Name _____

September - March Content

1. The motion of the particles of a substance is very slow. Which state of matter would the substance be in?

a. Solid

b. Liquid

c. Gas

2. A student is conducting an experiment to demonstrate the effects of temperature on a balloon. Hypothesize the effect of placing a balloon in a freezer.

a. The balloon will expand because molecules increase in speed.

b. The balloon will contract because molecules decrease in speed.

c. The balloon will remain the same because the molecules do not change.

d. The balloon will expand then contract because molecules increase and the decrease in speed.

3. A student doesn't like the test grade he received. He tears his test into many pieces. He has demonstrated ...

a. a mixture.

b. a chemical change.

c. a physical change.

d. a solution.

4. A student has a mixture of sand, salt and iron filings in a beaker. What equipment is used to separate the materials?

a. magnetic bar, microscope

b. magnetic bar, filter paper

c. filter paper, balance

d. forceps (tweezers), hand lens

5. For every action, there is an equal but opposite

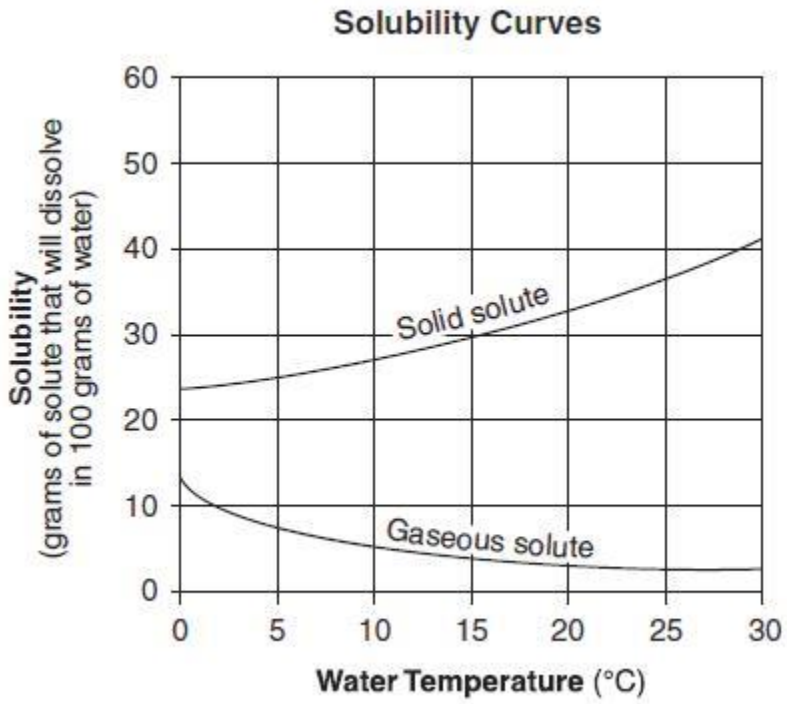
a. velocity.

b. reaction.

c. speed.

d. inertia.

6. Calculate the difference in solubility between the gas and solid solute at 15ºC.



a. 35 g

b. 30 g

c. 25 g

d. 5 g

7. Using the formula F=m*a, determine which object would exhibit the least amount of force?

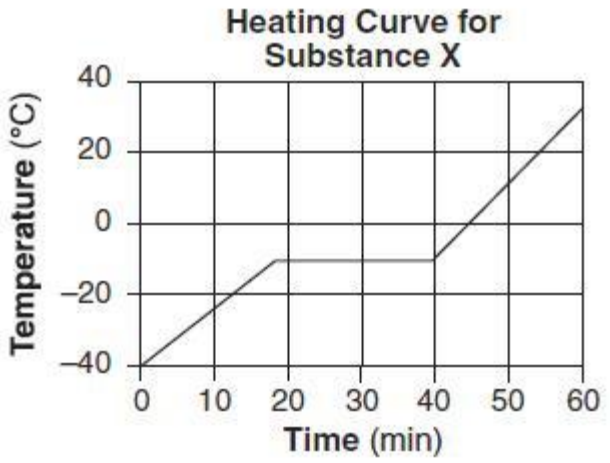
a. a 10-kg object accelerating at 20 m/s^2

b. a 10-kg object accelerating at 40 m/s^2

c. a 40-kg object accelerating at 8 m/s^2

d. a 40-kg object accelerating at 6 m/s^2

8. According to the graph, where is substance x changing from one phase to another?



a. 18 minutes - 40 minutes

b. 40 minutes - 60 minutes

c. 0 minutes - 10 minutes

d. none of the above

9. A student leans against the wall with a force of 20 Newtons. The wall does not move. What is the amount of force the wall exerts on the student?

a. 5 Newtons

b. 10 Newtons

c. 20 Newtons

d. 40 Newtons

10. A spoon left in a cup of hot cocoa gets hot because of heat transfer. This is an illustration of the process of

a. radiation

b. convection

c. conduction

d. ignition

11. Which type of wave cannot travel through space?

a. light

b. infrared

c. sound

d. ultraviolet

12. What are the two basic properties of a gaseous state?

a. neither a definite shape or definite volume

b. definite shape and no definitive volume

c. definite shape and definite volume

d. no definite shape and definite volume

13. A baseball and a golf ball are dropped at the same time from the same height. If there is **no** air resistance which statement would be true?

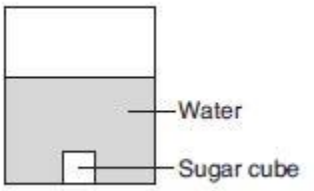
a. The baseball will land first.

b. The golfball will land first.

c. The baseball and the golfball will land at the same time.

d. There is no way of knowing which will land first.

14. A student heated the beaker in the diagram to increase the temperature because the student wanted to know if the sugar cube would dissolve quicker. What is the independent variable in this experiment?



