

Georgia Milestones Practice Packet

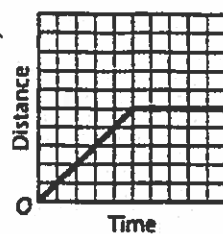
Science

Section 1

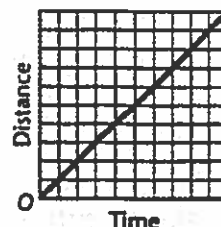
Section 1 of this test has thirty questions. Choose the best answer for each question. Fill in the circle in the space provided for questions 1 through 30 on your answer sheet.

- Jeri is studying the speed of sound in different materials. Which of the following is the manipulated variable in her experiments?
 - speed of sound
 - frequency of sound
 - type of material
 - size of material
- Hot gases rise from the interior of the sun. As they near the surface, they begin to cool. Cooler gases sink, forming loops of gas that move energy toward the sun's surface. This type of energy transfer is called
 - fusion.
 - radiation.
 - convection.
 - conduction.
- The rate at which velocity changes is called
 - speed.
 - direction.
 - acceleration.
 - motion.
- Electromagnetic waves can transfer energy without a(an)
 - medium.
 - electric field.
 - magnetic field.
 - change in either a magnetic or an electric field.

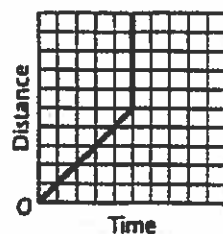
Use the graphs below to answer question 5.



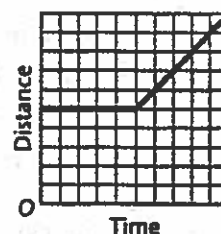
A



B

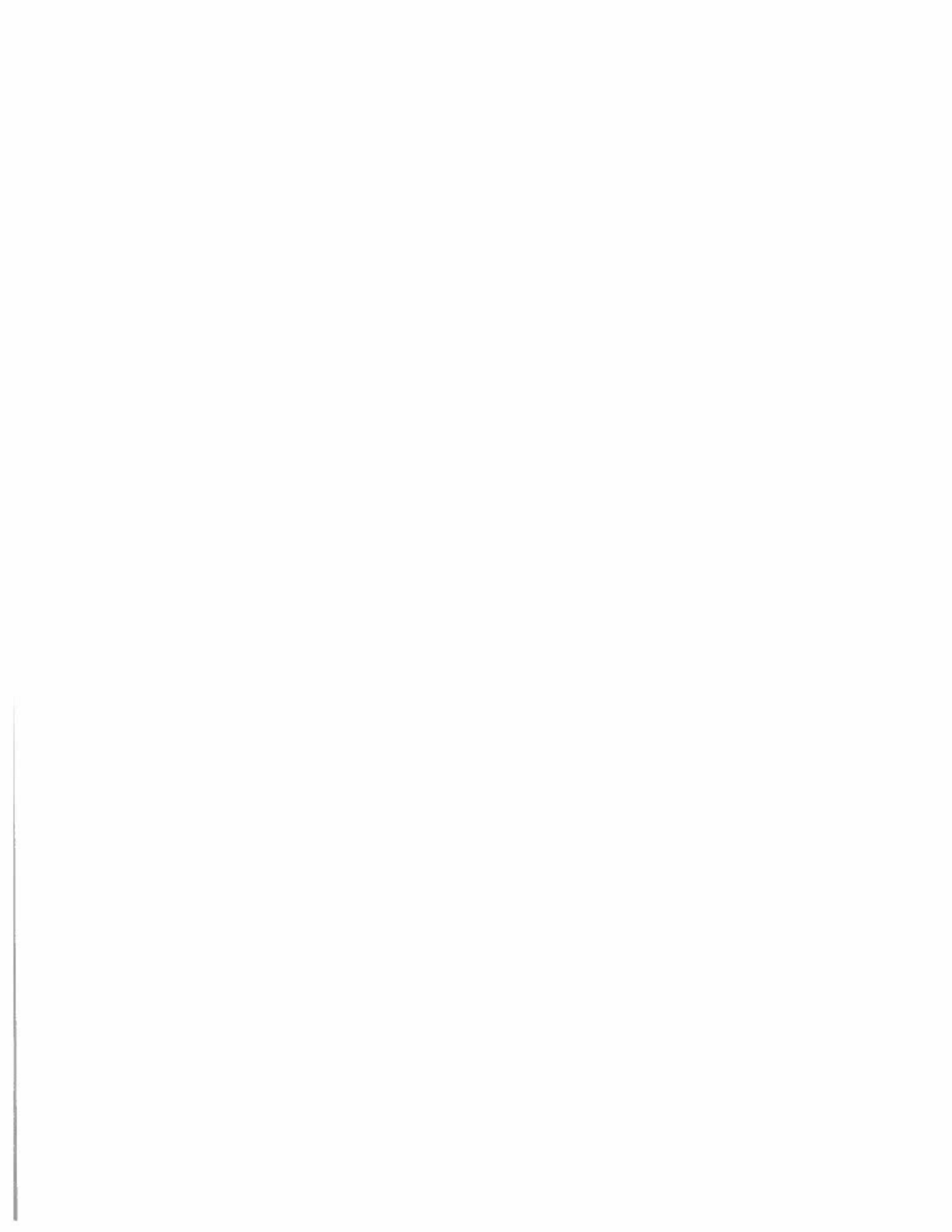


C



D

- Which graph shows the motion of a person who sat on a park bench for a while and then walked home at a constant speed?
 - Graph A
 - Graph B
 - Graph C
 - Graph D
- In which of the following substances do the particles have the least amount of kinetic energy?
 - steam
 - tap water
 - warm water
 - ice cubes



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Use the diagram below to answer question 7.

<p>18</p> <p>Ar</p> <p>Argon</p> <p>40.0</p>

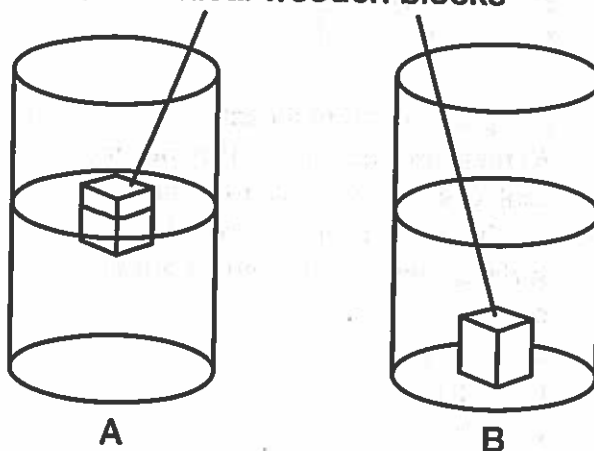
7. The diagram above shows the entry for one of the elements in the periodic table. Based on the diagram, an argon atom has
- 18 protons
 - 18 neutrons
 - 40 protons
 - 40 electrons
8. You are standing around the corner from a friend. What property of sound waves allows you to hear your friend speaking?
- Sound waves can travel without a medium.
 - Sound waves can interfere with one another.
 - Sound waves can be reflected by smooth surfaces.
 - Sound waves can diffract.
9. What is the balanced form of the reaction $\text{AgNO}_3 + \text{CaBr}_2 \rightarrow \text{AgBr} + \text{Ca}(\text{NO}_3)_2$?
- $\text{AgNO}_3 + \text{CaBr}_2 \rightarrow \text{AgBr} + \text{Ca}(\text{NO}_3)_2$
 - $\text{AgNO}_3 + 2\text{CaBr}_2 \rightarrow \text{AgBr} + \text{Ca}(\text{NO}_3)_2$
 - $2\text{AgNO}_3 + \text{CaBr}_2 \rightarrow \text{AgBr} + \text{Ca}(\text{NO}_3)_2$
 - $\text{AgNO}_3 + \text{CaBr}_2 \rightarrow 2\text{AgBr} + \text{Ca}(\text{NO}_3)_2$

10. You exert a force of 50 N to push a shopping cart down an aisle. Your friend helps by exerting a force of 30 N against the shopping cart in the same direction. Which net force do you and your friend exert on the shopping cart?
- 20 N
 - 50 N
 - 80 N
 - 1500 N

Use the diagram below to answer question 11.

