8th grade Georgia Milestone practice test

_____ 1. Which statement about the molecules in ice and the molecules in liquid water is correct?
A)The molecules in ice have more energy than the molecules in liquid water.
B)The molecules in ice contain different atoms than the molecules in liquid water.
C)The molecules in ice have more electric charge than the molecules in liquid water.
D)The molecules in ice are less free to move than the molecules in liquid water.

_____2. Which of the following is a compound? A)oxygen B)water C)nitrogen D)air

_____3. Which symbol represents carbon? A)Ca B)N C)K D)C

_____4. Evidence of a chemical change would be a
A)melting popsicle. C)spilled bucket of water.
B)spinning top. D)rusting car fender.

_____5. Moisture that collects on the outside of a cold glass results from the process of
A)evaporation. C)sublimation.
B)condensation. D)vaporization.

_____6. A hot air balloon rises because
A)molecules become lighter when heated.
B)molecules move faster and farther apart when heated.
C)molecules are less attracted by gravity when heated.
D)molecules become charged and repel each other when heated.

_____7. The solid, liquid, and gaseous states of water differ from each other in
A)the mass of the individual atoms.
B)the size of the individual atoms.
C)the net electrical charge of the individual molecules.
D)the average speed of movement of the individual molecules.

_____8. A different chemical substance is formed when a
A)piece of cloth is cut. C)candle burns.
B)cup breaks. D)piece of chalk breaks

_____9. Carbon dioxide is…. A)an element. B)a compound. C)a solution. D)a mixture.

_____10. A chemical change combining two elements results in…
A)an atom. B)a compound. C)an element. D)a mixture.

_____11. All plant and animal life on Earth contains what element?
A)sulfur B)carbon C)silicon D)aluminum

_____12. Which is usually true about metals?
A)Metals melt at lower temperatures than any other elements.
B)Metals always have their atoms arranged into crystals.
C)Metals do not combine easily with nonmetals.
D)Metals conduct electricity more easily than nonmetals.

_____13. When a gas forms a liquid, which process is taking place?
A)freezing B)condensation C)boiling D)evaporation

_____14. The element beryllium (Be, atomic number 4 and atomic mass 9) is right above magnesium (Mg, atomic number 12 and atomic mass 24) in the periodic table. How many more electrons does magnesium have than beryllium? A)5 B)7 C)8 D)15

_____15. Which is an example of a chemical change?
A)ice melting
B)salt crystals being ground to powder
C)water evaporating
D)wood burning

_____16. Based on the melting points shown in the table, which material would still be a solid at 400°C? A)beeswax
B)gold
C)lead
D)oxygen

Substance	Melting Point (°C)
beeswax	62
gold	1,063
lead	327
oxygen	–218

_____17. Which action would result in a chemical change?
A)crumpling several sheets of paper
B)pounding a nail into a piece of wood
C)peeling and slicing a carrot
D)making blueberry muffins

_____18. The amount of matter in an object is called its….
A)weight. B)gravity. C)mass. D)force.

_____19. A chemical change for a piece of metal would be
A)being bent in half.
B)getting cut into two pieces.
C)being painted.
D)getting rusty.

_____20. Which symbolizes a molecule of a compound?
A)He B)Be C)N_2 D)NaCl

_____21. Putting sand and salt together makes…
A)a compound. B)an element. C)a mixture. D)a solution.

_____22. The chemical symbol Al represents which metal on the periodic table?
A)arsenic B)antimony C)aurum D)aluminum

_____23. All of the substances on the periodic table are classified as elements because they

A)are pure substances.
B)are composed of atoms.
C)cannot be broken down into other substances.
D)cannot be dissolved in water or other liquids.

_____24. A difference between physical change and chemical change is that

A)chemical change involves energy while physical change does not.
B)physical change involves energy while chemical change does not.
C)different kinds of molecules are present after a physical change but not after a chemical change.
D)different kinds of molecules are present after a chemical change but not after a physical change.

