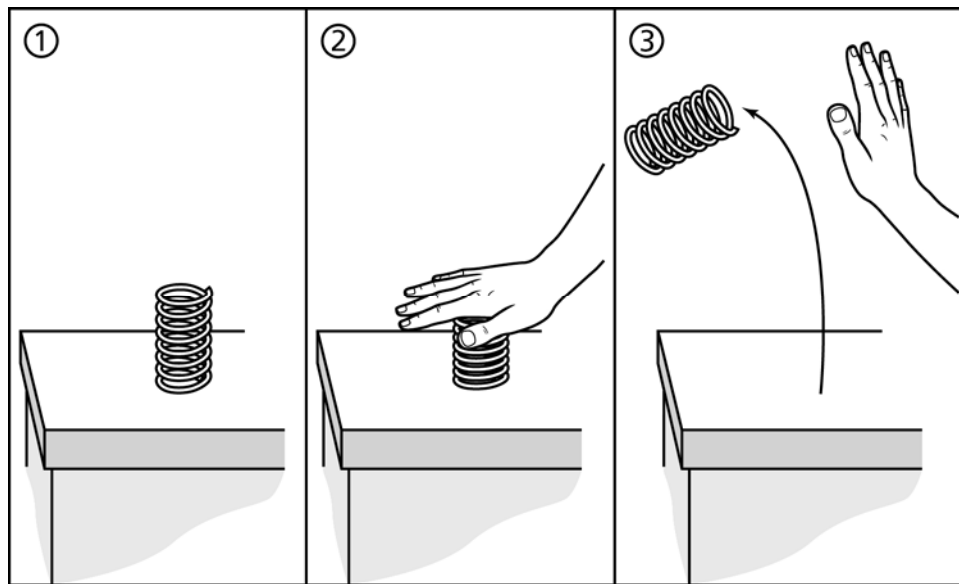
The energy in the wind that causes the blades of a windmill to turn is produced by the

- A clouds.
- B oceans.
- C rain.
- D sun.

TNS21235_D

Item # 50

The drawing shows a student pressing down on a spring and then letting go.



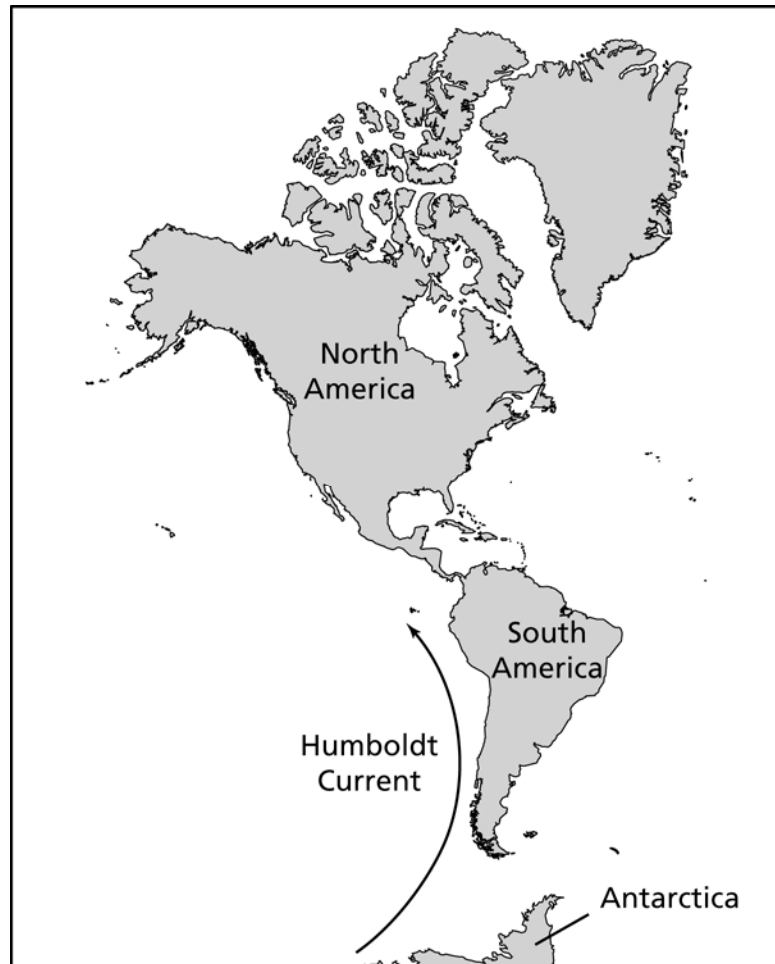
What happened to the energy that the student used to push the spring down?

