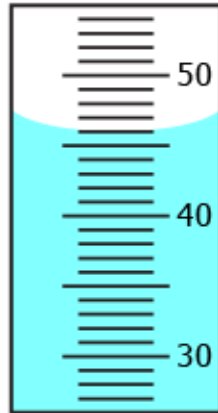


**Exam not valid for Paper Pencil Test Sessions**

1 Directions: Type your answer in the box.



mL

**What is the precise measurement of the liquid in the graduated cylinder?**

2



**A pencil is placed in a beaker of water. When viewed from the side, the pencil appears to be bent. This is an example of —**

- A reflection
- B diffraction
- C attraction
- D refraction

- 3 **A student performs an experiment to determine how the temperature of a liquid affects the rate of solubility of a solute. The student fills four beakers of equal size each with 250 mL of water at varying temperatures. The student then places 25 g of sugar in each beaker and records how long it takes for the sugar to dissolve in each beaker, as shown in the table.**

Beaker	Volume of liquid (mL)	Temperature of liquid (°C)	Amount of solute (g)	Time to dissolve (sec)
1	250	10	25	153
2	250	30	25	127
3	250	50	25	83
4	250	70	25	51

**What can the student conclude from the experiment?**

- A As the temperature of the solvent decreases, the rate at which the solute dissolves decreases.
- B As the volume of the solvent increases, the rate at which the solute dissolves increases.
- C As the volume of the solvent decreases, the rate at which the solute dissolves increases.
- D As the temperature of the solvent increases, the rate at which the solute dissolves decreases.

4

Age Range	Girl Caloric Requirement	Boy Caloric Requirement
2-3 years	1000-1400	1000-1400
4-8 years	1400-1600	1400-1600
9-13 years	1600-2000	1800-2000
14-18 years	2000	2200-2400

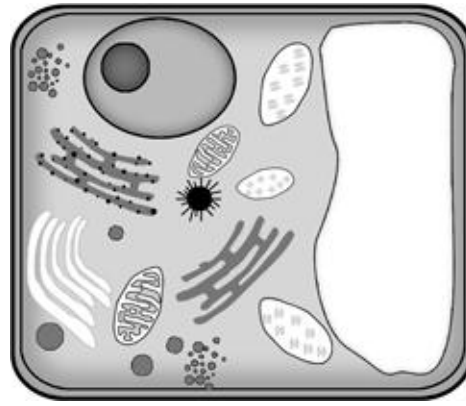
**At what age are boys suppose to intake the highest amount of calories daily?**

- A 2–3 years
- B 14–18 years
- C 9–13 years
- D 4–8 years

- 5 **Different versions or forms of the same gene are called —**

- A chromosomes
- B sex cells
- C nitrogen bases
- D alleles

6



**What type of cell is pictured?**

- A Animal cell
- B Nerve cell
- C Blood cell
- D Plant cell

7



**This picture shows a zebra with two tick birds on its back. The tick birds alert the zebras that predators are near as well as remove and eat ticks found on zebras. What is the primary type of interaction between the tick birds and the zebras?**

- A Mutualism
- B Parasitism
- C Competition
- D Commensalism

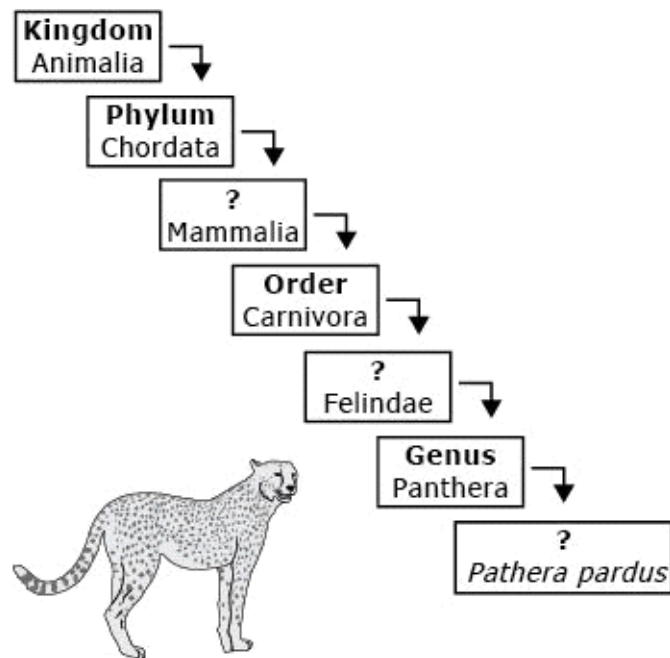
8

Bird	Beginning Speed (m/s)	Ending Speed (m/s)	Time (s)
1	6.25	8.60	2.0
2	4.70	7.10	2.3
3	5.25	8.50	2.8
4	6.12	8.25	2.1
5	5.50	7.90	2.6

A student tracked the traveling speeds of five different birds during a given amount of time. Which bird had the slowest acceleration?