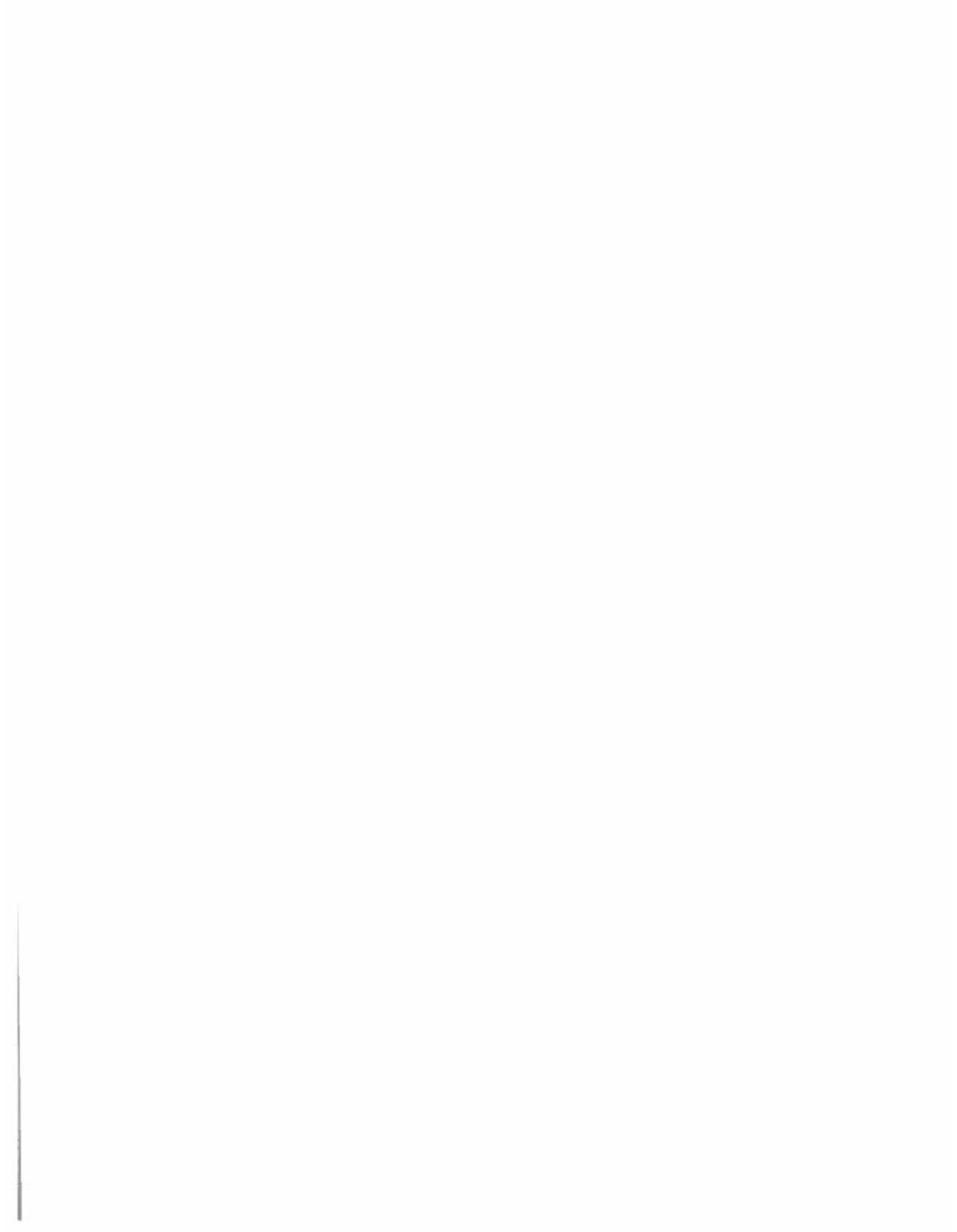
Blocks in Liquids

Identical wooden blocks



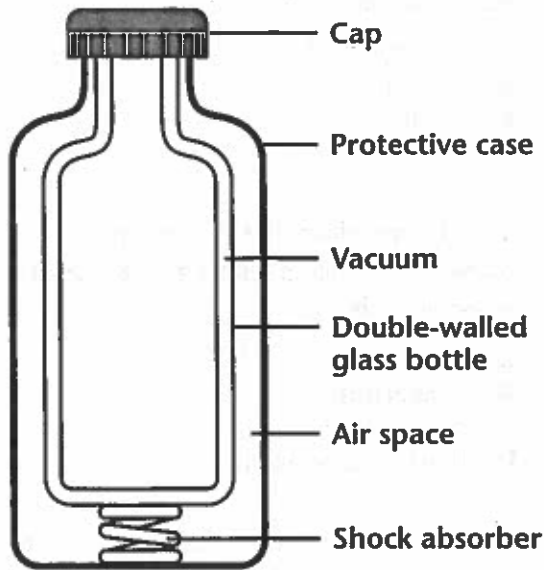
11. According to Archimedes' principle, the buoyant force in container A is
- greater than the buoyant force in container B.
 - the same as the buoyant force in container B.
 - less than the buoyant force in container B.
 - zero.



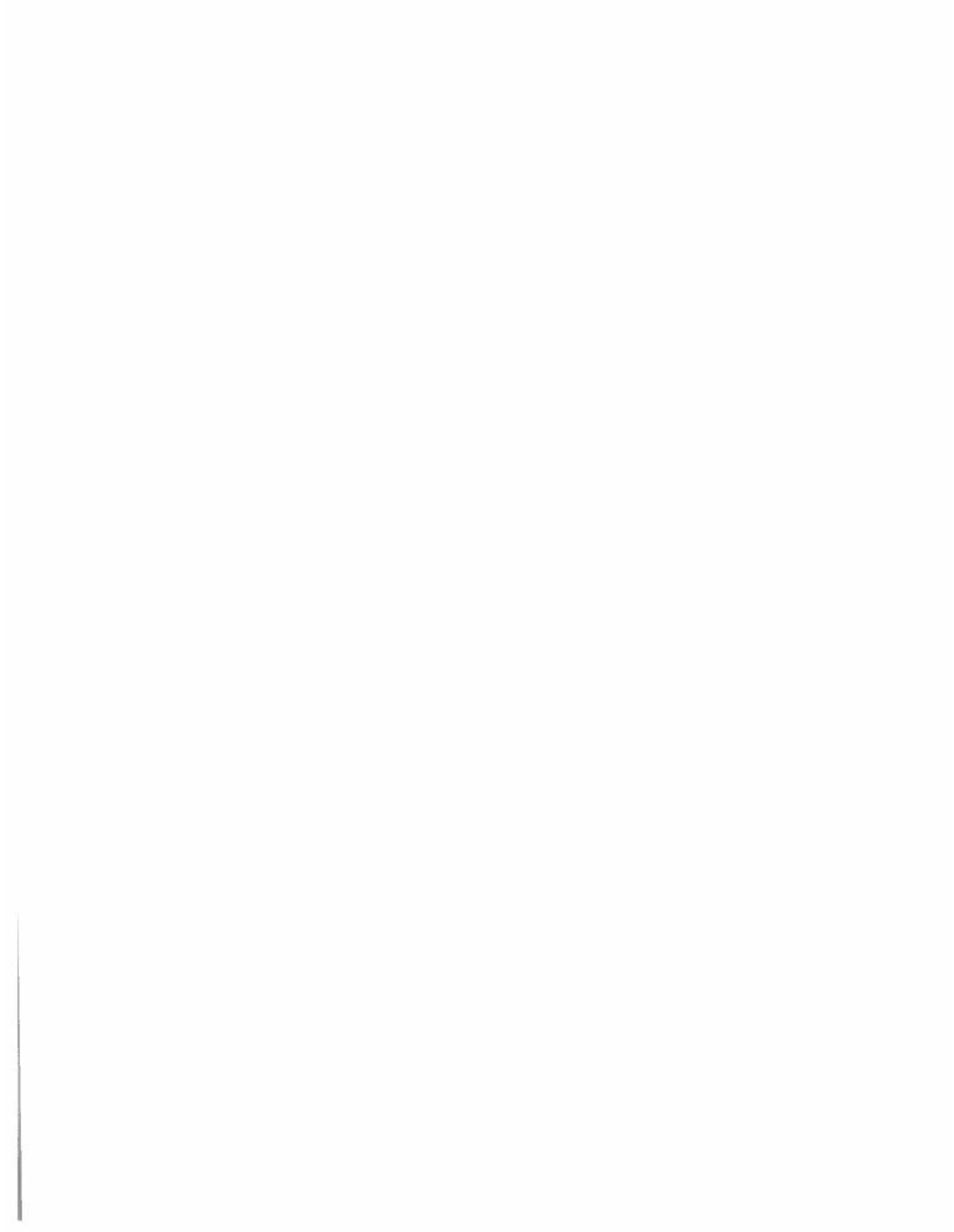


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Use the diagram below to answer question 18.