- A The spring absorbed a different kind of energy.
- B The spring returned the energy to the student.
- C The spring modified some of the energy into matter.
- D The spring changed the energy into a different kind of energy.

TNS60583_D

Item # 51

The diagram shows the location of the Humboldt Current.



Which of these best describes the Humboldt Current?

- A** a cold current that carries cold water from the pole northward to the tropics
- B** a cold current that carries cold water from the tropics southward to the pole
- C** a warm current that carries warm water from the pole northward to the tropics
- D** a warm current that carries warm water from the tropics southward to the pole

TNS50244_A

Item # 52

A battery-operated toothbrush is shown in the picture.



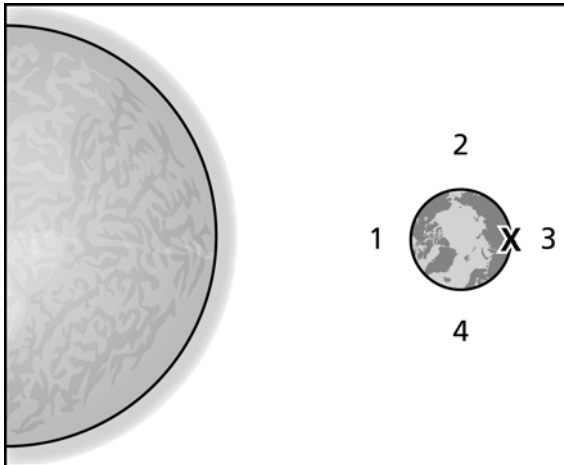
While running, the battery-operated toothbrush transforms electrical energy into

- A light and heat energy.
- B sound and mechanical energy.
- C nuclear and solar energy.
- D chemical and potential energy.

TNS40224_B

Item # 53

A spring tide is occurring at point X.



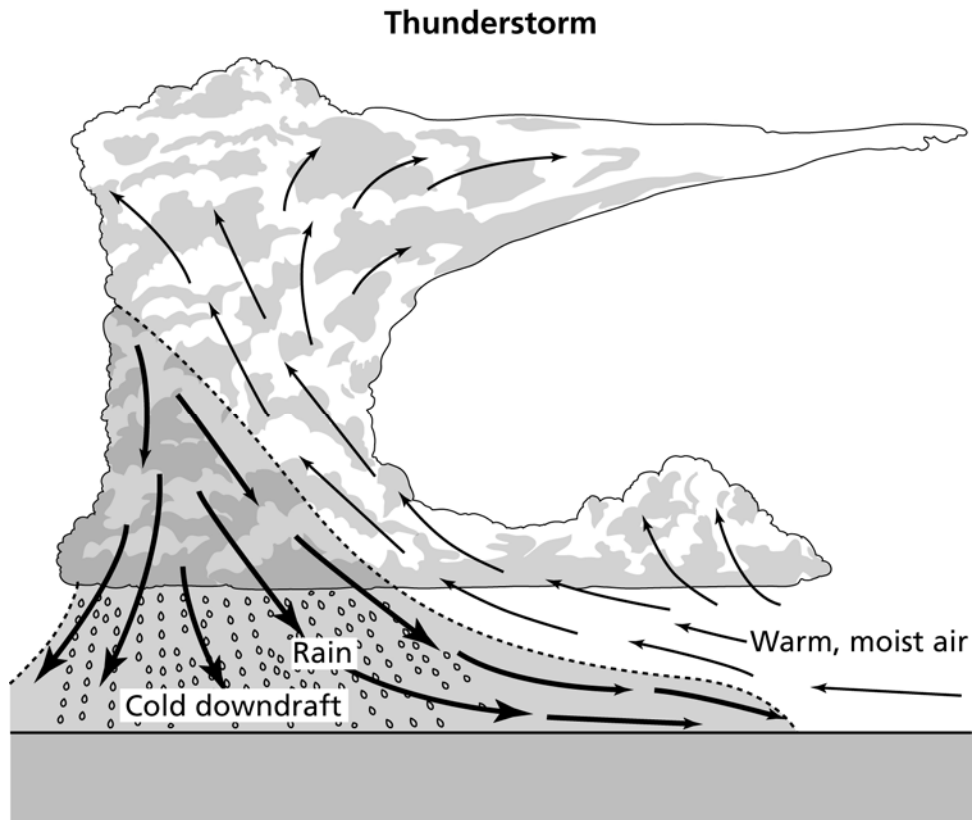
In which two positions could the moon possibly be located?