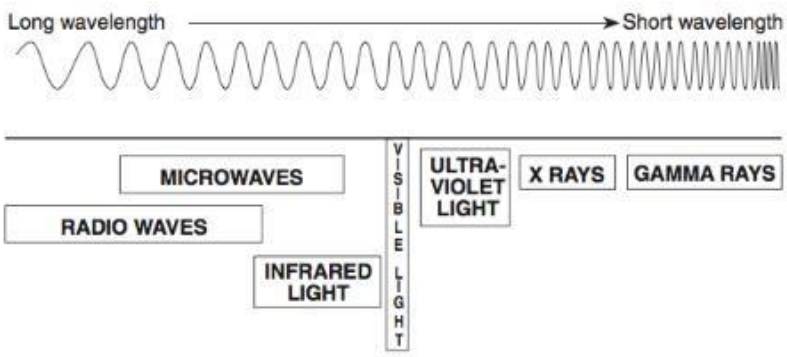
a. rate the sugar cube will dissolve

b. amount of sugar

c. type of water

d. temperature

15.



From the forms of electromagnetic energy listed above, which has the shortest wavelength?

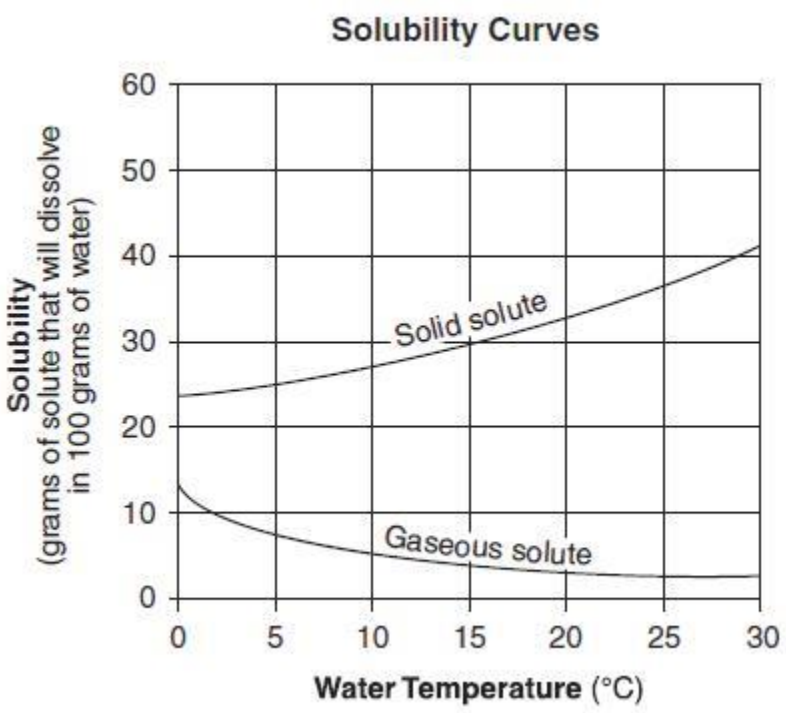
a. visible light

b. ultraviolet light

c. x rays

d. microwaves

16. Predict the solubility of the solid solute at 35ºC



a. 48 g

b. 23 g

c. 35 g

d. 41 g

17. You know you are in motion by comparing yourself to

a. object moving toward you

b. stationary object

c. upward moving object

d. object moving away from you

18. What best explains why an ice cube will melt when left on the kitchen counter?

a. Heat is released by the ice cube.

b. Heat is absorbed by the ice cube.

c. The counter absorbs heat from the ice cube.

d. The ice cube releases heat to the ai

19. An astronaut is completing a spacewalk to repair the spaceship. When he pushes off the side of the rocket, he will continue to move at a constant speed in a straight line, until his tether line stops him. Which of Newton's Three Laws of Motion does this demonstrate?

a. Newton's First Law of Motion

b. Newton's Second Law of Motion

c. Newton's Third Law of Motion

20. Grease is used on machines to reduce the opposing action of

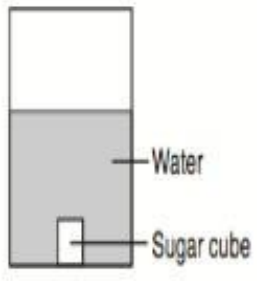
a. speed

b. gravity

c. friction

d. force

21. The diagram below shows a sugar cube that has been placed in a container of water. The sugar cube will dissolve in the water.



What is one way to make the sugar cube dissolve more quickly in the water?

a. Stir the water.

b. Heat the water.

c. Grind the sugar cube up into smaller pieces.

d. All of the above.

22. An object is at rest. All of the forces acting on the object are equal. If all the forces acting on the object remain equal, then what will happen to the object?

a. The object will move.

b. The object will remain at rest.

c. The object will move upward.

d. The object will move side to side.

23. When hydrogen and oxygen chemically combine the total mass of the product

a. is greater than the mass of the oxygen plus the mass of the hydrogen

b. is less than the mass of the oxygen plus the mass of the hydrogen

c. is equal to the mass of the oxygen plus the mass of the hydrogen

d. is equal to the mass of the oxygen

24. When water changes to steam or ice, it demonstrates the process of a

a. physical change
c. chemical change
b. physical property
d. chemical property

25. Which of the following is a mixture?

a. salt
c. soil
b. water
d. carbon dioxide

26. Which of the following is the property that refers to an object's ability to float?

a. mass
c. shape
b. volume
d. buoyancy

27. Most substances expand when heated and contract when cooled except for

a. oil
c. helium gas
b. water
d. iron

28. What process is happening when liquid water turns into water vapor?

a. condensation
c. melting
b. freezing
d. evaporation

29. Which statement is true about a mixture?

a. It can be separated by physical means.
c. It cannot be separated.
b. It can be separated by chemical means.
d. It has a definite shape and volume.

30. Tyler measured the density of an object at 0.3 g/cm^3. When an object was placed in a beaker of water it ___ _____. (Density of water = 1.0 g/cm^3)

a. sank to the bottom
b. floated on top
c. floated in the middle
d. none of the above

31. Sara measured the mass of the object at 50 grams. The volume was 25 ml. Calculate the density of the object. $D = \frac{m}{v}$

a. $2.0\ g/cm^3$

b. $0.5\ g/cm^3$

c. $20.0\ g/cm^3$

d. $0.2\ g/cm^3$

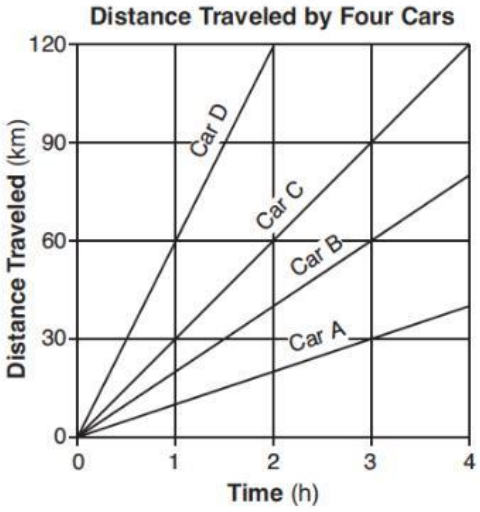
32. During a phase change, heat energy is either absorbed or released. Of the phase changes described below, select the phase change where energy is released?

a. a gas changes to a liquid

b. a solid changes to a liquid

c. a liquid changes to a gas

d. a star made of plasma



33. The diagram on the left shows the distance four cars travel in four hours. Which car is traveling with the highest average speed?