- A Bird 3
- B Bird 4
- C Bird 5
- D Bird 1

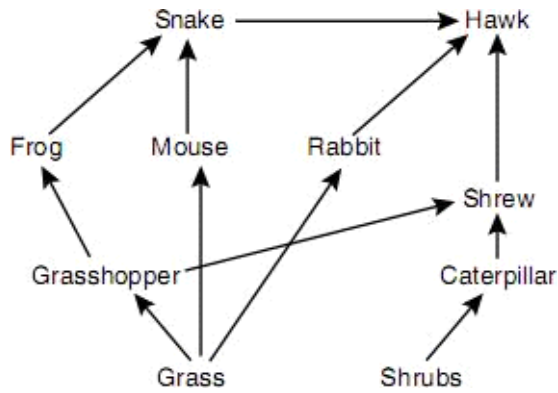
9



The last level of classification in the figure should be labeled —

- A Species
- B Class
- C Order
- D Family

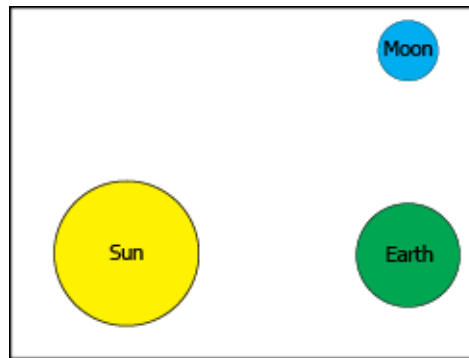
10



**In this food web, which organism has the greatest number of food sources?**

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

- 11 **A student prepared a model using three balls, representing Earth, the Sun, and the Moon, as shown.**



**Explain what change is required in his model to make it correctly represent the formation of spring tides.**

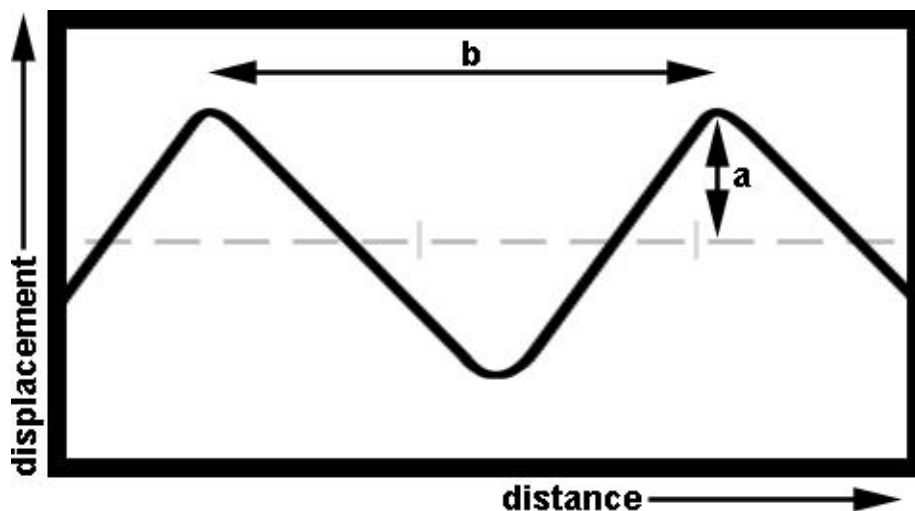
- A Align Earth between the Moon and the Sun in a straight line, because a full moon causes neap tides
- B Align the Moon between Earth and the Sun in a straight line, because a new moon causes spring tides.
- C Align the Moon between Earth and the Sun in a straight line, because a full moon causes spring tides.
- D Align Earth between the Moon and the Sun in a straight line, because a new moon causes neap tides.

12 Directions: Click and drag the text to the correct box.

Fill in the chart according to the pH readings.

pH	Chemical Property
1	Strong Acid
6	Weak Acid
7	Neutral
8	Weak Base
14	Strong Base

13

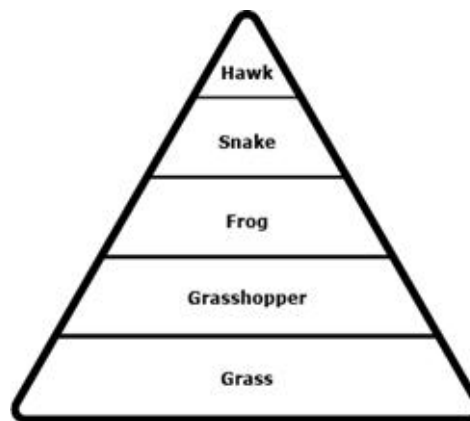


If the wavelength ( $b$ ) decreased, what would happen to the frequency and energy of the wave?

- A The frequency would decrease and the energy would increase.
- B Both the frequency and energy would decrease.
- C The frequency would increase and the energy would decrease.
- D Both the frequency and energy would increase.