- A** 1 or 3
- B** 1 or 4
- C** 2 or 3
- D** 2 or 4

TNS10447_A

Item # 54

The arrows in the diagram represent air movement during a thunderstorm.



The air circulates in this pattern because of the

- A percentage of relative humidity.
- B volume of precipitation.
- C static electricity discharge.
- D atmospheric heat convection.

TNS50902_D

Item # 55

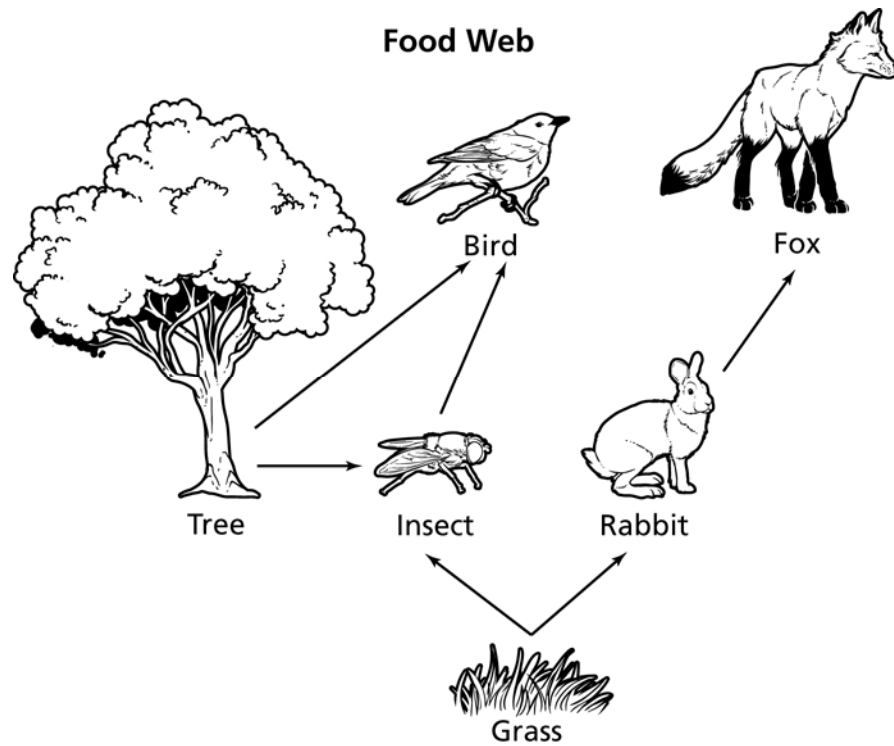
Which of these best describes a planet?

- A a small, frozen mass of dust and gas that travels faster as it gets closer to the sun
 - B a mass of gas that is held together by its own gravity and produces its own light
 - C a sphere-shaped mass of rock or gas that orbits a star
 - D a small, irregularly shaped mass of metal and rock that orbits a larger celestial body
-

TNS51174_C

Item # 56

A food web is shown.



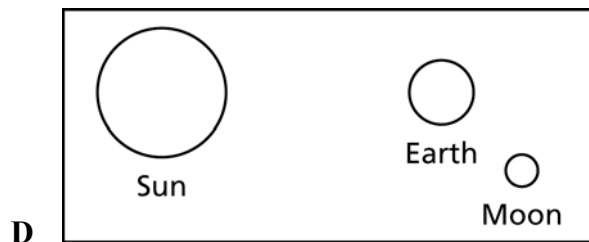
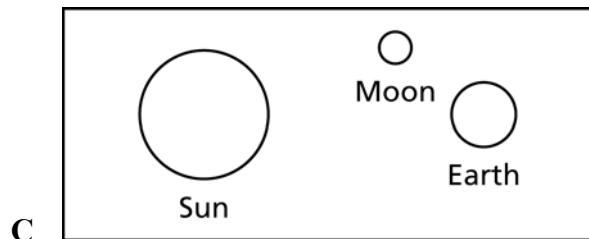
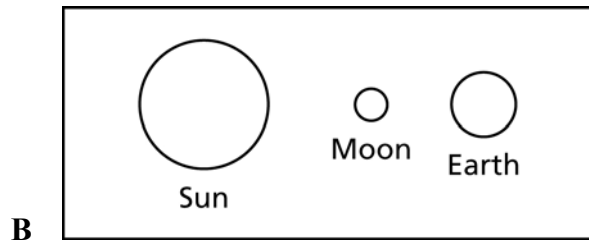
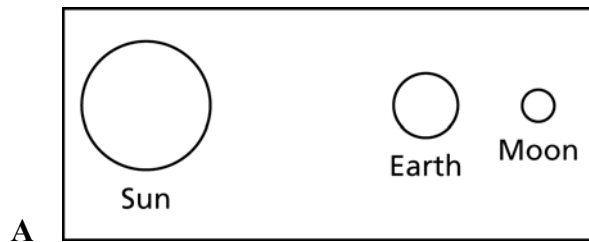
Which two organisms from this food web are both classified as consumers?