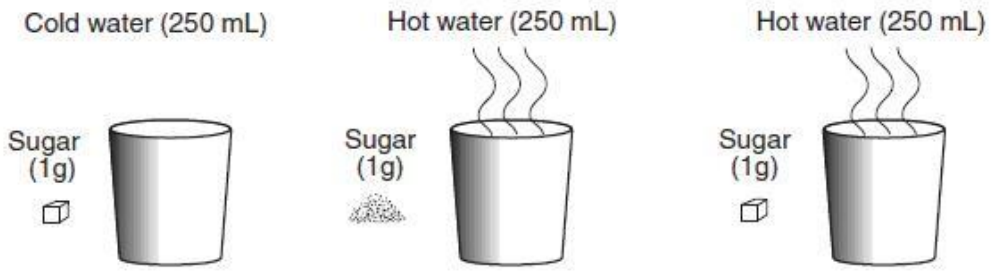
a. Car A

b. Car B

c. Car C

d. Car D

34. Which diagram illustrates where the sugar (solute) will dissolve the fastest?



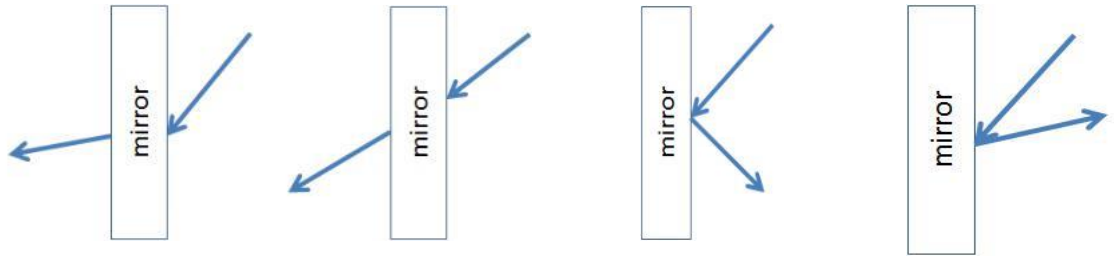
a. cold water and solid sugar cube

b. hot water and granulated sugar

c. hot water and solid sugar cube

d. cold water and granulated sugar

35. Which of the following diagrams shows the law of reflection?



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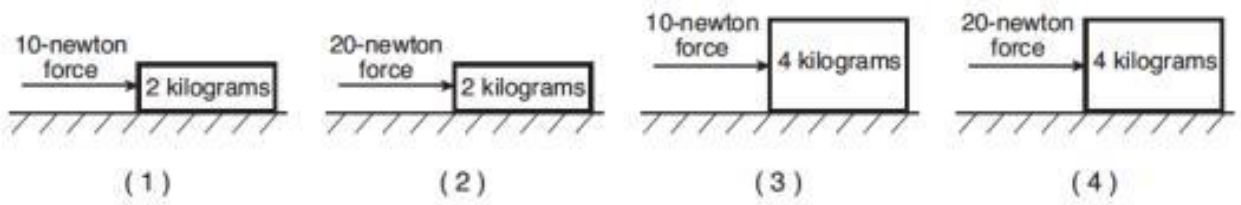


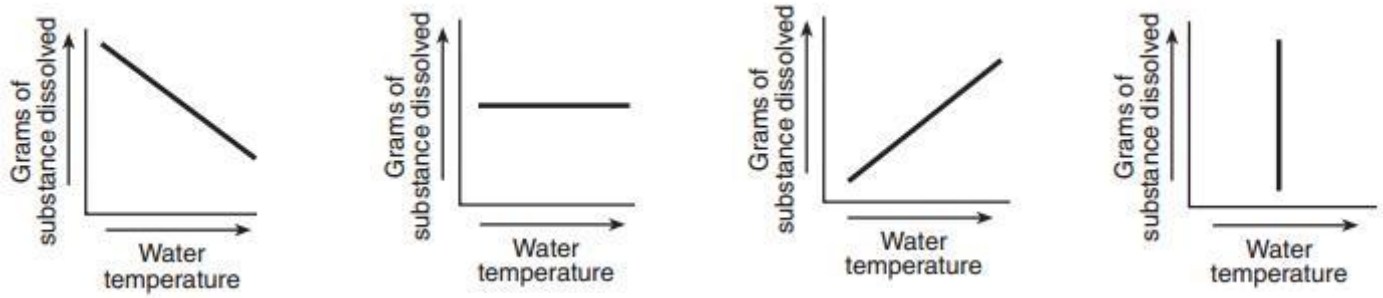
The diagram above shows blocks of different masses and the amount of force applied to each block. If the surface remains the same, which block would accelerate the least?

a. 1
c. 3
b. 2
d. 4

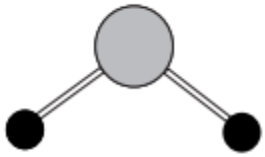
37. A kickball and a bowling ball are the same size but the bowling ball has more mass. Therefore,

a. the kickball has a greater density
c. both balls have the same density
b. the bowling ball has a greater density
d. the two balls are not the same size

38. Which graph shows that more grams of a substance can be dissolved in water as the water temperature increases?



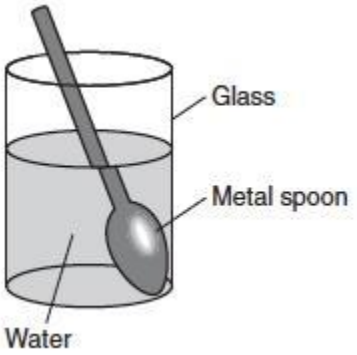
39. The diagram below shows the geometric structure of a molecule of water (H_2O).