- 14 **A whale has several barnacles attached to it. The barnacles receive a free ride but do not help or harm the whale. What type of symbiotic relationship does this best represent?**
- A Commensalism
  - B Competition
  - C Parasitism
  - D Mutualism
- 15 **Which of these shows the correct sequence of development?**
- A Systems → tissues → cells → organs
  - B Cells → tissues → organs → systems
  - C Organs → cells → tissues → systems
  - D Tissues → cells → systems → organs
- 16 **During the middle of its hibernation period, a bear would have —**
- A a decreased heart rate
  - B an increased weight gain
  - C a decreased amount of sleep
  - D an increased body temperature

17

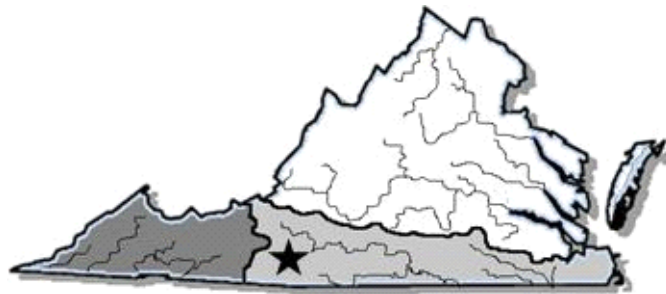


**According to the energy pyramid above, which organism is the 3rd-level consumer?**

- A Frog
- B Hawk
- C Snake
- D Grass

- 18 **Red foxes urinate around the opening of their den —**
- A to communicate their established territory to other red foxes
  - B to attract other red foxes for mating
  - C to clear the opening of their dens by killing plant life
  - D to lure small rodents to the area for prey
- 19 **Cutting down the rainforests will have various effects on people around the world. Which of the following could result from destroying the rainforests?**
- A Increased levels of oxygen, decreased levels of noise pollution
  - B Less room for houses, more satellites in orbit
  - C Decreased levels of air pollution, more new animal species
  - D Decreased levels of oxygen, increased plant and animal extinctions

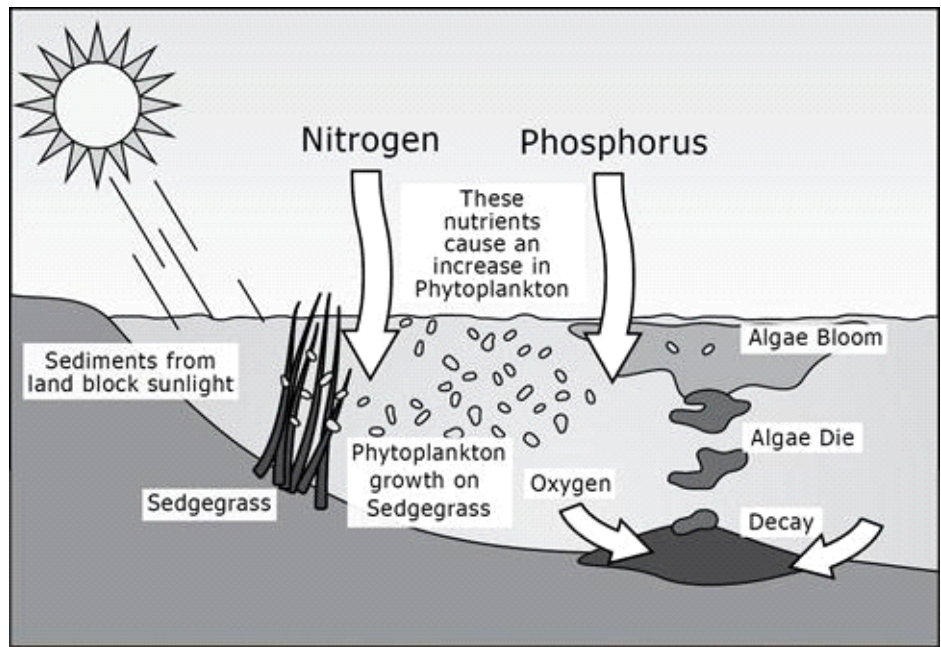
20



**A person poured oil into a creek at the starred location on the Virginia map. What major body of water would *most* likely be harmed?**

- A Pacific Ocean
- B Indian Ocean
- C Gulf of Mexico
- D Atlantic Ocean





**What is the figure shown displaying?**

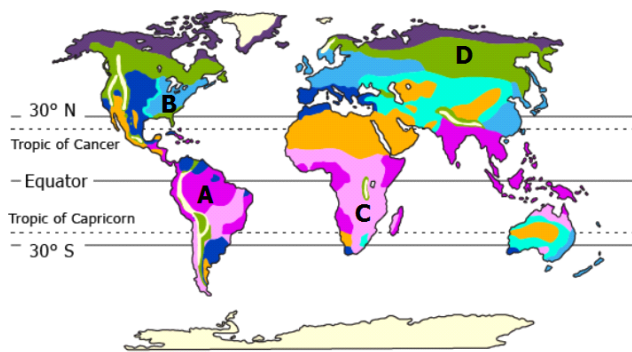
- A Eutrophication
- B Climate Change
- C Phototropism
- D Niches

22 Directions: Click and drag the text to the correct box.

**Place the beneficial variations in the chart to show which environment that trait would be helpful to the member of the species.**

Snowy Wilderness	Desert	Tropical Rainforest	Ocean
white fur	claws for burrowing	green and black camouflage	flippers