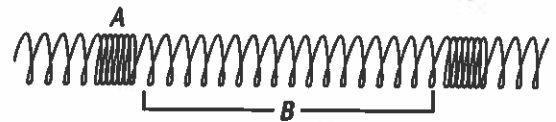
18. This bottle is designed to keep thermal energy from flowing in or out. Why does the bottle contain a vacuum, or space from which the air has been removed?
- to prevent the loss of thermal energy by radiation
 - to prevent the loss of thermal energy by convection
 - to prevent the loss of thermal energy by conduction
 - to prevent the loss of thermal energy by induction
19. The process by which water molecules escape into air as water vapor is called
- radiation.
 - condensation.
 - evaporation.
 - precipitation.
20. Which discovery first indicated to scientists that atoms are not solid balls of matter?
- Bohr's discovery of energy levels
 - Rutherford's discovery of the nucleus
 - Thomson's discovery of electrons
 - Curie's discovery of radioactivity
21. If two forces on an object at rest act in the same direction, what must be true about the motion of the object?
- The object must remain at rest.
 - The object must move at constant velocity.
 - The object must accelerate in the direction of the forces.
 - The object must accelerate in the direction opposite the forces.
22. Which of the following examples in nature represents a chemical change?
- water freezing in a pond
 - tree branch breaking
 - tree burning after a lightning strike
 - steam rising from pavement
23. A car accelerates from rest to a speed of 20 m/s in 5 seconds. What is the car's average acceleration?
- 15 m/s^2
 - 4 m/s^2
 - 20 m/s^2
 - 100 m/s^2



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24. What is the main purpose of lab safety rules?
- to make sure students wear the proper clothing to lab
 - to eliminate or reduce effects of exposure to harmful agents
 - to lower the potency of the chemicals and equipment in labs
 - to find out if students are willing to follow directions
25. What is the mean of the following set of data? {3, 3, 9, 11, 14}
- 3
 - 6
 - 8
 - 9
26. The formation of a molecule by the bonding of atoms of two or more different elements is
- a chemical change.
 - a physical change.
 - a change of state.
 - a change in valence.
27. As a ball rolls across a perfectly level floor, some of the ball's kinetic energy is converted to
- matter.
 - friction.
 - potential energy.
 - thermal energy.
28. Heat is the movement of thermal energy from a warmer substance to a cooler substance. Which of the following statements is a testable hypothesis for investigating whether heat has been transferred?
- If heat is transferred, one material will decrease in temperature, and another material will increase in temperature.
 - Temperature measures the average kinetic energy of the particles in a material, so you need to record the temperature of all materials you study.
 - Heat can be transferred by the movements of currents in a fluid, as when water in a pot boils.
 - If heat has been transferred, good conductors such as metals or floor tiles must be involved, and they will show a change of temperature.
29. The pitch of a sound that you hear depends on the sound wave's
- loudness.
 - frequency.
 - intensity.
 - speed.

Use the diagram below to answer question 30.



30. What type of wave is seen in the diagram above?
- a longitudinal wave
 - a transverse wave
 - an electromagnetic wave
 - an ocean wave



Georgia Milestones Practice Packet

Science

Section 2

Section 2 of this test has thirty questions. Choose the best answer for each question. Fill in the circle in the space provided for questions 31 through 60 on your answer sheet.

31. Dorothy suggests that the force between two magnets increases as the distance between the magnets decreases. Of what is this statement an example?

- A. a hypothesis
- B. a physical law
- C. a theory
- D. an observation

32. Touching a frayed wire can create a path with less resistance than the intended circuit. This causes a

- A. short circuit.
- B. series circuit.
- C. parallel circuit.
- D. grounded circuit.

33. A pair of rusty scissors is less efficient than a new pair of scissors. What force reduces the efficiency of the scissors?

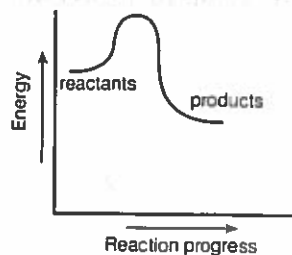
- A. friction
- B. inertia
- C. work
- D. mechanical advantage

34. Which of the following shows a balanced equation?

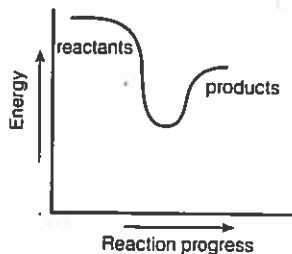
- A. $\text{SiO}_2 \rightarrow \text{SiO} + \text{O}_2$
- B. $2\text{SiO}_2 \rightarrow 2\text{SiO} + \text{O}_2$
- C. $2\text{SiO}_2 \rightarrow 2\text{SiO} + 2\text{O}_2$
- D. $2\text{SiO}_2 \rightarrow \text{SiO} + 2\text{O}_2$

35. Line graphs are used to represent the energy changes that occur during a chemical reaction. Which of the following graphs best represents the energy changes that occur during an endothermic reaction?

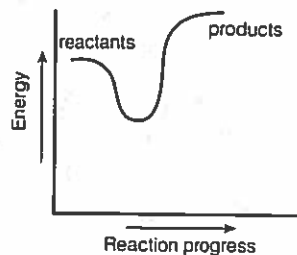
A.



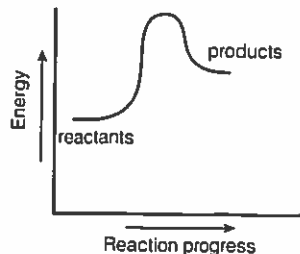
B.