What do the symbols  and  represent in the model?

1. genetic material
2. chemical bonds
3. cells
4. atoms

40. The diagram below shows a metal spoon in a glass of water.



Which process causes the metal spoon to appear split or broken?

1. absorption
2. refraction
3. convection
4. reflection

41. Which object will require more force to move?

a. 10 kg box
b. 60 kg box
c. 30 kg box
d. 100 kg box

42. Which of the following would not be found on the Periodic Table?

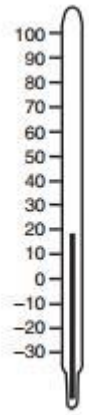
a. carbon

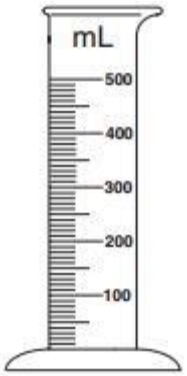
b. hydrogen

c. oxygen

d. sugar

43. Which instrument could be used to determine the volume of an irregularly shaped solid?





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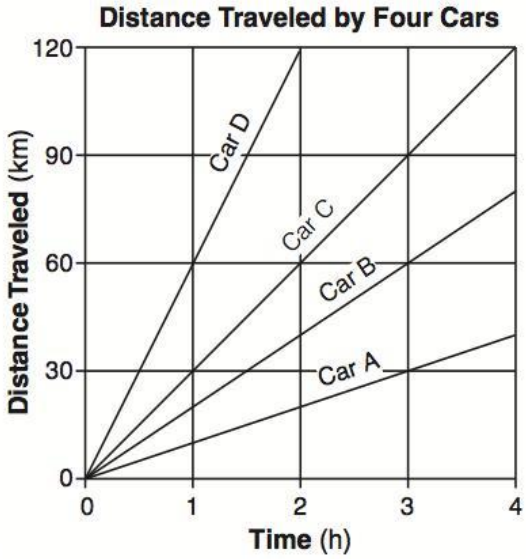


The graph above shows the distance traveled by four cars, A, B, C, and D, over a period of time. Which car would travel 30 km's in the least amount of time?

a. A

b. B

c. C

d. D

45.

Portion of the Periodic Table of the Elements

KEY
1 — approximate atomic mass
H — symbol
Hydrogen — name
1 — atomic number

Groups

11	12	13	14	15	16	17	18
							4 He Helium 2
		11 B Boron 5	12 C Carbon 6	14 N Nitrogen 7	16 O Oxygen 8	19 F Fluorine 9	20 Ne Neon 10
		27 Al Aluminum 13	28 Si Silicon 14	31 P Phosphorus 15	32 S Sulfur 16	35 Cl Chlorine 17	40 Ar Argon 18
64 Cu Copper 29	65 Zn Zinc 30	70 Ga Gallium 31	73 Ge Germanium 32	75 As Arsenic 33	79 Se Selenium 34	80 Br Bromine 35	84 Kr Krypton 36
108 Ag Silver 47	112 Cd Cadmium 48	115 In Indium 49	119 Sn Tin 50	122 Sb Antimony 51	128 Te Tellurium 52	127 I Iodine 53	131 Xe Xenon 54

The diagram above shows a section of the Periodic Table. The elements Nitrogen, Sulfur, Iodine, and Fluorine are all classified as

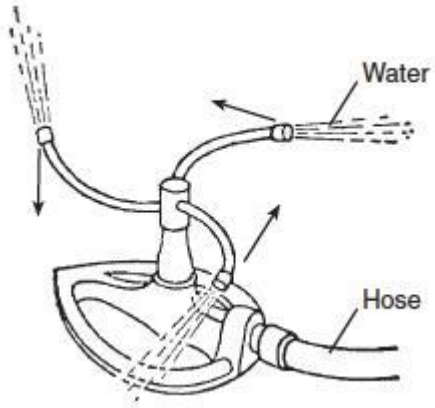
a. metals

b. metalloids

c. nonmetals

d. noble gases

46. The diagram below shows a spinning water sprinkler. Water comes through a hose and is sprayed by the sprinkler.



Which principle best explains why the sprinkler spins?

1. Every action has an equal and opposite reaction.

2. Solid substances are usually more dense than liquid substances.

3. Energy is released when water condenses.

4. Most substances expand when heated and contract when cooled.

47. Skiers often wear sunglasses while they are skiing because snow

1. radiates light

2. absorbs light

3. conducts light

4. reflects light

48. Which model is used by scientists to determine the properties of elements?

1. a Punnett square

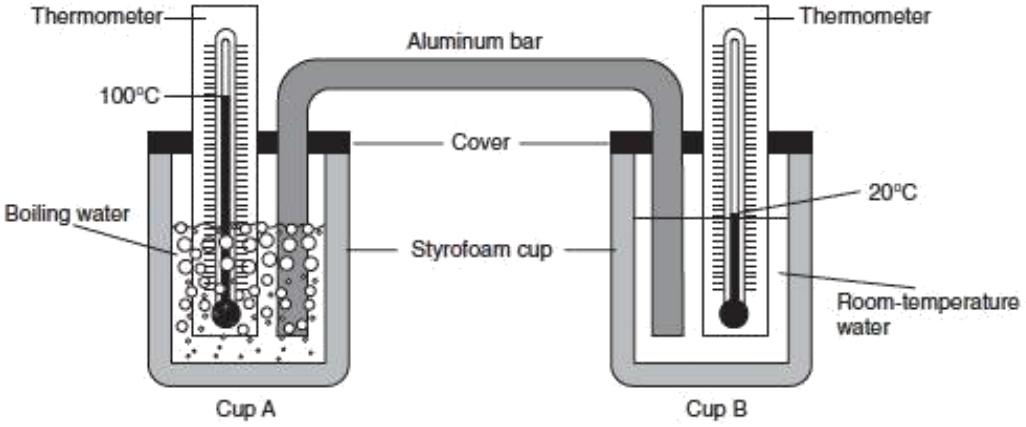
2. the Periodic Table

3. a pedigree chart

4. the rock cycle

Use the information below to answer question **49**.