_____25. Each element in the periodic table is assigned an atomic number. This number is the same as…

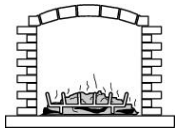
A)the number of electrons in the atom's nucleus.
B)the number of protons in the atom's nucleus.
C)the number of neutrons in the atom's nucleus.
D)the number of protons and neutrons in the atom's nucleus.

_____26. Which is the correct symbol for the element sodium? A)S B)AI C)Cl D)Na

_____27. Which statement is usually true about the electrical properties of metals?

A)Metals have high electrical resistance.
B)Lightweight metals are the best conductors.
C)Metals and plastics are both good insulators.
D)Metals are good electrical conductors.

_____28. Look carefully at the pictures below. Which picture shows only a physical change in the wood?

A)  B)  C)  D) 

_____29. Silver is a white metal that is an excellent conductor of heat and electricity. The density of silver is 10.49 g/cm3. Silver does not react with water but does react with nitric acid. Silver tarnishes when exposed to air. A physical property of silver is

A)Silver reacts with nitric acid.
B)Silver does not react with water.
C)The density of silver is 10.49 g/cm3.
D)Silver tarnishes when exposed to air.

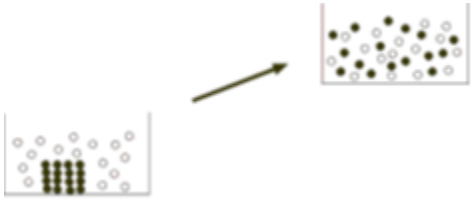
_____30. During science lab, some students added small pieces of magnesium (Mg) to hydrochloric acid (HCl). They noticed that bubbles formed, the test tube got hot, and the magnesium disappeared. Which of the following is a sign that a chemical reaction has taken place in this experiment? A)odor C)decrease in temperature B)formation of a gas D)formation of a precipitate

_____31. Two or more atoms, joined covalently, that act as a unit, are called a(n)…
A)ion. B)atom. C)mixture. D)molecule.

_____32. Which of the following particles combine to form molecules?
A)atoms B)protons C)electrons D)compounds

_____33. Compare and contrast mixtures and compounds. Which statement is true about mixtures and compounds?
A)Both mixtures and compounds are the same throughout.
B)Mixtures and compounds are made of two or more elements in a definite proportion.
C)Mixtures must be separated by chemical methods and compounds by physical methods.
D)Mixtures contain two or more elements physically combined and compounds contain two or more elements chemically combined.

_____34. The substance produced in the change would BEST be described as a
A)pure substance. C)molecule.
B)solution. D)compound.



USE FOR QUESTIONS 35-36: A group of students were asked to identify three white powders. The students used physical and chemical properties to identify the powders. They computed the density of each powder. They checked to see if any dissolved in water. One of the powders did not dissolve in water and they thought it was cornstarch. They knew that cornstarch felt slippery and reacted with iodine. The students put a few drops of iodine on each white powder. One powder turned black; it was definitely cornstarch. Another powder, baking soda reacted with vinegar. It fizzed and the test tube got hot.

_____35. During the experiment, which of these provided evidence of a physical property of one of the white powders? A)vinegar fizzed C)cornstarch turned black B)test tube got hot D)cornstarch felt slippery

_____36. Which of these is an observed chemical property?
A)color of powders C)powder dissolves in water
B)density of powders D)powder reacts with vinegar

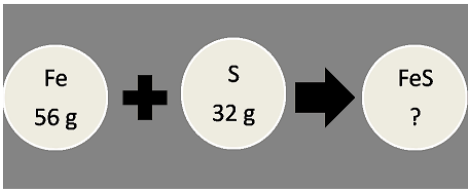
_____37. As you move across the periodic table from right to left within a period, the elements
A)become less stable. C)change from gases to solids.
B)become more reactive. D)change from metals to nonmetals.

_____38. Copper (Cu) is a transition metal found in the 11th column of the periodic table. What statement is true about copper and the two other elements in that column?

A)All three elements are nonreactive.
B)All three elements are in the same period.
C)All three elements have the same number of protons.
D)All three elements have similar chemical properties.

