

## Science 8th Grade Midterm Review

### Multiple Choice

Identify the choice that best completes the statement or answers the question.

- \_\_\_ 1. The process of learning more about the natural world is \_\_\_\_.
- a. an experiment
  - b. a control
  - c. a hypothesis
  - d. science
- \_\_\_ 2. Experiments and investigations must be \_\_\_\_.
- a. approved
  - b. unreproducible
  - c. repeatable
  - d. accepted
- \_\_\_ 3. A prediction about a problem that can be tested is a(n) \_\_\_\_.
- a. hypothesis
  - b. independent variable
  - c. dependent variable
  - d. control
- \_\_\_ 4. It is important to \_\_\_\_ when drawing conclusions from scientific information.
- a. keep notes
  - b. make up your mind
  - c. talk to others
  - d. keep an open mind
- \_\_\_ 5. The factor being measured in an experiment is the \_\_\_\_.
- a. hypothesis
  - b. scientific law
  - c. variable
  - d. control
- \_\_\_ 6. A variable in an experiment that stays the same is a(n) \_\_\_\_.
- a. independent variable
  - b. dependent variable
  - c. constant
  - d. control
- \_\_\_ 7. Science cannot answer questions about \_\_\_\_.
- a. distance
  - b. temperature
  - c. politics
  - d. the natural world
- \_\_\_ 8. Models can do all of the following EXCEPT \_\_\_\_.
- a. make a hypothesis
  - b. communicate
  - c. test predictions
  - d. save time, money, and lives
- \_\_\_ 9. Limitations of models include \_\_\_\_.
- a. ability to communicate
  - b. the ability to test predictions
  - c. the tendency to change
  - d. the ability to save time
- \_\_\_ 10. Models can be used to describe which of the following environments?
- a. the floor of the ocean
  - b. volcanoes
  - c. space
  - d. all of the above
- \_\_\_ 11. Scientific \_\_\_\_ must be supported by observations and results from many investigations and are not absolute.
- a. constants
  - b. theories
  - c. systems
  - d. laws
- \_\_\_ 12. The three branches of science are \_\_\_\_, Earth, and physical.
- a. space
  - b. physics
  - c. life
  - d. chemistry

- \_\_\_ 13. Another term for technology is \_\_\_\_.
- a. applied science
  - b. controlled experiment
  - c. comparison
  - d. sequence
- \_\_\_ 14. When designing an experiment, the first step is to \_\_\_\_.
- a. draw conclusions
  - b. form a hypothesis
  - c. recognize a problem
  - d. test a hypothesis
- \_\_\_ 15. When conducting an experiment, the last step is to \_\_\_\_.
- a. analyze the data
  - b. draw conclusions
  - c. form a hypothesis
  - d. recognize a problem
- \_\_\_ 16. A camera is an example of \_\_\_\_.
- a. an experiment
  - b. a robot
  - c. technology
  - d. a scientific method
- \_\_\_ 17. To evaluate the observations you make, you must use \_\_\_\_.
- a. a hypothesis
  - b. critical thinking
  - c. measurements
  - d. models
- \_\_\_ 18. Scientists must be impartial and not base their conclusions on \_\_\_\_.
- a. opinions
  - b. evidence
  - c. models
  - d. experiments
- \_\_\_ 19. To \_\_\_\_ means to draw a conclusion based on something you observe.
- a. guess
  - b. control
  - c. model
  - d. infer
- \_\_\_ 20. \_\_\_\_ materials are designed to get you to buy a product or service.
- a. Model
  - b. Scientific
  - c. Observed
  - d. Advertising
- \_\_\_ 21. The inner core of Earth is \_\_\_\_.
- a. solid
  - b. liquid
  - c. gas
  - d. lava
- \_\_\_ 22. The largest layer of Earth's interior is the \_\_\_\_.
- a. inner core
  - b. outer core
  - c. mantle
  - d. crust
- \_\_\_ 23. Earth's outermost layer is the \_\_\_\_.
- a. inner core
  - b. outer core
  - c. mantle
  - d. crust
- \_\_\_ 24. Plates move apart because of \_\_\_\_, a pulling force acting on plates.
- a. volcanoes
  - b. rifts
  - c. tension
  - d. faults
- \_\_\_ 25. A mid-ocean ridge forms from \_\_\_\_ plates.
- a. sliding
  - b. separating
  - c. colliding
  - d. volcanic
- \_\_\_ 26. Sliding plates cause \_\_\_\_.
- a. earthquakes
  - b. volcanoes
  - c. hurricanes
  - d. tsunamis