Base your answers to the following questions on the diagram below, which shows two insulated Styrofoam cups of water connected by an aluminum bar. The thermometers show the temperature of the water in cup A and cup B at the beginning of a heat-flow experiment.



49. Which process is most responsible for the temperature changes that will take place?

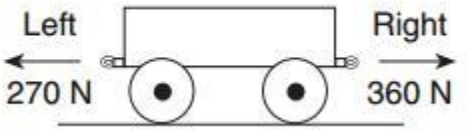
1. radiation of heat from the water in the cups to the thermometers

2. conduction of heat through the aluminum bar

3. radiation of heat from the water in the cups into the air

4. conduction of heat through the air to the water in the cups

50. The diagram below shows a stationary cart on a frictionless surface. Two unequal opposing forces are about to be applied to the cart.



If the unequal opposing forces are applied to the cart at the same time, what will occur?

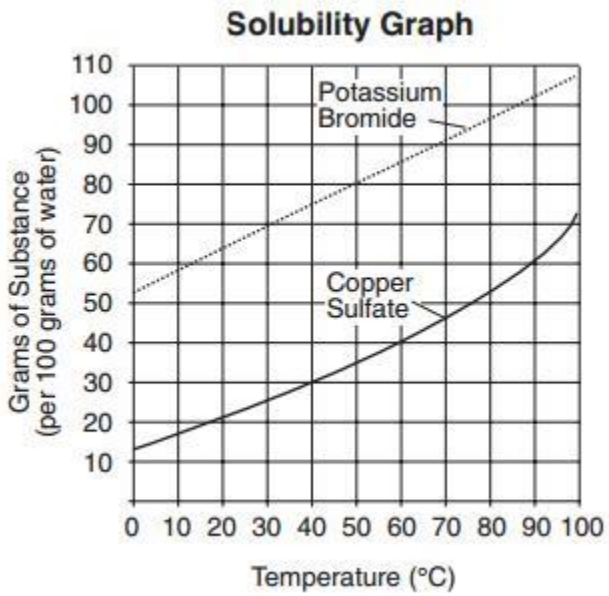
1. The cart will move to the left.

2. The cart will move to the right.

3. The cart will alternate between moving left and right.

4. The cart will remain stationary.

51. The graph below shows the solubility of two different chemical compounds.



Compared to copper sulfate, approximately how many more grams of potassium bromide would dissolve at 90°C?

1. 20

2. 40

3. 60

4. 80

52. A student shouts "Hello!" into a canyon. The sound bounces back to him as an echo. This example describes the sound wave as

a. being reflected off of a surface.

b. being refracted from one medium.

c. being diffracted around an obstruction.

d. being interfered with by another wave.

53. The cartoon below shows a humorous view of a law of motion.

Which statement best summarizes the scientific concept shown in the cartoon?

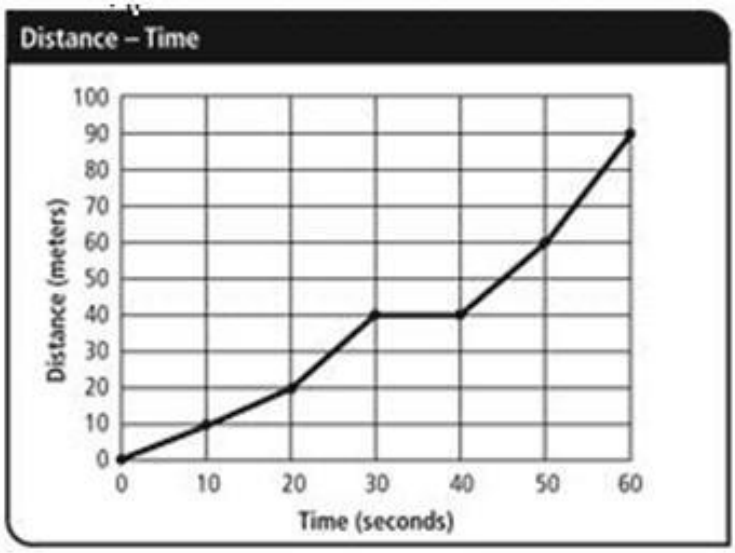
1. A falling body accelerates at a constant speed.

2. The motion of an object is constantly changing due to magnetic forces.

3. The force of friction causes an object in motion to move faster.

4. A body in motion will remain in motion unless influenced by an outside force.

54.



During which ten-second time interval was the car's acceleration zero?

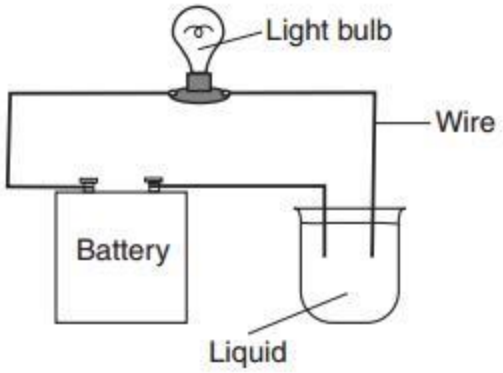
a. 0-10 seconds

b. 10-20 seconds

c. 20-30 seconds

d. 30-40 seconds

55. The diagram below shows an experiment to test a certain property of liquids.



Which property of the liquid is being tested?

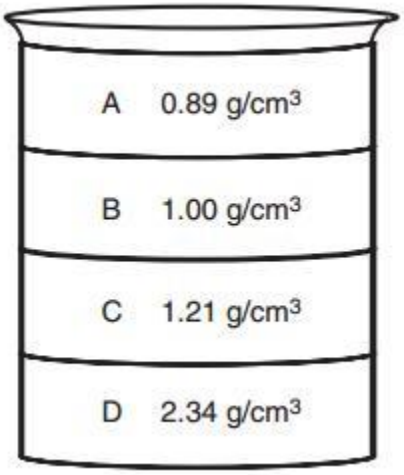
1. density

2. magnetic attraction

3. conductivity

4. freezing point

56. The diagram below shows a tall beaker with four different liquids and their densities.



If a ball that has a density of 1.73 g/cm3 is placed in the beaker, where will the ball come to rest?