_____39. Using the Law of Conservation of Matter, determine the number of grams of iron sulfide (FeS) that will be produced in this reaction.

A)24 grams B)32 grams C)56 grams D)88 grams



_____40. A glass of water kept at room temperature long enough will become empty because

A)water molecules slowly leak through the walls of the glass.
B)water molecules move into the air as gas molecules.
C)water left in a glass starts to boil and becomes a gas.
D)water slowly combines with oxygen to become carbon dioxide.

_____41. The bulb of a thermometer is placed in your mouth. Which of the following explains why the level of the liquid rises in the thermometer?

A)Hot air rises inside the thermometer.
B)Heat energy changes into light energy.
C)The liquid expands when heated.
D)Heat can change a solid into a liquid.

_____42. Suppose you had four spoons the same size and shape made out of glass, plastic, steel, and wood. Which spoon handle would get hot the quickest when the spoons are placed in a pan of hot water?

A)glass spoon B)plastic spoon C)steel spoon D)wooden spoon

_____43.When water boils in a pan on a hot burner, heat gets to the water mainly by…

A)conduction of heat through the pan. C)reflection of heat from the burner.
B)radiation of heat through the pan. D)absorption of heat from the air in the room.

_____44. When ice cream is left out of the freezer on a table for a long time, it melts. This change in state is caused by the…

A)ice cream absorbing heat. C)air absorbing heat.
B)ice cream giving up heat. D)table absorbing heat.

_____45. Through which of the following materials does heat travel the fastest?

A)glass B)metal C)plastic D)wood

_____46. Which of the following is an example of kinetic energy?
A)a child jumping rope C)a stuffed toy lying on a table
B)a swimmer ready to dive D)firewood stacked in a fireplace

_____47. Light is an example of which type of energy?
A)nuclear B)gravitational C)electromagnetic D)chemical

_____48. Which represents kinetic energy?
A)a bear standing in a field of berries C)a bear holding a salmon it has caught
B)a salmon resting in still water D)a salmon leaping up a waterfall

_____49. When a hair dryer is being used, one of the energy transformations that takes place is
A)electrical to chemical. C)mechanical to electrical.
B)electrical to mechanical. D)chemical to electrical.

_____50. When electrical energy is "used" by an electric light, what really happens to the energy? A)It is given off as other forms of energy. C)It stops at the electric light.
B)It changes to matter. D)It disappears.

_____51. In which state of matter are molecules in contact with each other but free to move around? A)solid B)liquid C)gas

_____52. A car stopped at the top of a ramp has…
A)heat energy. B)potential energy. C)kinetic energy. D)mechanical energy.

_____53. In an amusement park a moving bumper car (car 1) collides with a bumper car at rest (car 2) and, after the collision, both cars move. If momentum is conserved, which statement is correct?
A)The momentum of car 1 increases and the momentum of car 2 decreases.
B)The momentum of car 1 decreases and the momentum of car 2 increases.
C)The total momentum of both cars increases.
D)The total momentum of both cars decreases.

_____54. To pull up a bucket of water from a well, George pulled hard on a handle to wind up a rope. Which kind of energy was George applying to the handle?
A)chemical energy B)frictional energy C)potential energy D)mechanical energy

_____55. What is the process by which heat energy gets to Earth from the Sun?
A)conduction B)radiation C)subduction D)convection

_____56. Which situation is an example of increasing potential energy?
A)pulling a wagon uphill C)a cat jumping from a tree
B)emptying a bucket of water D)a bicyclist stopping at a stop sign

_____57. A pitcher throws a baseball as shown in the diagram. Which of these has MOSTLY kinetic energy?

A)the pitcher
B)the ball
C)the batter
D)the catcher

_____58. How do microwaves cook food?

A)by using electromagnetic waves and the process of radiation
B)by using forced hot air currents through the process of convection
C)by using the movement of charged particles through the process of induction
D)by using direct contact of moving particles through the process of conduction

_____59. Bill and Mary wanted to have a snack after school. They heated some milk in a pot on the stove to make hot chocolate. They also popped some popcorn in the microwave oven. How did Bill and Mary transfer heat energy to make these snacks?