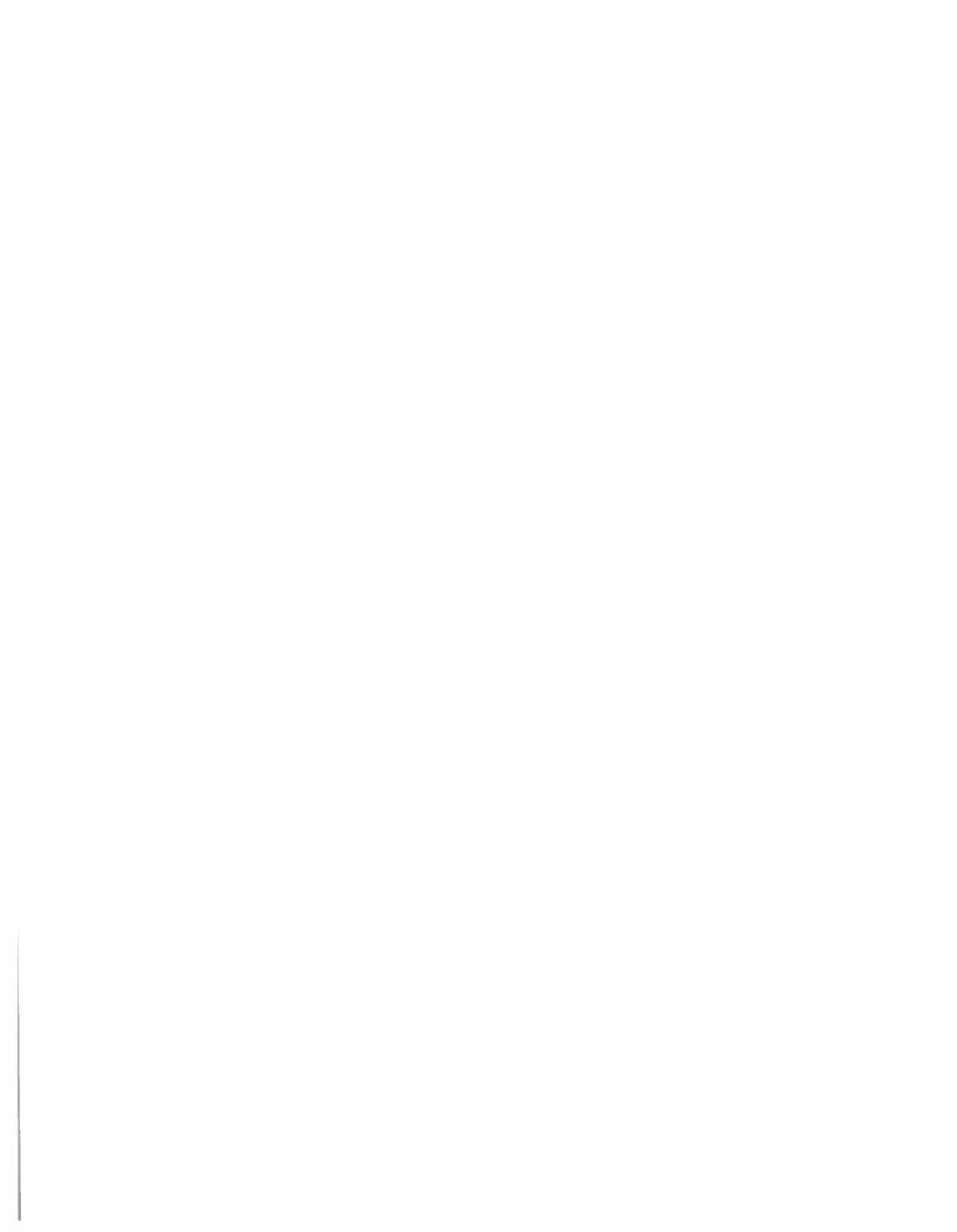


C.



D.

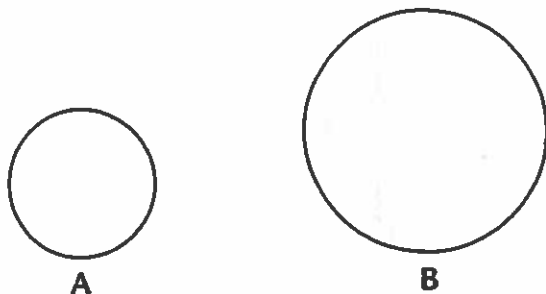




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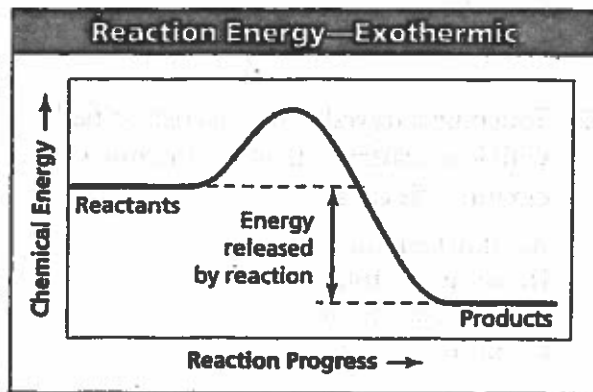
36. Sue wants to measure the average energy of motion of the air outside. Which instrument should she use?
- a scale
 - a pan balance
 - a thermometer
 - a graduated cylinder
37. An object can be seen because of the
- light it absorbs.
 - light it reflects.
 - energy it contains.
 - energy it transforms.

Use the diagram below to answer question 38.

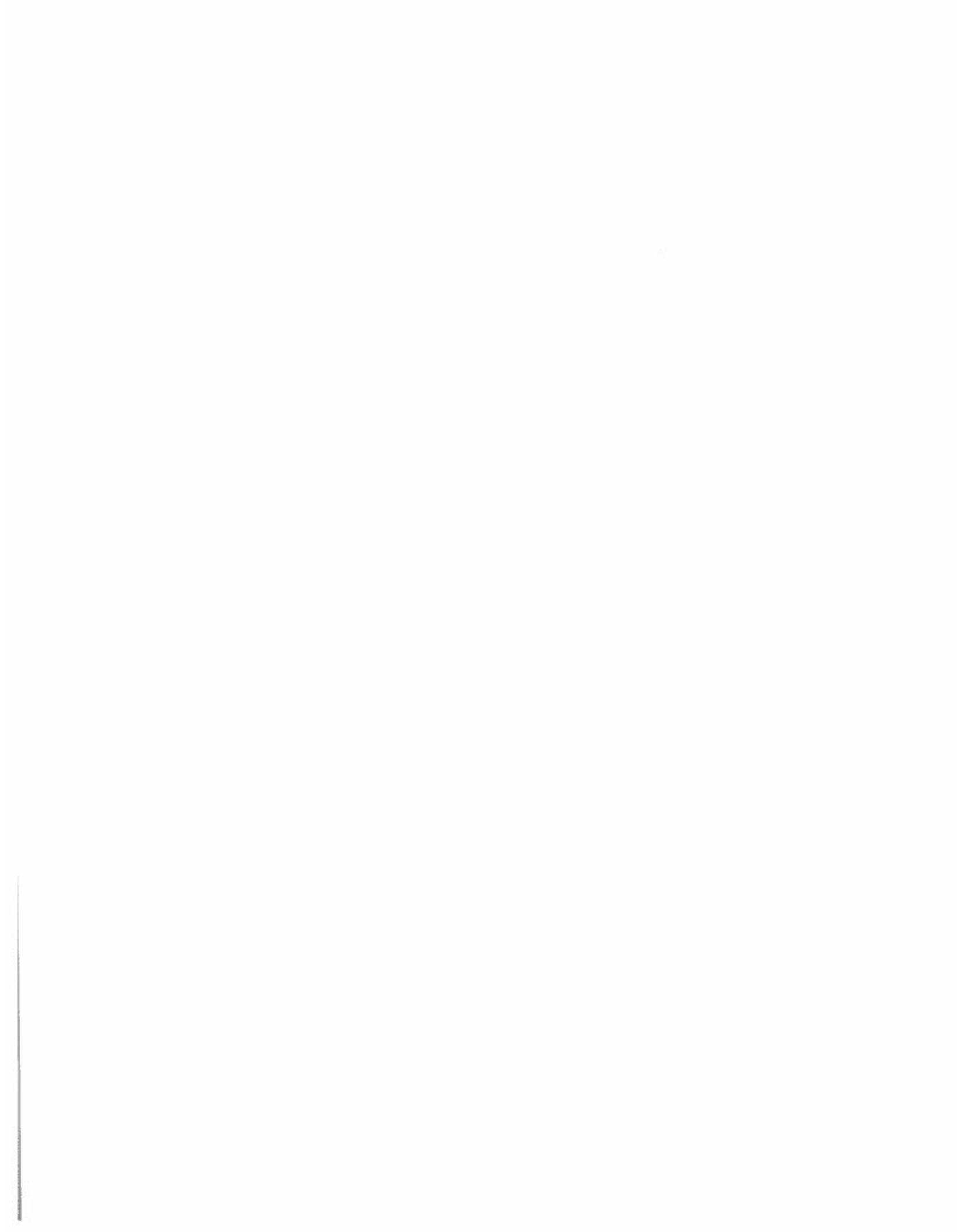


38. The two balls in the diagram are solid and are made of the same substance. How do the gravitational forces exerted by each ball on a distant mass compare?
- Ball A exerts a greater gravitational force because it is smaller.
 - Ball B exerts a smaller gravitational force because it has a larger surface area.
 - Ball B exerts a greater gravitational force because it has more mass.
 - The two balls exert the same gravitational force.
39. During a tug of war, the rope accelerates toward the left. What is true about the forces acting on the rope?
- The force toward the right is greater than the force toward the left.
 - The force toward the left is equal to the force toward the right.
 - The force toward the left is greater than the force toward the right.
 - There can only be a force pulling toward the left.

Use the graph below to answer question 40.