1. on top of liquid A

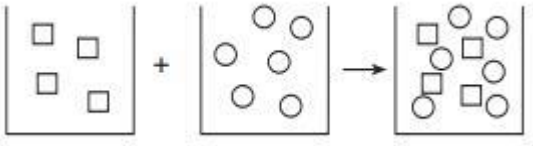
2. between liquids B and C

3. between liquids C and D

4. on the bottom of the beaker

57. The four diagrams below model the results of mixing atoms of different substances. Each atom is represented by a different symbol. Which diagram correctly models a chemical change?

1.



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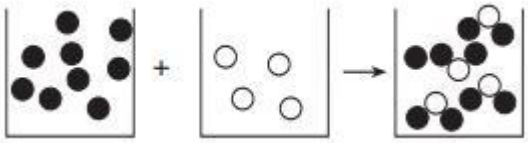
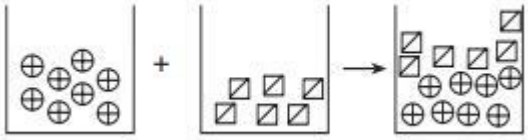


3.

4.



58. A pebble has a mass of 35 grams and a volume of 14 cubic centimeters. What is its density?

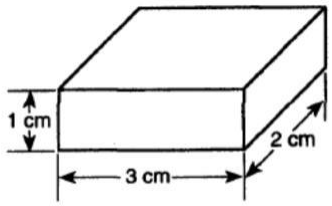
a. $0.4\ g/cm^3$

b. $2.5\ g/cm^3$

c. $490\ g/cm^3$

d. $4.0\ g/cm^3$

59. The diagram below represents a solid object with a density of 3 grams per cubic centimeter.



(Not drawn to scale)

What is the mass of the object?

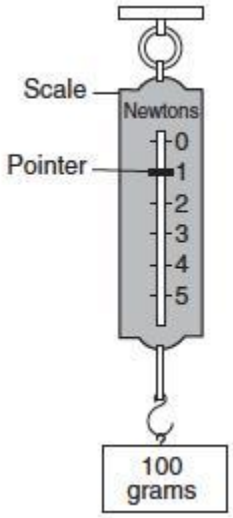
a. 0.5 g

b. 18 g

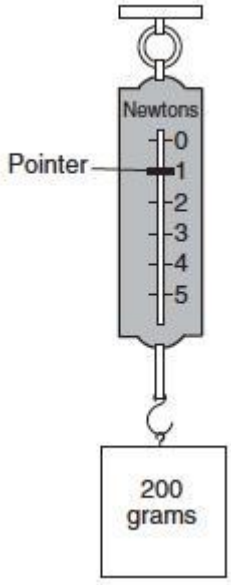
c. 2 g

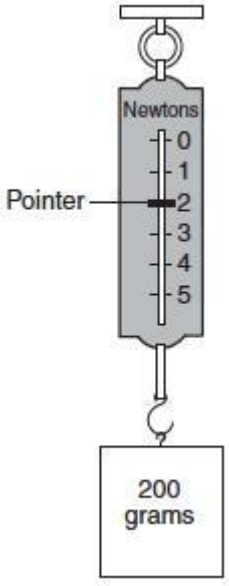
d. 36 g

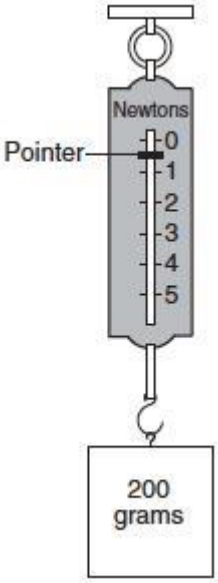
60. The diagram below shows a spring scale being used to weigh a 100-gram mass.

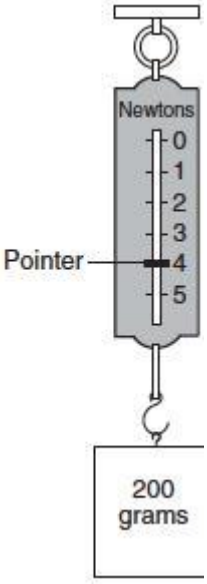


Which diagram best represents the correct reading for the same spring scale being used to weigh a 200-gram mass?

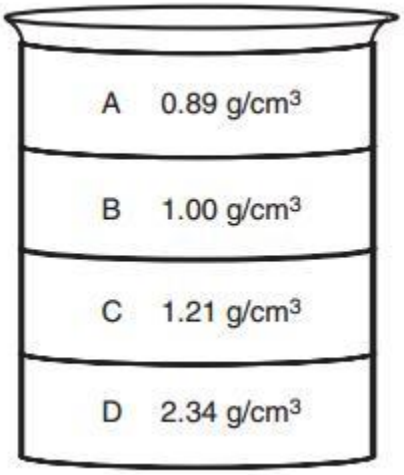








61. The diagram below shows a tall beaker with four different liquids and their densities.



If a ball that has a density of 1.73 g/cm3 is placed in the beaker, where will the ball come to rest?

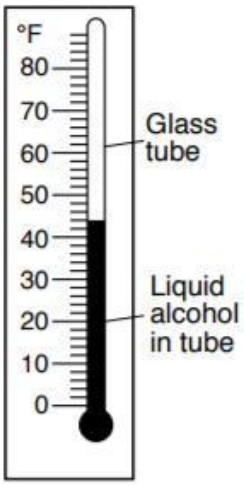
1. on top of liquid A

2. between liquids B and C

3. between liquids C and D

4. on the bottom of the beaker

62. The diagram below represents a thermometer.



Which principle best explains how this thermometer works?

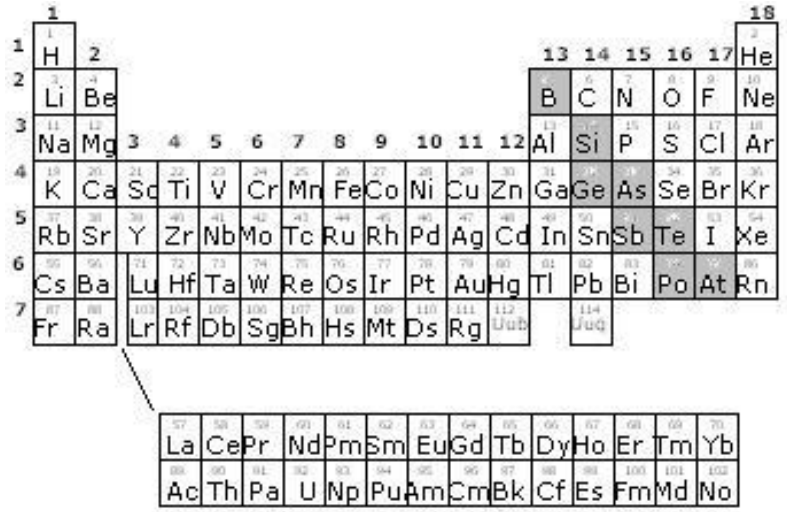
1. A liquid changes to a gas when heated.