A)heating milk by radiation; popping popcorn by radiation
B)heating milk by radiation; popping popcorn by convection
C)heating milk by conduction; popping popcorn by radiation
D)heating milk by convection; popping popcorn by conduction

_____60. Gasoline, wood, water behind a dam, and a boulder on the edge of a cliff all represent some form of potential energy. What form of potential energy do gasoline and wood have in common? A)heat B)light C)chemical D)mechanical

_____61. On a cold, winter day, Sheena rubs her hands together. Stored chemical energy is transformed into mechanical energy. Due to the Law of Conservation of Energy some of the energy is also transformed into…

A)heat energy. B)light energy. C)solar energy. D)kinetic energy.

_____62. What form of energy is associated with the movement of charges, usually electrons?

A)chemical B)electrical C)heat D)sound

_____63. _____ energy is produced when a force causes a substance to vibrate, and the energy is transferred through the substance in a wave.

A)Heat B)Light C)Mechanical D)Sound

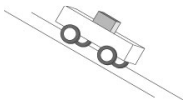
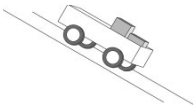
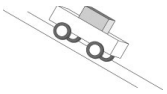
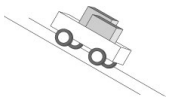
_____64. 1. Shaina uses a shovel to dig a hole to plant a tree. A shovel is an example of a compound machine because it is made up of what two simple machines?

A)wheel and axle and lever C)screw and wedge
B)lever and wedge D)inclined plane and wedge

_____65. What type of simple machine is used to pull a flag up to the top of a flagpole?

A)screw B)wheel and axle C)inclined plane D)pulley

_____66. The blocks shown in the pictures below are all made of wood. Which car will move the fastest?

A)  B)  C)  D) 

_____67. Sam was learning how to roller-skate. He did not want to go fast. On which kind of floor surface would Sam travel the slowest?

A)carpet B)concrete C)tile D)wood

_____68. Which best explains why a person using a ramp can load heavy boxes onto a truck more easily than a person can using only human strength?

A)The person using a ramp needs less force.
B)The person using human strength needs less force.
C)The ramp reduces the weight of the boxes.
D)Friction makes it harder to lift boxes without a ramp.

_____69. Which term refers to the rate of change of motion?

A)acceleration B)speed C)momentum D)velocity

_____70. What must happen to an object in order to accelerate it?

A)A net force must be applied.
B)Some weight must be removed.
C)Its frictional coefficient must be reduced.
D)It must contain momentum.

_____71. A car is traveling down a hill. Which of the following will affect the amount of energy the car has?

A)how long the car is C)how much the car weighs
B)the time of day D)the color of the car

_____72. What type of simple machine is used to split things apart?

A)screw B)wheel and axle C)wedge D)inclined plane

_____73. Which of the following is often used as a lever? A)file B)nail C)saw D)crowbar

_____74. Which activity involves the use of a simple machine?

A)riding on a seesaw C)listening to a radio
B)flying a kite D)skiing down a hill

_____75.All objects in the universe are attracted to each other by the force of

A)effort. B)friction. C)gravity. D)inertia.

_____76. On which simple machine is a fulcrum found? A)pulley B)wheel C)axle D)lever

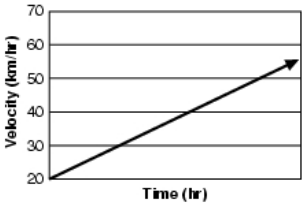
_____77. Which is true about the relationship between an object's mass and its weight?
A)The object's mass is caused by the weight of the object pushing downward.
B)Weight is gravity's force on the object, which is determined by its mass.
C)An object's weight and its mass are the same, but they are measured differently.
D)An object's weight and its mass are independent of each other.