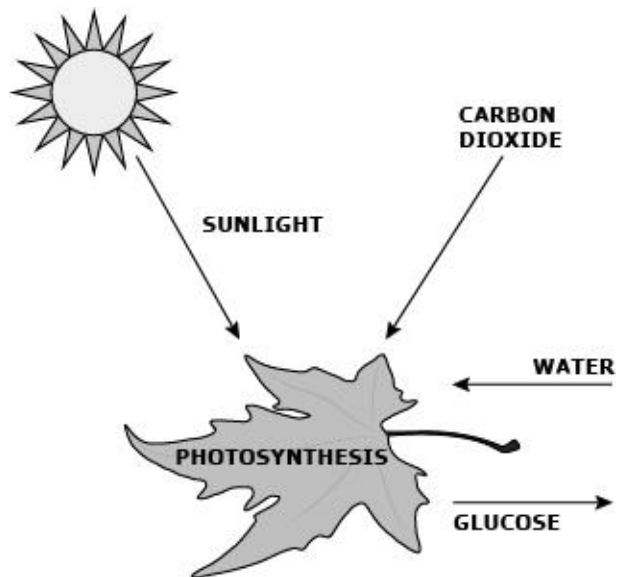
23 Directions: Type your answer in the box.



Which letter shows the location of the temperate deciduous forest biome?

Letter

24



As the leaf absorbs the energy from the sun, it produces glucose. Glucose can also be referred to as —

- A sugar
- B carbon
- C salt
- D oxygen

25 What does NOT usually lead to the evolution of a species?

- A Adaptations
- B Mutations
- C Respiration
- D Natural selection

$WW$	$Ww$
$Ww$	$ww$

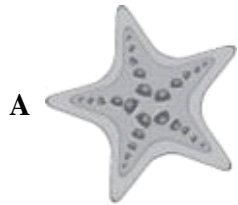
**According to the punnett square, what are the genotypes of the parents?**

- A  $W W$  and  $W W$
- B  $w w$  and  $w w$
- C  $W w$  and  $W w$
- D  $w w$  and  $W w$

**27 Which statement is true about all metals?**

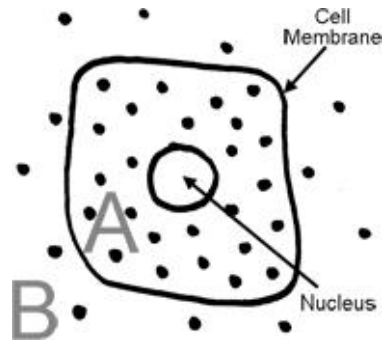
- A They are all solids at room temperature.
- B They are all soft enough to be cut with a knife.
- C They are all radioactive.
- D They are all found to the left of the zig-zag line on the periodic table.

**28 Which animal is classified as an echinoderm?**



- 29 **A group of campers travels to a cabin which has no electrical power. In order to provide the power for a heater and lights, which device would be appropriate?**
- A A resistor
  - B An insulator
  - C A generator
  - D A voltmeter
- 30 **The process of joining two atoms' nuclei and releasing an enormous amount of energy is called—**
- A nuclear fission
  - B nuclear meltdown
  - C nuclear fusion
  - D nuclear isotope
- 31 **During which stage of mitosis do the chromosomes line up in the middle of the cell?**
- A Metaphase
  - B Prophase
  - C Telophase
  - D Interphase

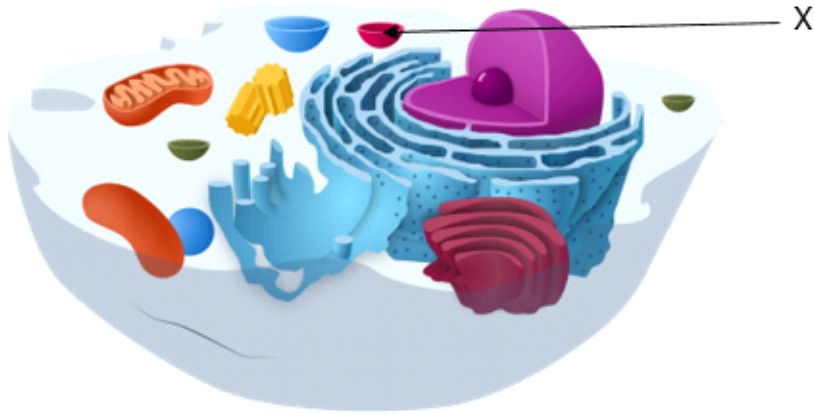
32



- Based on the process of diffusion, which direction will the molecules most likely move?**
- A From B to A
  - B The molecules will not move
  - C All of the molecules will move into the nucleus
  - D From A to B

- 33 **Which scientist proposed a model of the atom in which the individual atoms were thought of as positively charged spheres with negatively charged electrons randomly orbiting the center? This model has the atom being made up of mostly empty space.**
- A Niels Bohr
  - B Ernest Rutherford
  - C John Dalton
  - D James Chadwick