- A Tree and Bird
- B Insect and Fox
- C Rabbit and Grass
- D Grass and Tree

TNS40375_B

Item # 57

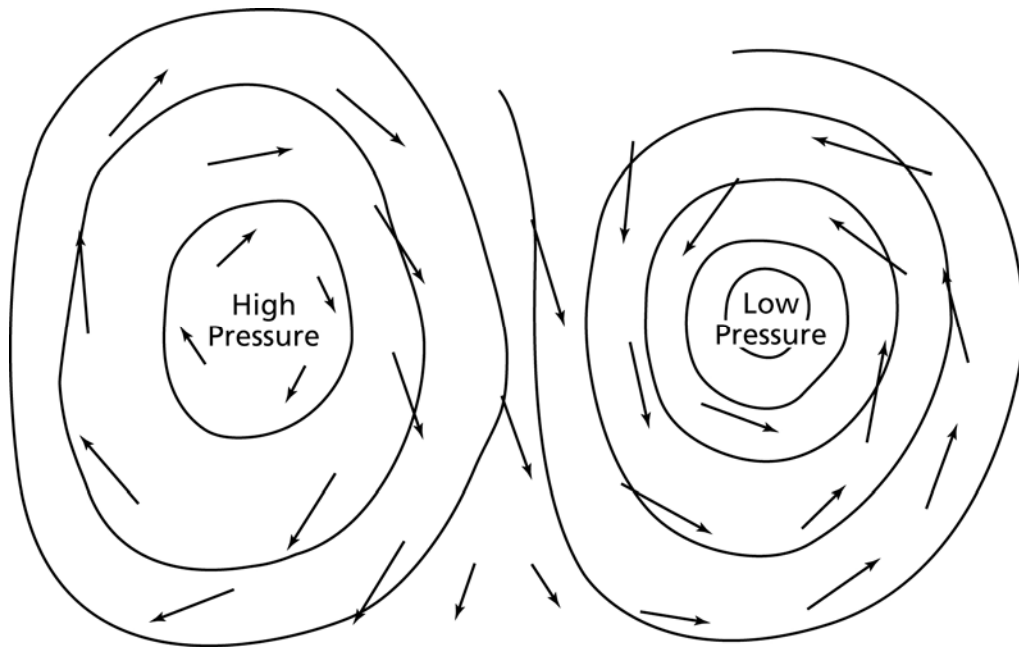
Which diagram best shows the positions of the sun, Earth, and the moon during a lunar eclipse?



TNS50442_A

Item # 58

An unequal heating of the surface of Earth by the sun causes areas of high and low pressure to form.



What do the arrows in the diagram most likely represent?

- A wind
- B precipitation
- C clouds
- D runoff

TNS50575_A

Item # 59

Some comets are visible to the naked eye from Earth because they

- A increase in size.
 - B pass close enough to Earth.
 - C produce their own light.
 - D react with the atmosphere of Earth.
-

TNS30709_B

Item # 60

An ocean food chain is shown.



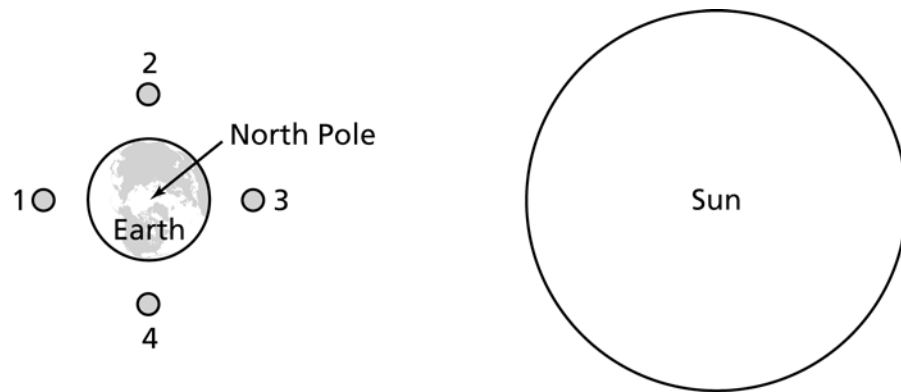
What is the role of krill in this food chain?