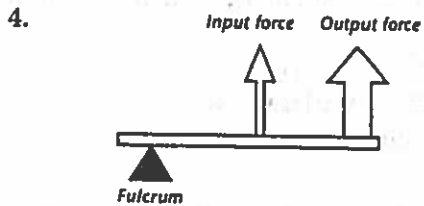
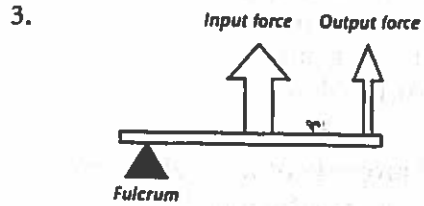
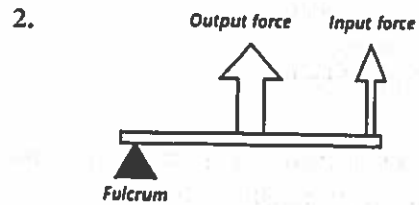
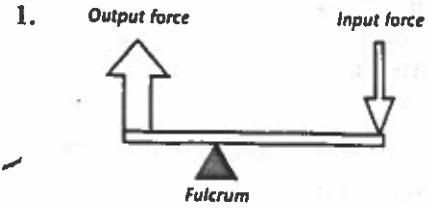
40. Which statement best describes what is happening to the chemical energy in the graph above?
- The energy of the products is greater than the energy of the reactants.
 - The energy required for the reaction is greater than the energy released.
 - The energy of the reaction is released as heat.
 - The energy of the reactants is equal to the energy of the products.



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41. Ian and Jan were making a model of a seesaw. They used weights to represent the people, a ruler to represent the seesaw, and a small piece of wood to represent the seesaw's fulcrum. Which piece of scientific equipment should they use to measure force on the seesaw?
- stopwatch
 - spring scale
 - meter stick
 - thermometer
42. Which list gives the correct order of the energy conversions that are needed to transform the energy in fossil fuels into electricity?
- chemical to thermal to mechanical to electrical
 - mechanical to thermal to chemical to electrical
 - mechanical to chemical to thermal to electrical
 - thermal to chemical to mechanical to electrical

Use the diagram below to answer question 43.



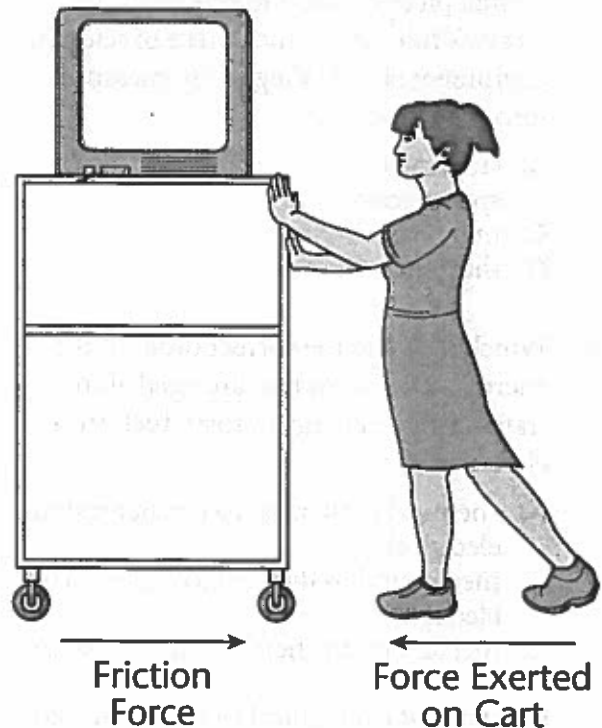
43. A fishing pole is an example of a third-class lever. It increases distance, but does not change the direction of input force. Which of the above levers is a third-class lever?
- 1
 - 2
 - 3
 - 4



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44. In order for a wave to form, energy must cause a substance to
- vibrate.
 - compress.
 - rarefy.
 - diffract.
45. The greatest amount of light energy is absorbed by a
- black object.
 - green object.
 - red object.
 - white object.
46. Besides heat, what is another outcome of every energy transformation?
- Energy is destroyed.
 - Matter is formed.
 - Mass is gained.
 - Work is done.
47. What property of water allows water molecules to stick together?
- Water is made up of hydrogen and oxygen.
 - Water has high surface tension.
 - Water molecules are polar molecules.
 - Water is a universal solvent.
48. What is the name for the process that transfers electromagnetic energy through space from the sun to Earth?
- radiation
 - condensation
 - conduction
 - convection

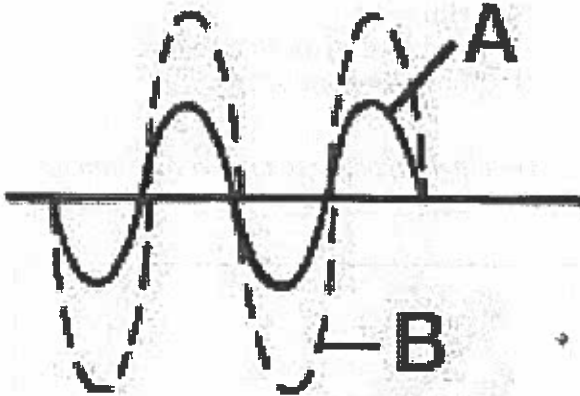
Use the diagram below to answer question 49.



49. What kind of force acts against the motion of the cart shown in the diagram?
- static friction
 - sliding friction
 - rolling friction
 - fluid friction
50. While a train is moving forward, a 25,000 N force acts on a train in the forward direction, and then an additional 26,000 N force acts in the opposite direction. What is the resulting motion of the train?
- The train speeds up.
 - The train moves at constant speed.
 - The train slows down.
 - The train must be and remain at rest.

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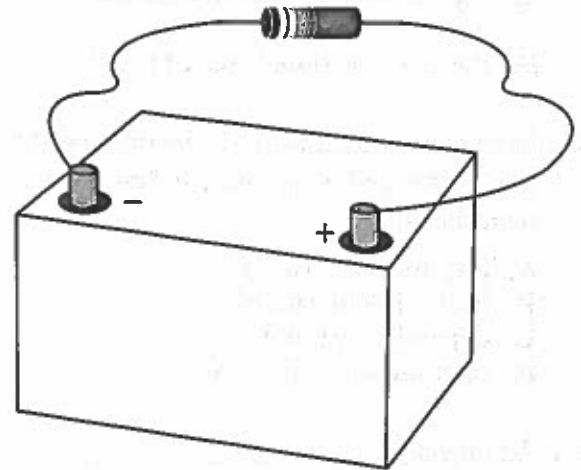
Use the diagram below to answer question 51.



51. Which statement about the energy in waves A and B is correct?
- Wave A has more energy because its frequency is greater.
 - Wave A has more energy because its amplitude is greater.
 - Wave B has more energy because its frequency is greater.
 - Wave B has more energy because its amplitude is greater.
52. Which experimental observation would demonstrate the uniformity of gravitational force on an object at Earth's surface?
- the constant downward displacement of a falling body
 - the constant downward velocity of a falling body
 - the constant downward acceleration of a falling body
 - the increasing downward acceleration of a falling body

53. The region around a magnet where the magnetic force is exerted is known as its
- magnetic pole.
 - lodestone.
 - magnetic field.
 - magnetic domain.

Use the diagram below to answer question 54.



54. What type of energy conversion occurs in the device shown above?
- thermal to chemical
 - chemical to electrical
 - mechanical to thermal
 - electrical to mechanical

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55. An experiment involves measuring the time it takes for heat to be conducted along the lengths of several bars made of different substances. The bars have the same length and the same cross sectional area. What is the independent variable in this experiment?

- A. the length of each bar
- B. the time during which heat is conducted
- C. the substance of which each bar is made
- D. the cross-sectional area of each bar

56. In an experiment, which is the one variable that is changed on purpose to test a hypothesis?

- A. responding variable
- B. independent variable
- C. dependent variable
- D. operational definition

57. An object will _____ if the buoyant force is less than the weight of the object.

- A. remain in place
- B. rise
- C. bob up and down
- D. sink

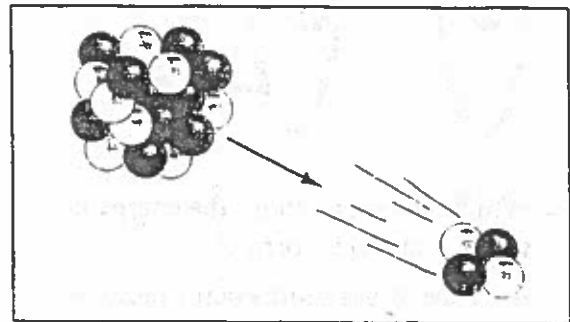
58. A squirrel that weighs 2 N perches near the top of a tree 20 m above the ground. How much gravitational potential energy does the squirrel have?