- 34 **A student examines a model of an animal cell, with a figure labeled X.**

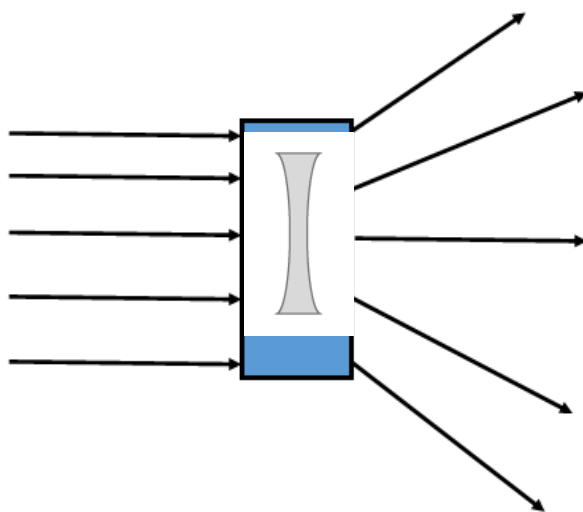
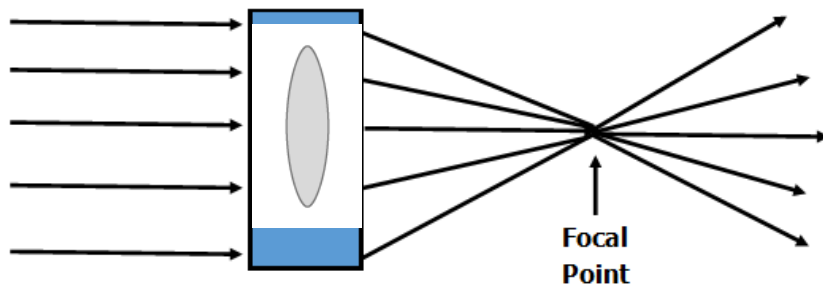


**If structure X helps the animal cell break down nutrients, what is the name of structure X?**

- A Lysosome
- B Ribosome
- C Nucleolus
- D Chloroplast

35 Directions: Click and drag the image to the correct box.

**Place the lenses in the correct box.**



- 36 **Andre is moving the furniture in his bedroom. By placing wheels under his dresser, Andre makes his task easier by changing —**
- A sliding friction to fluid friction
  - B rolling friction to fluid friction
  - C fluid friction to static friction
  - D sliding friction to rolling friction

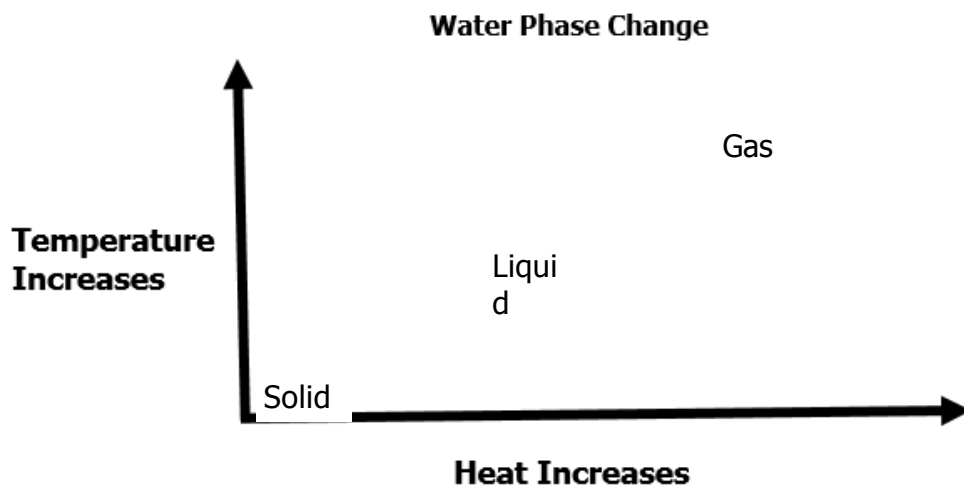


**Which of the following statements explains the changing appearance of the moon over the course of the month?**

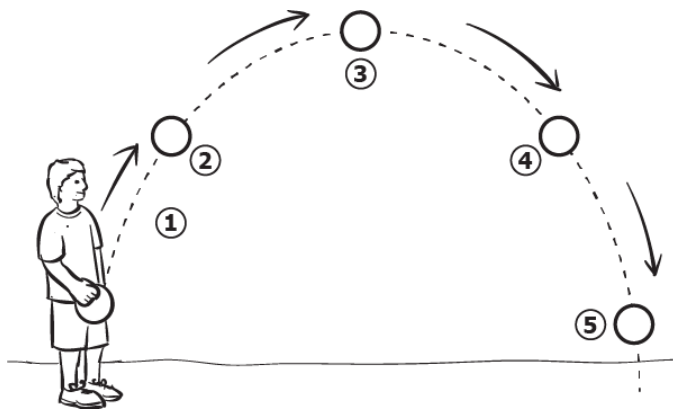
- A The moon changes appearance by changing in both size and shape over the course of the month.
- B The moon changes appearance by changing its shape over the course of the month.
- C The moon changes its appearance by the amount of light reflected by the Earth and it's relative location to the Sun and Earth.
- D The moon changes its appearance by the amount light reflected on it from the Sun and its relative location from the Earth and the Sun.