- A scavenger
- B producer
- C consumer
- D decomposer

TNS50418_C

Item # 61

The diagram below shows Earth, the sun, and the moon.



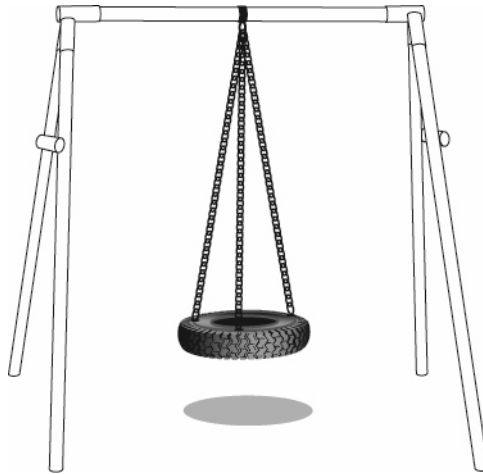
In order to see a new moon from Earth, where should the moon be positioned?

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

TNS30754_C

Item # 62

A tire swing is shown.



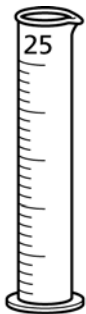
As the tire swings back and forth, a relationship occurs between which two types of energy?

- A** heat and electromagnetic
- B** mechanical and nuclear
- C** potential and kinetic
- D** physical and chemical

TNS21231_C

Item # 63

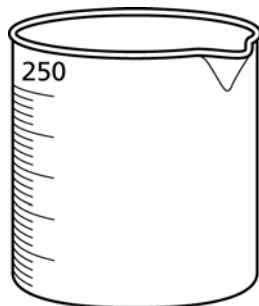
A student needs 10 milliliters (mL) of water for a lab experiment. Which piece of equipment will give the student the most precision in a single measurement?



A 25 mL Graduated Cylinder



B 5 mL Test Tube



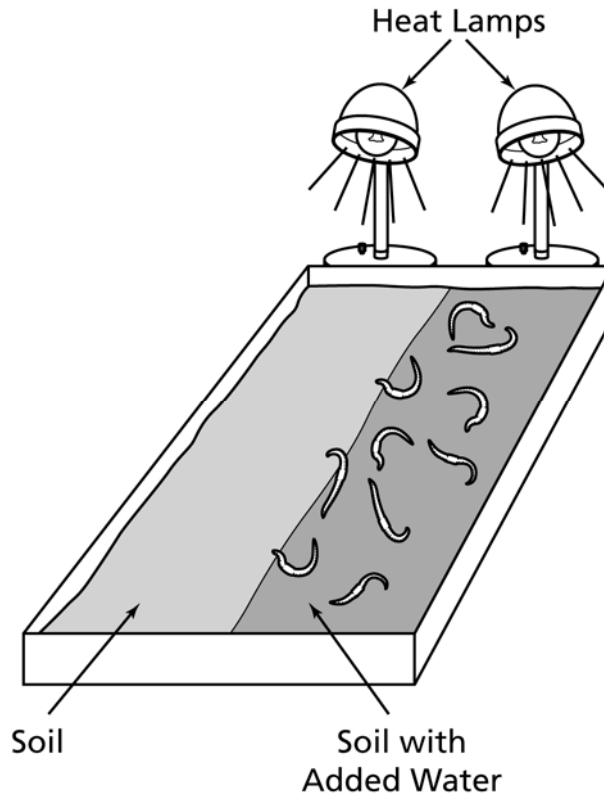
C 250 mL Beaker



D 1 mL Pipette

Item # 64

A student placed 10 earthworms in the middle of a tray of soil under a heat lamp. The student added a small amount of water to the soil on the right side of the tray. The picture shows the locations of the earthworms after 20 minutes.



Based on this investigation, which conclusion can best be reached?

- A Earthworms prefer moist soil to dry soil.
- B Earthworms prefer deep soil to shallow soil.
- C Earthworms prefer warm temperatures to cool temperatures.
- D Earthworms prefer bright environments to dark environments.

TNS50072_A