- A. 10 J
- B. 40 J
- C. 22 J
- D. 18 J

59. Which of the following is not a property of solid nonmetals?

- A. dull
- B. brittle
- C. good conductor of electricity
- D. poor heat conductor

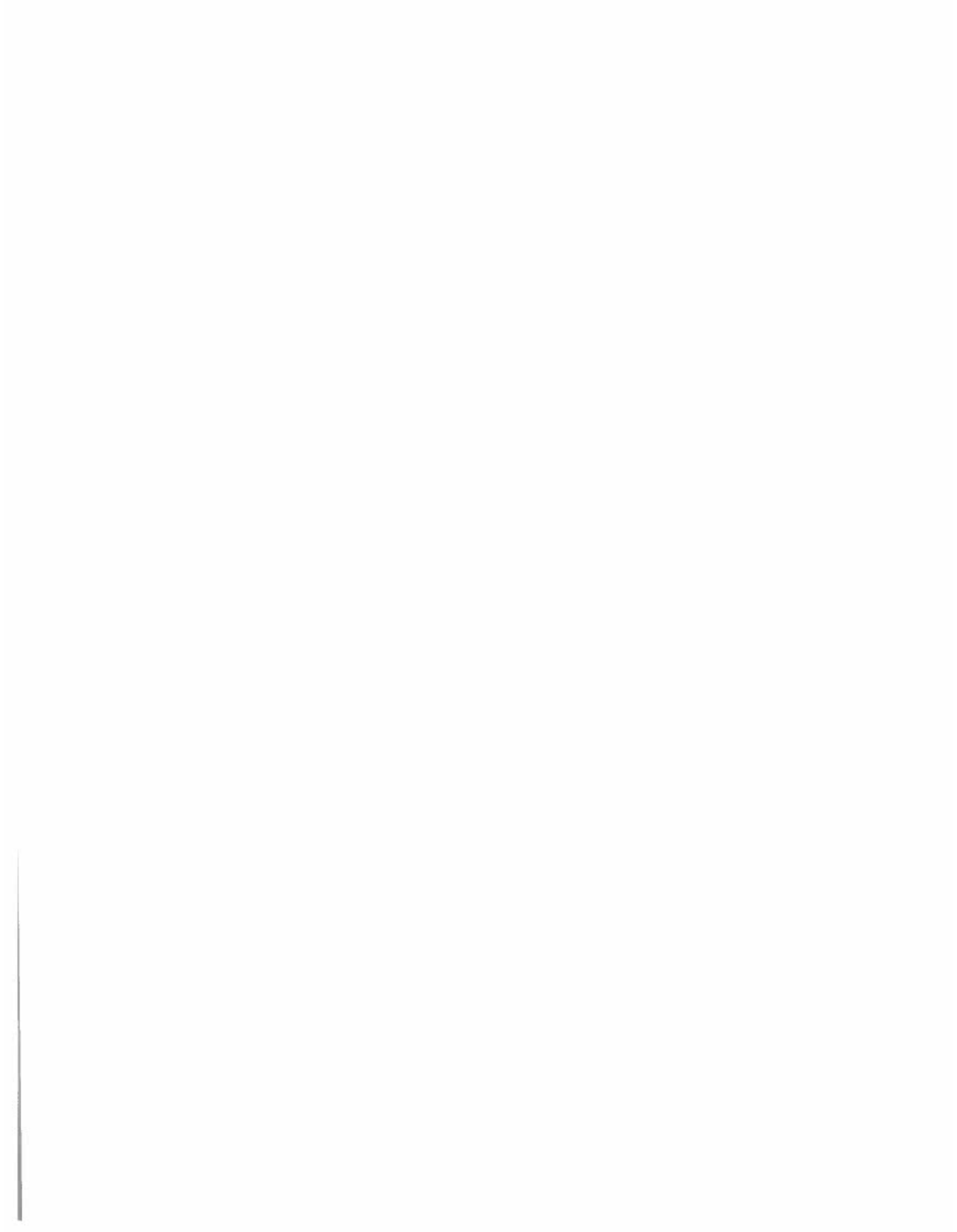
Use the diagram below to answer question 60.



60. The diagram above shows a process that has been shown to happen to some atomic nuclei. Which of the following theories changed as a result of this discovery?

- A. Atoms are indivisible particles of matter.
- B. The nucleus of an atom contains two types of particles.
- C. Atoms combine with each other to form compounds.
- D. The smallest particles of elements are atoms.





SCIENCE

Section 1

Section 1 of this test has thirty questions. Choose the best answer for each question. Fill in the circle in the spaces provided for questions 1 through 30 on your answer sheet.

PRETEST

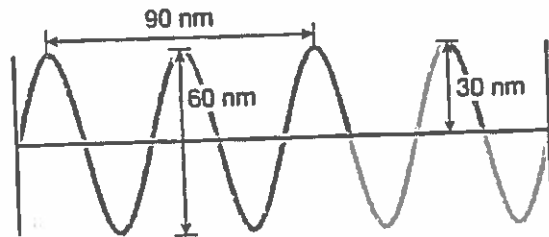
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1. Which tool is used to measure the volume of a liquid?
 - A. balance
 - B. ruler
 - C. spring scale
 - D. graduated cylinder

3. Which type of wave is part of the electromagnetic spectrum?
 - A. mechanical
 - B. sound
 - C. light
 - D. water

2. You slide a box across a table. Which force would cause the box to stop sliding before it reaches the end of the table?
 - A. balanced force
 - B. gravity
 - C. friction
 - D. inertia

Use the illustration below to answer question 4.



4. What is the amplitude of the transverse wave?
 - A. 30 nm
 - B. 90 nm
 - C. 60 nm
 - D. 120 nm

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SCIENCE

5. Which step would be done first in a scientific investigation?
- A. write procedure steps
 - B. develop a hypothesis
 - C. analyze the results
 - D. draw conclusions
6. Which of the following would BEST be used in a laboratory report to show changes in data over a period of time?
- A. a three dimensional model
 - B. circle graph
 - C. line graph
 - D. pie graph

Use the information in the list below to answer question 7.

- I. Publish and review the results.
 - II. Replicate the investigation.
 - III. Draw conclusions in order to develop a theory.
7. Which items in the list above can the scientific community do as a result of accurate and complete record keeping of a scientific investigation?
- A. I and II
 - B. II and III
 - C. I only
 - D. I, II, and III
8. Sound waves travel fastest when moving through
- A. a vacuum.
 - B. a gas.
 - C. a liquid.
 - D. a solid.

SCIENCE

PRETEST

9. How will gravitational pull between two objects be affected if the distance between the two objects decreases?
- A. The gravitational pull increases.
 - B. The gravitational pull decreases.
 - C. The gravitational pull stays the same.
 - D. No gravitational pull exists between the two objects.

Use the table below to answer question 10.

Time (hours)	Temperature (°C)
2	30
4	33
6	37
8	42
10	?

10. What will the temperature reading MOST LIKELY be at 10 hours?
- A. 45°C
 - B. 48°C
 - C. 52°C
 - D. 55°C
11. Which simple machine would you use to pry a heavy rock from the ground?
- A. lever
 - B. inclined plane
 - C. wheel and axle
 - D. screw

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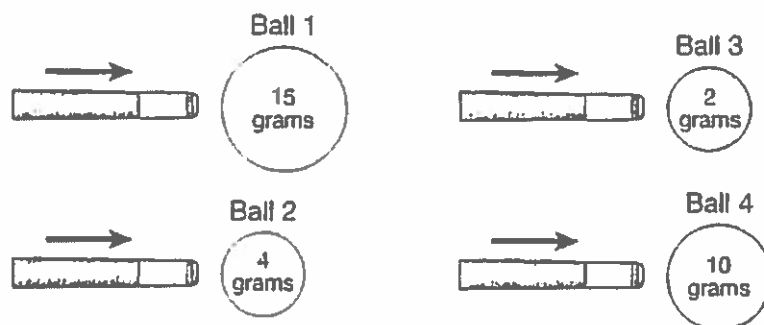
Use the information below to answer question 12.