38 Directions: Click and drag the text to the correct box.

**Place the phases on the diagram with regard to heat and temperature.**



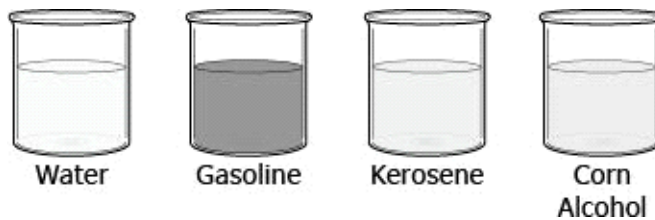
39



**At which point does the ball have the greatest amount of potential energy?**

- A 1
- B 2
- C 3
- D 4
- E 5

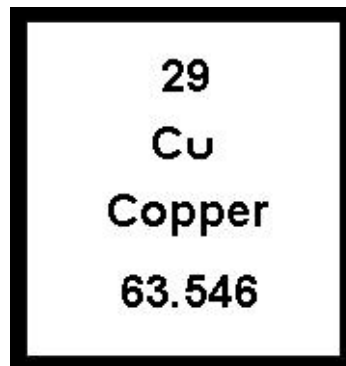
40



**A student collected four samples of resources used to generate energy. What samples are nonrenewable?**

- A Water
- B Gasoline
- C Gasoline and kerosene
- D Water and corn alcohol

41



**How many protons are contained in one atom of the above element?**

- A 64
- B 35
- C 29
- D 63



42 Directions: Click and drag the answers to the correct box.

**Match the weather symbol to the correct meaning.**



Occluded Front



Stationary Front



Warm Front

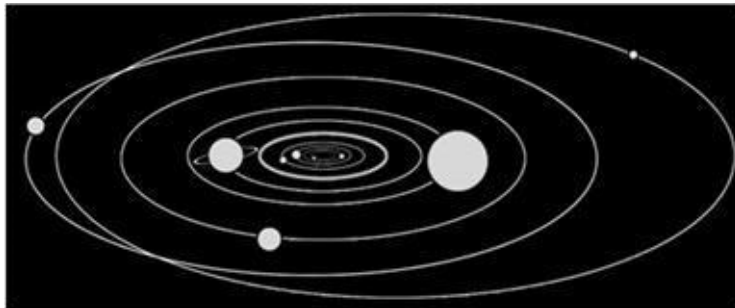


Trough



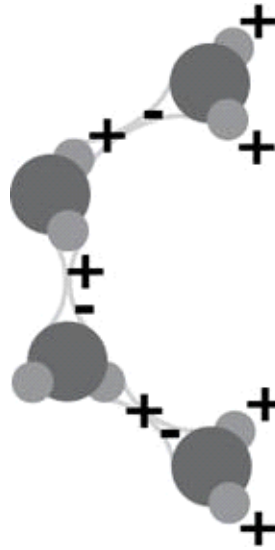
Cold Front

43



**What term best refers to the orbital motion of the planets around the Sun?**

- A Ellipses
- B Ovals
- C Elongated
- D Circle



**Since a water molecule has a polar nature, what property does water have?**

- A Magnetic properties
- B Density properties
- C Dissolving properties
- D Lustrous properties

**45 Physical and chemical weathering processes are responsible for breaking down rocks. Which of these is an example of chemical weathering by water?**

- A Mineral crystals form as water evaporates from rocks.
- B Limestone reacts with acid rain and dissolves.
- C Water freezes in rock cracks and causes the rock to split.
- D Moss collects and grows on the surface of rocks.

**46 The atom has an overall —**

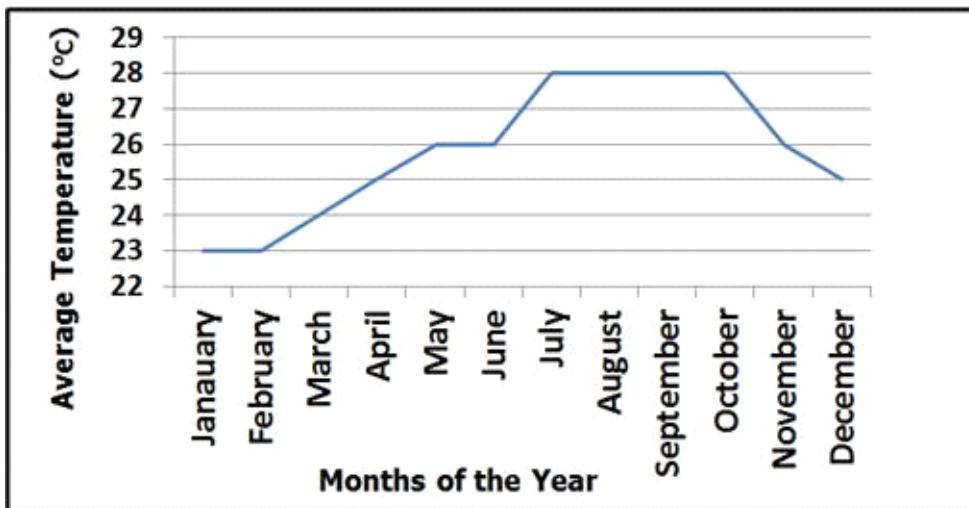
- A negative charge
- B positive charge
- C static charge
- D neutral charge

Fast Swimmers	
Fish	Speed (miles per hour)
Sailfish	60
Yellowfin Tuna	46
Bluefin Tuna	43
Flying Fish	40
Dolphin	37
Trout	15

**What inference can be drawn from the chart?**

- A Yellowfin tuna swim faster than Bluefin Tuna.
- B Bluefin Tuna swim faster than Yellowfin Tuna.
- C Yellowfin Tuna swim faster than Sailfish.
- D All tuna fish in the ocean swim slowly.