2. A gas changes to a liquid when heated.

3. A liquid expands when heated and contracts when cooled.

4. A liquid contracts when heated and expands when cooled.

63.



Above is a periodic table. The elements highlighted on the periodic table are known as the

a. metals

b. metalloids

c. noble (inert) gases

d. nonmetals

64. The identity of an atomic element depends on the number of _____ the atom contains.

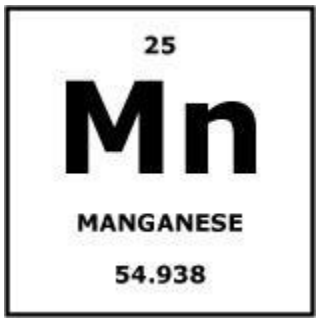
a. protons

b. neutrons

c. electrons

d. neutrons and electrons

65.



Above is the square for manganese from the periodic table. According to the square, what is the atomic number of manganese?

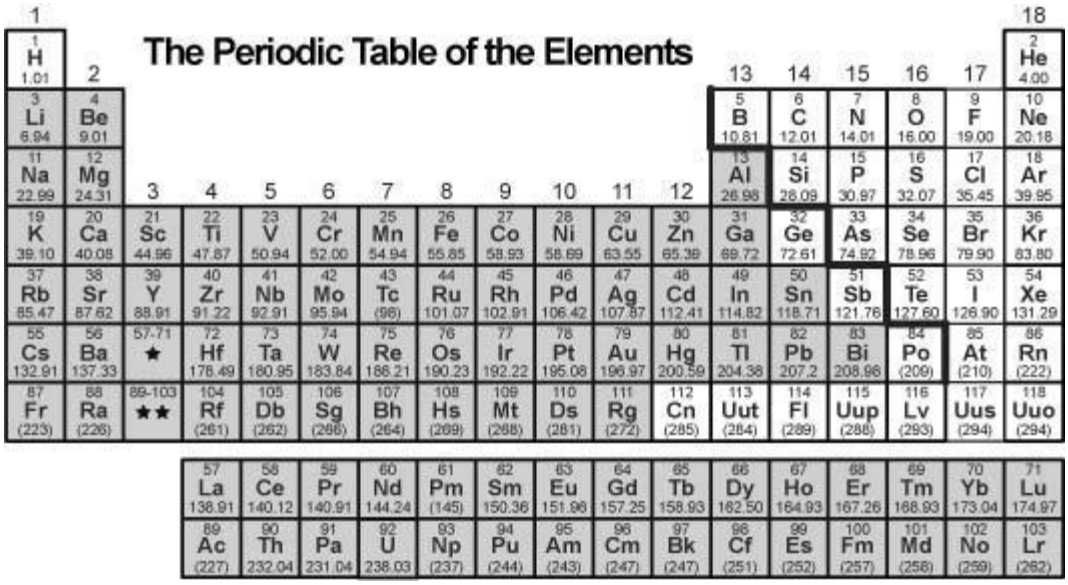
a. 25

b. 29.938

c. 30

d. 54.93

66.



The elements highlighted on the periodic table are considered _____.

a. metals only

b. semimetals only

c. liquids and gases

d. nonmetals and semimetals

67. The table below shows the chemical symbols for some common elements.

Element	Symbol
Hydrogen	H
Helium	He
Oxygen	O
Silicon	Si
Carbon	C
Iron	Fe

Based on the information in the table, which of the four substances below is a compound?

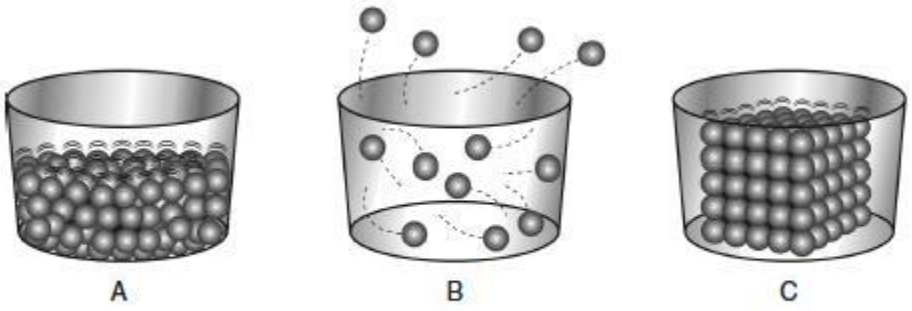
1. CO

2. He

3. Si

4. Fe

68. The diagrams below represent three phases of matter, labeled A, B, and C.



(Not drawn to scale)

Which table correctly identifies the phases of matter represented by the diagrams?

A	liquid
B	gas
C	solid

(1)

A	solid
B	liquid
C	gas

(2)

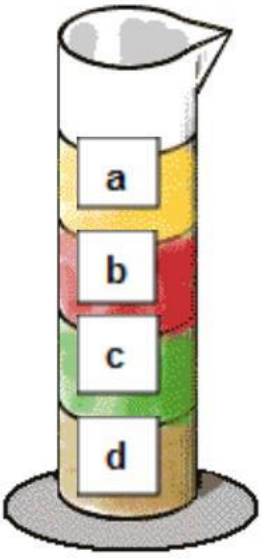
A	solid
B	gas
C	liquid

(3)

A	liquid
B	solid
C	gas

(4)