Methane (CH_4) is a natural gas that burns in the presence of oxygen to create carbon dioxide (CO_2) and water (H_2O). A student measured the amount of methane and oxygen in a closed container before igniting the mixture. After the reaction, the student measured exactly 72 grams of water in the container. The equation summarizing this reaction is shown.



12. How many grams of carbon dioxide are formed in the reaction?
- A. 32 grams
 - B. 62 grams
 - C. 88 grams
 - D. 128 grams

Use the diagrams below to answer question 13.



13. The four metal balls shown above are placed in a pinball machine. Which ball will accelerate fastest if equal force is applied to each ball?
- A. Ball 1
 - B. Ball 2
 - C. Ball 3
 - D. Ball 4

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14. How can you identify elements that have similar properties on the periodic table?

- A. They will be in the same horizontal row.
- B. They will be in the same vertical column.
- C. They will be in the same period.
- D. They will have similar chemical symbols.

15. One molecule of glucose has the formula $C_6H_{12}O_6$. How many atoms make up a glucose molecule?

- A. 3
- B. 6
- C. 12
- D. 24

16. You can see your image clearly in a mirror because light is

- A. reflected.
- B. refracted.
- C. absorbed.
- D. transmitted.

17. Which situation describes an unsafe laboratory practice?

- A. pointing a test tube being heated away from people
- B. removing a hot container from a burner without gloves or tongs
- C. keeping your work area neat and organized
- D. wearing a lab apron and safety goggles when pouring chemicals

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18. Scientists often collaborate when seeking the answer to a scientific question. To prevent bias in their work, scientists working to solve the same problem can
- change their hypotheses often.
 - change their observations and measurements to support their hypotheses.
 - disregard any results that do not support their hypotheses.
 - conduct independent studies of the same question.
19. In which form of water will the particles in a sample move most slowly?
- ice
 - liquid water
 - water vapor
 - steam
20. Which statement explains how to safely work with chemicals during a lab investigation?
- Always smell the chemical if you are not sure what it is.
 - Never use a chemical from an unlabeled container.
 - Gloves are not needed when you work with chemicals.
 - Goggles only need to be worn when working with chemicals labeled "toxic."
21. Which statement describes a chemical property of matter?
- The density of ice is 0.4 g/mL.
 - The boiling point of ethanol is 78.4°C.
 - Sodium is a very reactive element that combines easily with nonmetals.
 - Rust is a flaky material with an orange-red color.

PRETEST

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Use the table below to answer questions 22 and 23.

Group	Frequency of Fertilizer Treatment
1	No fertilizer provided
2	Once each week
3	Every other week
4	Once each month

22. Bob is conducting an experiment on plant growth. He grows four groups of plants in identical conditions except as described above. Which group in Bob's experiment is the control group?
- A. Group 1
 - B. Group 2
 - C. Group 3
 - D. Group 4
23. Based on the procedures Bob is using, what scientific question is he trying to answer?
- A. How much sunlight do plants need for growth?
 - B. How does water affect plant growth?
 - C. Does the number of plants grown in an area affect the growth of the plants?
 - D. Does regular fertilizer treatment affect plant growth?

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24. Which is an example of a chemical change?

- A. ice melting
- B. lava cooling
- C. wood being chopped
- D. iron rusting

25. Which is an example of kinetic energy?

- A. water behind a dam
- B. gasoline in a car
- C. a peanut butter sandwich
- D. throwing a ball

26. Currents facilitate the transfer of heat in a liquid or gas by

- A. radiation.
- B. convection.
- C. conduction.
- D. electromagnetism.

27. The chemical formula for water is always H_2O . What is the ratio of hydrogen to oxygen atoms in a molecule of water?

- A. 1:1
- B. 1:2
- C. 2:1
- D. 2:2

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SCIENCE

PRETEST

28. Maria measures the length of a piece of wood as 2.7 meters. What is the length of the wood in centimeters?

- A. 0.27
- B. 2.7
- C. 270
- D. 2,700

29. Tammy needs to find the volume of a marble. Which correctly describes the tools and techniques she will need to find this measurement?

- A. Use a metric ruler to find the length, width, and height of the marble. Multiply these measurements.
- B. Obtain a sample of water in a graduated cylinder. Record the volume. Add the marble to the cylinder and record the new volume. Subtract the volume of the water alone from the volume of the water and the marble to determine the volume of the marble.
- C. Use a balance to find the mass of the marble. Change the grams to milliliters since the number of grams is equal to the volume in cubic centimeters.
- D. Place the marble in a graduated cylinder. Line up the top of the marble with the markings on the cylinder and record the volume.

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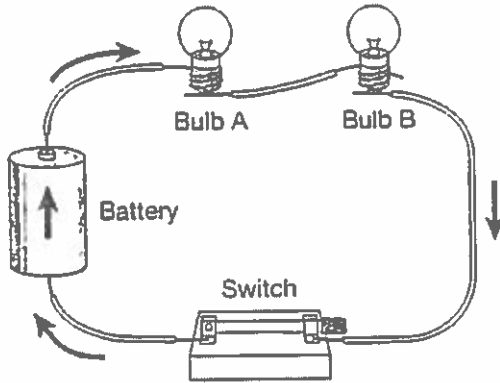
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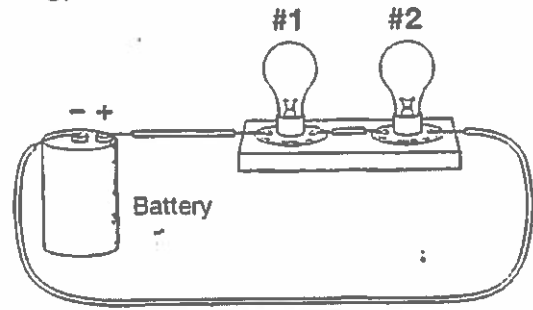
PRETEST

30. Four different circuits are shown. In which circuit would a failure of one bulb NOT affect the other bulb(s)?

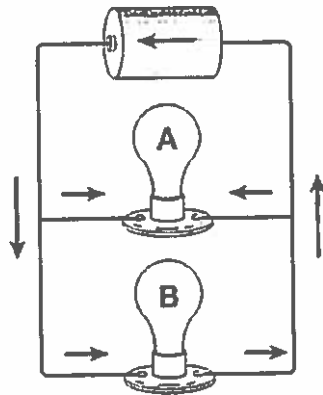
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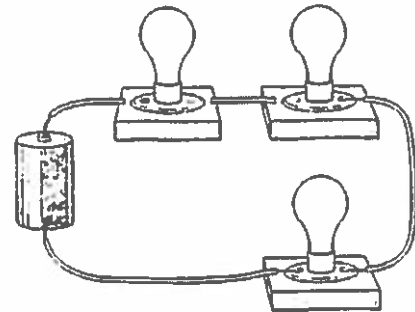
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B.



D.



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SCIENCE

Section 2

Section 2 of this test has thirty questions. Choose the best answer for each question. Fill in the circle in the spaces provided for questions 31 through 60 on your answer sheet.

31. The form of energy given off by a vibrating object is
- A. sound energy.
 - B. electrical energy.
 - C. light energy.
 - D. electromagnetic energy.

32. Sandra is making a salad. She places lettuce, tomato, cheese, cucumbers, vinegar, and oil in a bowl. She then lightly tosses the ingredients to combine them. When completely combined, the ingredients can easily be identified and separated from each other. What kind of substance has Sandra produced?
- A. molecule
 - B. element
 - C. compound
 - D. mixture

33. Which term is used to describe a set of related or connected parts or ideas that work together as a whole?
- A. machine
 - B. model
 - C. system
 - D. variable

Use the table below to answer question 34.