**Average Monthly Temperatures**



**What was the average temperature for this biome during December?**

- A 23°C
- B 19°C
- C 28°C
- D 25°C



**What energy process is causing the fish to cook?**

- A Thermal Invection
- B Conduction
- C Convection
- D Radiation

**50 The energy collected in petroleum and coal is stored as —**

- A nuclear energy
- B chemical energy
- C heat energy
- D mechanical energy

**51 30 mm = \_\_\_\_\_ cm**

- A 3
- B 300
- C 3,000
- D .3

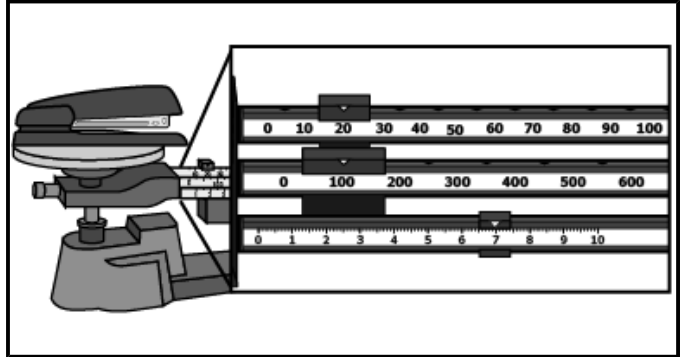
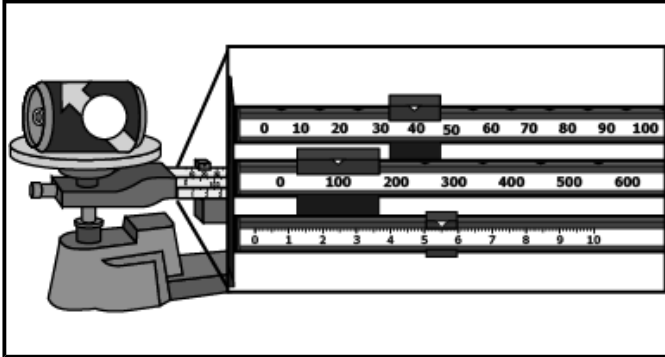
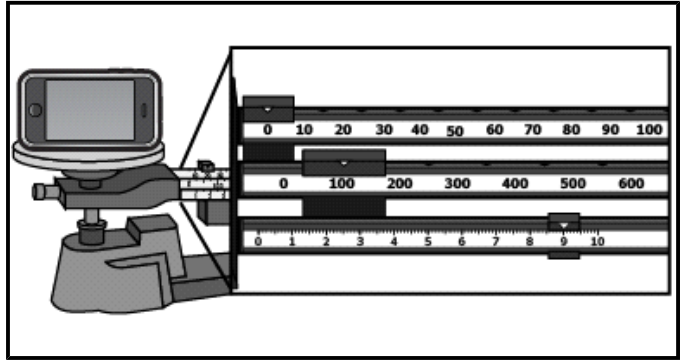
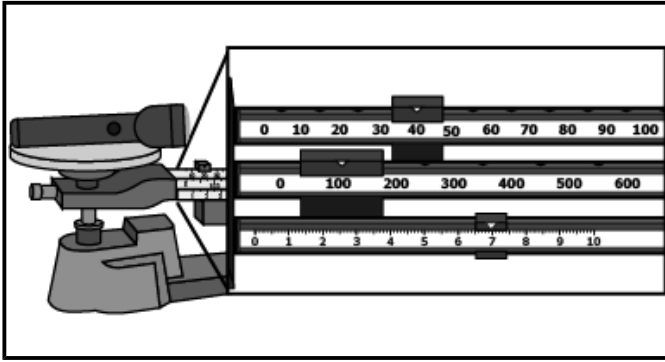
**52 To test the hypothesis below, what would be used as the control group?**

**Hypothesis: I can run faster when I wear Nike running shoes.**

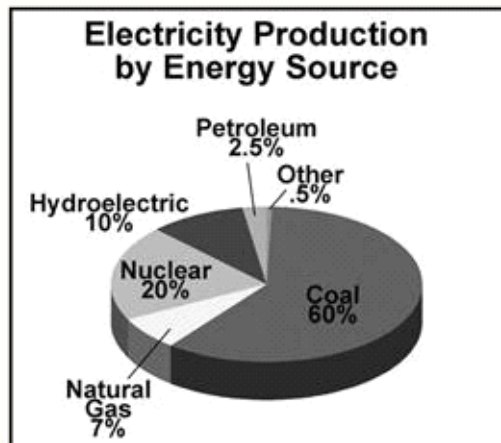
- A How fast I can run (speed)
- B All other brands of shoes tested
- C The Nike shoes
- D The number of times each brand was tested