69. Look at the graduated cylinder and chart below. Which letter represents where Canola Oil would be?



Liquid	Density (g/ml)
corn syrup	1.38
ether	1.2
canola oil	.93
salt water	1.1

a. at the top

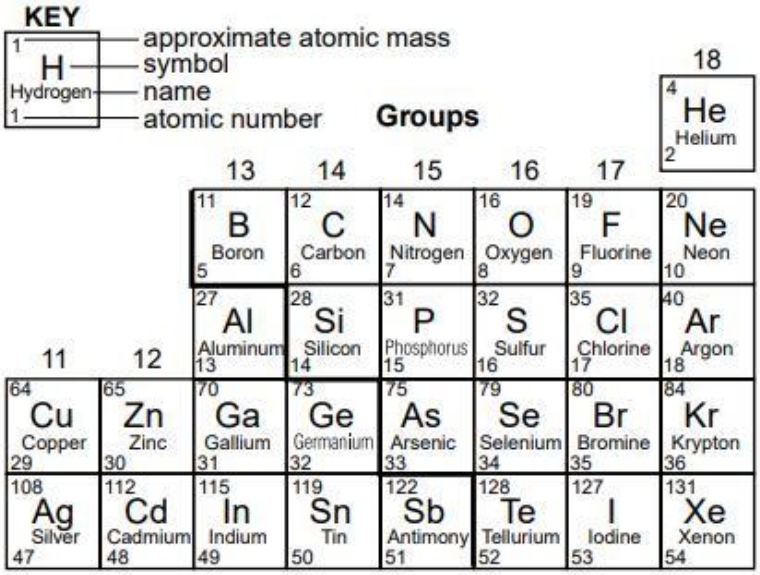
b. between a and c

c. between c and d

d. at the bottom

70. The diagram below represents a portion of the Periodic Table of the Elements.

Portion of the Periodic Table of the Elements



Based on its position in the Periodic Table, at room temperature, cadmium is most likely a

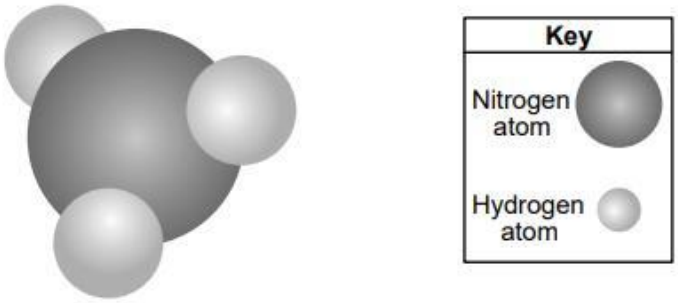
1. noble gas

2. nonmetal

3. metal

71. The model below represents a molecule of ammonia gas.

Model of a Molecule of Ammonia Gas



Ammonia gas would be classified as

1. a compound

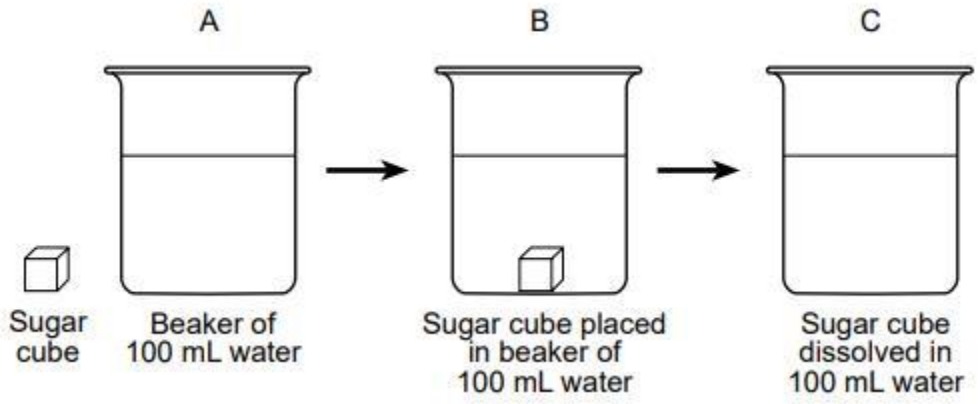
2. a mixture

3. an element

4. an atom

Use the information below to answer question **72**.

A sugar cube was placed into a beaker containing 100 mL of water at room temperature and completely dissolved into the water. This process is represented by the series of diagrams labeled A, B, and C below.



72. Describe one way that the dissolved sugar at C could be separated from the water.

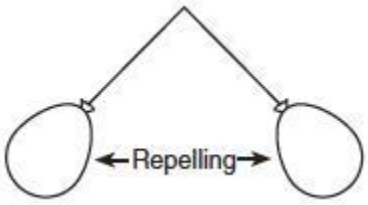
a. filtration

b. sifting

c. flotation

d. evaporation

73. A student attached two balloons to equal lengths of string and tied them to the same point. The student observed that the balloons repelled each other, as shown in the diagram below.

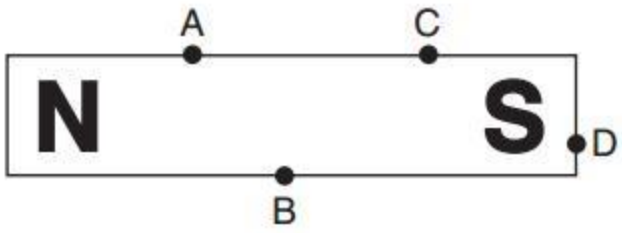


In terms of electrical charges, explain why the balloons repelled each other.

a. opposite charges attract and like charges repel

b. like charges attract and opposite charges repel

74. Letters A, B, C, and D represent locations on a bar magnet.



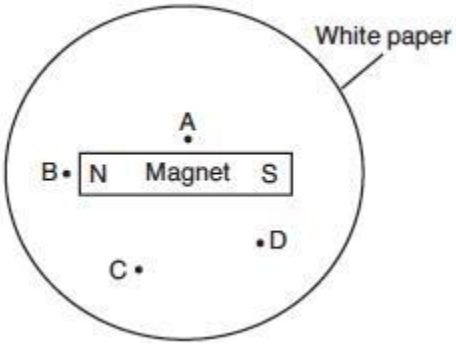
Which location has the greatest magnetic force? **1.** A

2. B

3. C

4. D

75. The diagram below shows a bar magnet resting on top of a piece of white paper. The north and south poles of the magnet are labeled N and S. Points A, B, C, and D represent four locations around the magnet.



If iron filings were sprinkled evenly across the entire paper circle, at which location would the greatest concentration of iron filings be found after 30 seconds?

1. A

2. B

3. C

4. D