Number of Pets in an Apartment Building

Cats	15
Hamsters	28
Dogs	37
Rabbits	17
Snakes	3
Total Pet Population	100

34. A student collected the data shown of the types and numbers of pets in an apartment building. Based on these data, what percentage of pets are cats?
- A. 3 percent
 - B. 15 percent
 - C. 85 percent
 - D. 100 percent

SCIENCE

35. Which of these statements about a hypothesis is true?
- A. It is valuable only when proved accurate.
 - B. It may be valuable even when it turns out not to be completely accurate.
 - C. It is determined after a scientist performs his or her initial experiment.
 - D. It provides a basis for changing data that are inaccurate.
36. Which technological tool would be most useful for storing and retrieving scientific data?
- A. balance
 - B. model
 - C. computer
 - D. beaker

37. Why do you see a banana as yellow?
- A. The banana absorbs wavelengths for most colors of light, while reflecting wavelength for yellow light.
 - B. The banana absorbs wavelengths for yellow light, while wavelengths for other colors of light are reflected.
 - C. The banana absorbs only yellow wavelengths of light, and the colors of all other wavelengths are transmitted.
 - D. The banana does not absorb wavelengths for any color of light.

Use the information in the table below to answer question 38.

Time	Temperature (degrees Fahrenheit)
8:00 AM	55
9:00 AM	60
10:00 AM	64
11:00 AM	69
12:00 PM	68
1:00 PM	73
2:00 PM	70
3:00 PM	68

38. A student records the outdoor temperature at various times throughout the day. What is the mode of the data collected by the student?
- A. 55
 - B. 65.88
 - C. 68
 - D. 73

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PRETEST

39. Carl wants to determine if blue eyes are more common in humans than brown eyes. He observes and records the eye color of his mother, father, two sisters, and himself. His data show that three people in his family have blue eyes and two have brown eyes. Based on these data, Carl concludes that blue eye color is more common in humans than brown eye color. What is the main reason you should question the value of the conclusion reached by Carl?
- A. The sample size in his research was too small.
 - B. His data were collected without the use of a control.
 - C. Carl has blue eyes so his data may be biased.
 - D. The data gathered by Carl may be interpreted in more than one way.

40. A student is conducting an experiment that involves potentially harmful chemicals. In which illustration is the student **BEST** demonstrating appropriate and safe techniques for handling the chemicals?

A.



C.



B.



D.



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SCIENCE

41. Which formula represents a compound?
- A. SiO_2
 - B. N_2
 - C. Ag
 - D. Au
42. What is the main goal of scientific ethics?
- A. to reduce the use of animals in research
 - B. to help scientists design more accurate experiments
 - C. to guide scientific research in a responsible way
 - D. to increase the amount of research done as field studies
43. Two scientists conduct the same experiment and get different results. What is the BEST plan of action to resolve the difference?
- A. Accept the results that best support current theory.
 - B. Have a third scientist run the experiment again.
 - C. Accept the results of the scientist who published the results first.
 - D. Consider the educational backgrounds of the scientists.
44. A scientific claim appears in a magazine. The factor that should cause you to have the LEAST amount of confidence in the claim is
- A. popular support for the claim.
 - B. verification of the claim through repeated investigations.
 - C. support for the claim in peer-reviewed publications.
 - D. mathematical analysis that supports the claim.

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45. A scientist conducts a valid experiment but collects data that contradict a current theory. What should the scientist do?
- A. discard the record of the results since they contradict the theory
 - B. record the results without attempting to publish them since they contradict the theory
 - C. attempt to publish the results as accurately as possible and wait for a response from the scientific community
 - D. announce in a publication that the current theory is wrong
46. What is MOST LIKELY to happen if many repeated investigations suggest that a current scientific theory is wrong?
- A. The theory may be discarded.
 - B. The data from the new investigations will be discarded.
 - C. New investigations related to the current theory will be abandoned.
 - D. Scientists will accept the current theory over the new information.

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Use the information and data table below to answer question 47.

Janet and Stuart conduct an experiment to determine the effect of salt concentration on the boiling point of water. They report the results of their investigation in the data table shown. In her laboratory report, Janet concludes that the boiling point of water decreases as the salt concentration decreases. In his laboratory report, Stuart concludes that boiling point increases as salt concentration increases.

PRETEST

Salt Concentration and Boiling Point

Solution	Boiling Point Trial 1	Boiling Point Trial 2	Boiling Point Trial 3
1 L water	100°C	100°C	100°C
1 L water + 1 tablespoon salt	102.1°C	101.9°C	101.6°C
1 L water + 2 tablespoons salt	103.5°C	103.4°C	103.4°C

47. What accounts for the differences in the conclusions?
- A. There may be more than one way to interpret a given set of findings.
 - B. Janet's conclusion is incorrect and unsupported by the data.
 - C. Stuart's conclusion is incorrect and unsupported by the data.
 - D. The conclusions of both students are incorrect and unsupported by the data.

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SCIENCE

PRETEST

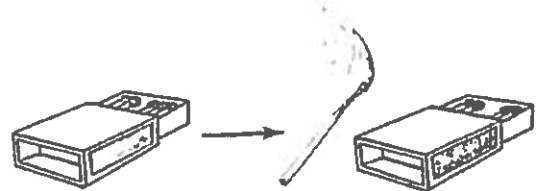
48. An example of a mixture is
- A. solid NaCl
 - B. liquid NaCl
 - C. NaCl dissolved in water
 - D. water (H₂O)

49. Mercury melts at -38.87°C and boils at 356.58°C . What is the freezing point of mercury?
- A. -38.87°C
 - B. 0°C
 - C. 100°C
 - D. 356.58°C

50. Rhett wants to use a model to observe and study how blood flows through the different chambers of the heart. Which type of heart model will be MOST useful to Rhett?
- A. a diagram
 - B. a three-dimensional model
 - C. an analogy
 - D. a computer simulation

51. Tightening the strings of a guitar causes the strings to vibrate more quickly when plucked. As a result, tightening the strings produces sounds that are
- A. louder
 - B. higher in pitch
 - C. softer
 - D. lower in pitch

Use the illustration below to answer question 52.



52. The illustration shows a matchstick after it has been rubbed against the striker portion of the box. The BEST summary of the energy transformation that takes place in the matchstick is
- A. chemical energy \rightarrow thermal energy and light energy
 - B. light energy and thermal energy \rightarrow chemical energy
 - C. mechanical energy and thermal energy \rightarrow light energy
 - D. mechanical energy and light energy \rightarrow thermal energy

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SCIENCE

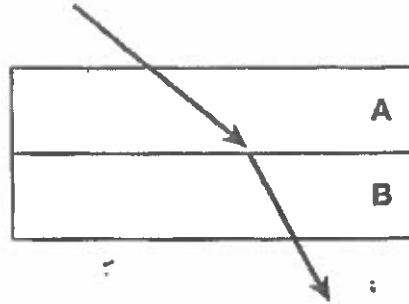
53. The law of conservation of energy states that

- A. energy can be created or destroyed, as well as being converted from one form to another.
- B. energy is created when it is converted from one form to another.
- C. in most systems some energy is destroyed and lost as heat.
- D. energy cannot be created or destroyed but can be converted from one form to another.

54. A wheel and axle is a simple machine made up of two circular objects of different sizes. How does a wheel and axle make work easier?

- A. It changes the direction of the force.
- B. It multiplies the effort force.
- C. It multiplies the distance over which the force must be exerted.
- D. It changes both the direction and the size of the effort force.

Use the illustration below to answer question 55.



55. The illustration shows how a light wave is affected as it moves from air into water. What light wave behavior is illustrated?

- A. reflection
- B. diffraction
- C. refraction
- D. absorption

56. Which of the following occurs in an electromagnet?

- A. An electric current is used to generate a magnetic field.
- B. A magnetic field is used to generate an electric current.
- C. Mechanical energy is converted into electrical energy.
- D. Electrical energy is converted into mechanical energy.

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57. Which describes a change from gas to liquid?

- A. boiling
- B. condensing
- C. freezing
- D. sublimation

58. Four students were instructed to weigh an object and record the weight to the nearest one-hundredth of an ounce. Which measurement indicates that the student followed directions?

- A. 7 lb
- B. 7.3 lb
- C. 7.37 lb
- D. 7.372 lb

59. The actual mass of a ball is 32.19 grams. Four students measured and recorded the mass of the ball. Which measurement made by the students is the MOST accurate?

- A. 30 g
- B. 32 g
- C. 32.2 g
- D. 31.29 g

60. A student mixes two clear liquids in a flask as directed by his teacher. A moment later a white solid forms at the bottom of the flask. What can the student conclude from this observation?

- A. No chemical change has occurred.
- B. A chemical change has occurred.
- C. No new substances have formed.
- D. A mixture has been created.