_____78. Jeff was riding in a car. Which change demonstrates the GREATEST effect of inertia?
A)The car makes a sudden stop. C)The car changes into another lane.
B)The car slows down gradually. D)The car runs out of gas and rolls to a stop.

_____79. Manuel is coasting on his bike. Because he is not pedaling, his bike will come to a stop. Which of these will cause Manuel's bike to stop?
A)an increase in kinetic energy C)the property of inertia
B)Earth's magnetic field D)the force of friction

_____80. Simon rolled a ball down a hill. The ball stopped before it reached the bottom of the hill. Which of these MOST LIKELY stopped the ball from rolling?
A)mass B)gravity C)friction D)inertia

_____81. This graph shows the velocity of a car. Which statement BEST explains how the car is moving?



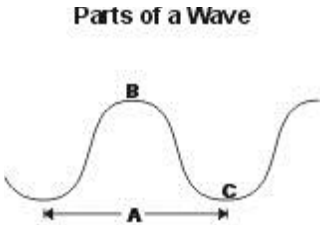
A)Velocity is increasing, so the car is accelerating.
B)Velocity is decreasing, so the car is accelerating.
C)Velocity is increasing, so the car is not accelerating.
D)Velocity is decreasing, so the car is not accelerating.

_____82. When doing work using simple machines, what happens when the effort distance is increased? A)The effort force is decreased.
B)The effort force is increased.
C)The resistance force is increased.
D)The direction of the effort force is changed.

_____83. Your mother asks you to move a large rock from of her garden. The rock is too heavy to lift. Because you are an excellent science student, you understand how simple machines make work easier. You use a long pole balanced on a brick to lift the rock and start it rolling. You push down on one end of the pole and the rock moves up. This simple machine is an example of a(n)
A)fixed pulley. B)inclined plane. C)first class lever. D)second class lever.

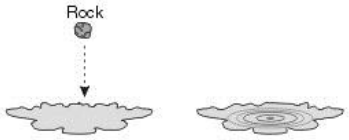
_____84. The distance between a wave's crest and its trough is known as its…
A)low tide measurement. B)water depth. C)wave height. D)wave length.

_____85. Use the diagram to answer this question. Which correctly identifies the parts of a wave in this diagram?



A)A is the crest; B is the trough; C is the wavelength.
B)A is the wavelength; B is the crest; C is the trough.
C)A is the trough; B is the wavelength; C is the crest.
D)A is the trough; B is the crest; C is the wavelength.

_____86. When a rock is dropped into a large puddle,



A)the energy of the waves is greatest at the center of the puddle.
B)the energy of the waves is greatest at the edge of the puddle.
C)the energy of the waves is greatest between the center and edge of the puddle.
D)the energy of the waves doesn't change as they move away from the center of the puddle.

_____87. As Maria stood knee-deep in the ocean, she noted how high the waves came up on her compared to the day before. Which property of waves was Maria observing?

A)frequency B)wavelength C)amplitude D)speed

_____88. The leaves on a tree appear to be green because the molecules of the leaves

A)emit only green light.
B)absorb only green light.
C)absorb all colors except green.
D)reflect the light back unchanged.

_____89. If a light ray hits the back of the spoon at a 30° angle, the angle that the ray will reflect off the spoon is….

A)less than 30°. B)30°. C)more than 30°. D)unpredictable.

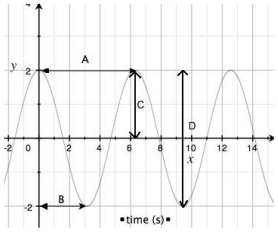
_____90. Electromagnetic waves and mechanical waves are alike and different. What is one way in which these waves are similar?

A)Both types of waves require a medium.
B)Both types of waves have a frequency.
C)Both types of waves transmit matter.
D)Both types of waves have a pitch.

_____91. The speed of a sound wave depends MOSTLY on…

A)the amplitude of the wave.
B)the frequency of the wave.
C)the angle at which it approaches the listener.
D)the medium through which the wave travels.

_____92. After the train passed, the pitch of the train whistle became lower. This change in sound would be represented by what change in the diagram?