53 Directions: Click on each answer you want to select. You must select all correct answers.

**Identify the objects that measure more than 130 grams.**

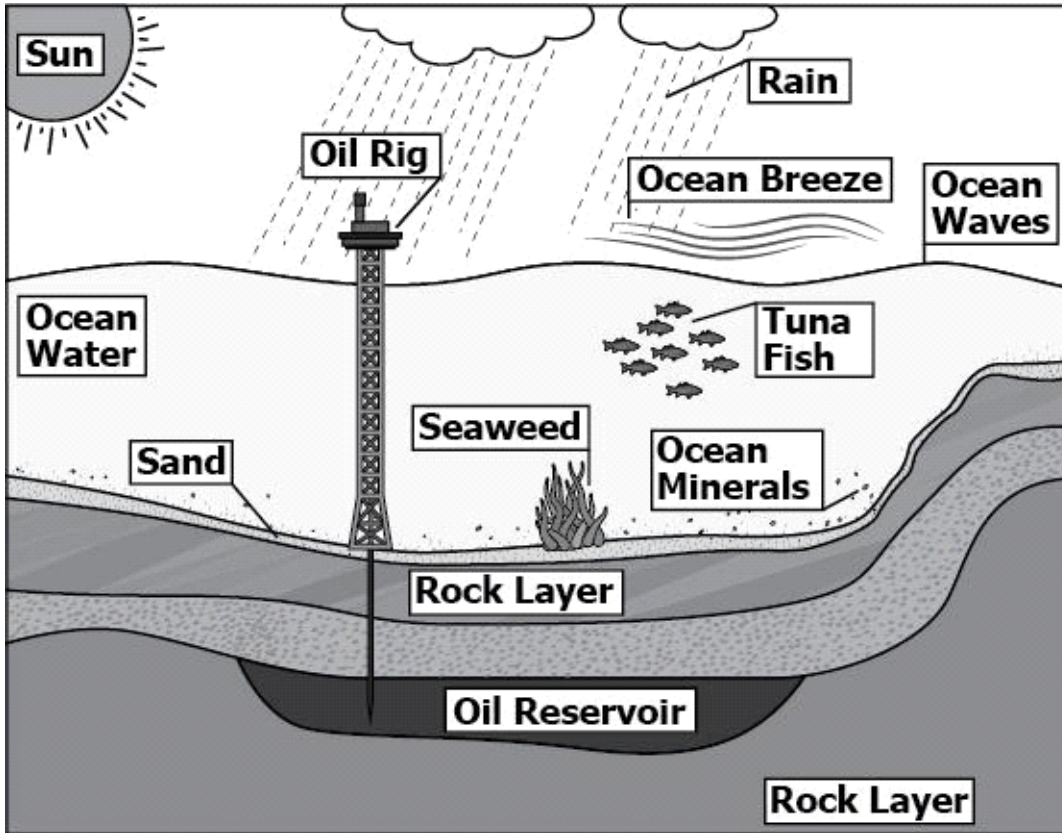


54



**What do all of the natural resources found in the pie chart have in common?**

- A All of the natural resources are nonrenewable.
- B All of the natural resources are renewable.
- C All of the natural resources are created from the sun's energy.
- D All of the natural resources are created through human techniques.



**Which resources seen in the above figure are renewable?**

- A Sun, ocean water, rain, seaweed, tuna fish, ocean breeze, and ocean waves
- B Sand, ocean minerals, rocks, salt, and oil
- C Ocean minerals, rocks, salt, oil, and tuna fish
- D Sand, ocean water, minerals, ocean breeze, rocks, tuna fish, and ocean waves

56  $9.9 \times 10^{-6}$  becomes —

- A 0.00000099
- B 0.0099
- C 0.0000099
- D 0.000099

### Properties of Sound Lab

**Question:** How does changing the amplitude change how a sound is perceived?

**Procedure:**

1. Have 2 partners each hold one end of a thick rubber band and pull until the rubber band is taut (not loose).
2. Pull the rubber band about 1 cm away from the middle. Let it go. Document the sound that is heard.
3. Repeat step 2 four times. Each time, pull the band back further. Describe how the sound changes each time.

**Results:**

Distance Away from Middle	Description of Sound
1 cm	Low sound
2 cm	Gets higher
3 cm	Higher
4 cm	Higher
5 cm	Highest

The above figure shows a student's lab assignment investigating the sound a rubber band produces when the amplitude of the rubber band is changed. What is the dependent variable in the lab?

- A The students holding the rubber band
- B The rubber band's change in amplitude
- C Description of sound produced
- D Repetition of trials

20
<b>Ca</b>
Calcium 40.078

What is the atomic weight of calcium?

- A 801.56
- B 20
- C 40.078
- D 60.078

**59 Which phase of matter has a definite shape and definite volume?**

- A Solid
- B Gas
- C Plasma
- D Liquid

**60 From Earth to space, the main layers of the atmosphere are —**

- A mesosphere, troposphere, ionosphere, thermosphere
- B troposphere, mesosphere, ionosphere, thermosphere
- C troposphere, stratosphere, mesosphere, thermosphere
- D stratosphere, troposphere, ionosphere, thermosphere