A)The distance represented by "A" would increase.
B)The distance represented by "A" would decrease.
C)The distance represented by "C" would increase.
D)The distance represented by "C" would decrease.

_____93. A tuning fork with a frequency of 404 Hertz is struck with a soft hammer. The fork is struck a second time by the same hammer with twice as much force, and the volume, or amplitude, increases by a factor of two. What will the frequency of the second sound be? A)101 Hertz B)202 Hertz C)404 Hertz D)808 Hertz

_____94. You can see your image in a shiny, flat surface because lights waves bounce directly back at you and your eyes. This is an example of…
A)diffraction. B)reflection. C)refraction. D)transparency.

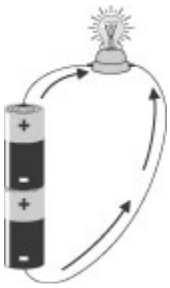
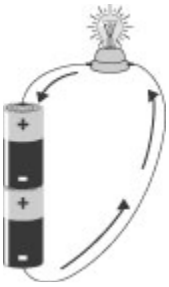
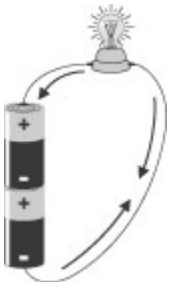
_____95. Imagine a ringing bell set inside a sealed glass jar. Once all the air is removed and a vacuum is created, the ringing sound is no longer heard. Explain why this happens.
A)The glass prevents any sound from escaping.
B)The lack of air in the jar causes the ringing to stop.
C)Without air, the sound waves cannot travel to the ear.
D)The pressure of the outside air causes the sound to remain within the jar.

_____96. Sound waves are transmitted fastest through… A)air B)liquids C)solids D)a vacuum

_____97. Which of these is one way that mechanical waves differ from electromagnetic waves?
A)Mechanical waves require energy and electromagnetic waves do not.
B)Mechanical waves require a medium and electromagnetic waves do not.
C)Electromagnetic waves require a medium and mechanical waves do not.
D)Mechanical waves transmit matter and electromagnetic waves transmit energy.

_____98. What is the negatively charged particle that flows through a circuit?
A)electron B)proton C)neutron D)ion

_____99. Which picture could show the direction of the electrical current in the circuit?

A)  B)  C)  D) 

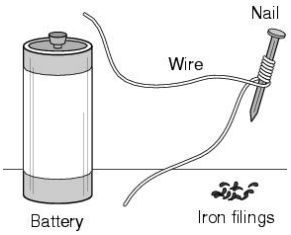
____100. As an astronaut travels from Earth to a space station orbiting Earth, what happens to her mass and weight?
A)Her mass decreases, but her weight remains the same.
B)Her mass increases as her weight decreases.
C)Her mass remains the same, but her weight decreases.
D)Her mass decreases and her weight also decreases.

____101. The force that holds you to Earth's surface is…
A)gravity. B)weight. C)mass. D)pressure.

____102. Which is true about friction and gravity?
A)Both are forces. C)Both cause things to speed up.
B)Both cause energy loss. D)Both cause heat.

____103. Which is a result of the effect of gravity?
A)Rocket engines can force objects into space.
B)Air friction causes falling objects to slow down.
C)Released objects always fall toward Earth's surface.
D)Airplanes are able to fly without falling to the ground.

____104. How can the materials in the diagram be used to make a magnet?
A)replace the iron nail with a wood rod
B)add more loops of wire to the iron nail
C)connect the ends of the wire to each other
D)touch the ends of the wire to the ends of the battery



____105. If you were to travel to the moon, your weight would be about one-sixth less than it is on earth. This is because the moon…
A)has a much smaller circumference than earth.
B)is much less massive than earth.
C)rotates much slower than earth.
D)has no water on its surface.

____106. A(n) _____ circuit has only one path for the current to take.
A)open B)parallel C)resistant D)series

____107. A circuit contains four light bulbs. One light bulb goes out but the other three stay lit. This must be a(n) _____ circuit.
A)open B)series C)parallel D)resistant