- a. slowly  
b. do not
- c. rapidly  
d. into sand
- \_\_\_ 41. One of the factors NOT involved in soil formation is \_\_\_\_.
- a. force  
b. time  
c. climate  
d. topography
- \_\_\_ 42. Thick soils form most readily on \_\_\_\_.
- a. deserts  
b. lowlands  
c. slopes  
d. forests
- \_\_\_ 43. Which of the following is NOT an agent of erosion?
- a. ice  
b. water  
c. gravity  
d. sunlight
- \_\_\_ 44. Mass movement is caused by \_\_\_\_.
- a. moving glaciers  
b. gravity  
c. wind  
d. water
- \_\_\_ 45. Deflation is a form of \_\_\_\_ erosion.
- a. water  
b. gravity  
c. wind  
d. ice
- \_\_\_ 46. Which of the following is NOT an agent that carries erosion products?
- a. wind  
b. glaciers  
c. gravity  
d. water
- \_\_\_ 47. If you saw long scratch marks on a flat rock surface you would suspect \_\_\_\_.
- a. wind erosion  
b. water erosion  
c. deflation  
d. glacial erosion
- \_\_\_ 48. Loess is formed by \_\_\_\_.
- a. glaciers  
b. slump  
c. wind  
d. water
- \_\_\_ 49. The type of mass movement that involves soil particles moving slowly downhill is called \_\_\_\_.
- a. creep  
b. slump  
c. mudflow  
d. none of the above
- \_\_\_ 50. When Mendeleev published his periodic table, there were some spaces for undiscovered elements. Figure 4K-1 is a section of a similar table. A reasonable value for the atomic mass of the missing element is \_\_\_\_.

<b>Al</b> 27.0	<b>Si</b> 28.1	<b>P</b> 31.0
<b>Ga</b> 69.7	<b>?</b>	<b>As</b> 74.9
<b>In</b> 115	<b>Sn</b> 119	<b>Sb</b> 122

**Figure 4K-1**

- a. 101
- c. 68.2

b. 72.3

d. 34.8

- \_\_\_ 51. When Mendeleev made his arrangement of the elements in a table, he found that elements with \_\_\_ fell into groups on the table.
- a. the same mass
  - b. similar size
  - c. similar properties
  - d. the same color
- \_\_\_ 52. Every element has its own atomic number. The atomic number is the number of \_\_\_ in the nucleus of an atom of the element.
- a. electrons
  - b. neutrons
  - c. positrons
  - d. protons
- \_\_\_ 53. In the modern periodic table, elements are arranged according to increasing \_\_\_.
- a. atomic number
  - b. atomic mass
  - c. date of discovery
  - d. electrical conductivity
- \_\_\_ 54. Elements in the \_\_\_ group can be used as catalysts.
- a. halogen
  - b. actinide
  - c. carbon
  - d. platinum
- \_\_\_ 55. What is the name of the elements in Group 2 of the periodic table?
- a. halogens
  - b. alkali metals
  - c. boron family
  - d. alkaline earth metals
- \_\_\_ 56. Elements in Groups 3 through 12 of the periodic table are called \_\_\_.
- a. transition elements
  - b. representative elements
  - c. halogens
  - d. noble gases
- \_\_\_ 57. \_\_\_ conducts electricity when exposed to light, so it is used in solar cells and in light meters.
- a. Bromine
  - b. Boron
  - c. Selenium
  - d. Sulfur
- \_\_\_ 58. A major difference between the two rows of inner transition elements is that the lanthanides \_\_\_.
- a. are radioactive and the actinides are not
  - b. occur in nature while most of the actinides are synthetic
  - c. are gases at room temperature and the actinides are solids
  - d. have no uses while the actinides have many
- \_\_\_ 59. Which of the following statements about iron is NOT correct? Iron is \_\_\_.
- a. found in the hemoglobin of red blood cells
  - b. a component of steel
  - c. a member of the iron triad
  - d. a metalloid
- \_\_\_ 60. The particles that make up an atom are \_\_\_.
- a. electrons, protons, and nuclei
  - b. elements, protons, and electrons
  - c. protons, neutrons, and nuclei
  - d. protons, neutrons, and electrons
- \_\_\_ 61. In an atom, electrons \_\_\_.
- a. are located in the nucleus
  - b. are paired with neutrons
  - c. travel outside the nucleus
  - d. are always in the same place in an atom
- \_\_\_ 62. Dot diagrams are used to represent \_\_\_.
- a. protons
  - c. atomic mass

- b. outer electrons  
d. the structure of the nucleus
- \_\_\_ 63. The energy levels of an atom are occupied by \_\_\_\_.
- a. electrons  
b. protons  
c. neutrons  
d. ions
- \_\_\_ 64. The maximum number of electrons in the second energy level of an atom is \_\_\_\_.
- a. two  
b. four  
c. eight  
d. ten
- \_\_\_ 65. In the compound,  $H_2O$ , the electrons in the bonds are unequally shared between oxygen and hydrogen, forming \_\_\_\_.
- a. cations  
b. ionic bonds  
c. nonpolar molecules  
d. polar bonds
- \_\_\_ 66. Alkali metals tend to lose one electron per atom in forming bonds. What family of elements will form ionic bonds with alkali metals, in a 2-to-1 ratio, alkali metal to other element?
- a. alkaline earth elements  
b. oxygen family  
c. halogens  
d. noble gases
- \_\_\_ 67. Some elements are unlikely to lose or gain electrons, but share electrons to form covalent bonds. Which of the following elements is most likely to form covalent bonds?
- a. silicon (#14)  
b. oxygen (#8)  
c. chlorine (#17)  
d. sulfur (#16)
- \_\_\_ 68. What is the neutral particle that is formed when atoms share electrons?
- a. cation  
b. ionic compound  
c. molecule  
d. nucleus
- \_\_\_ 69. In carbon dioxide, each oxygen atom shares four electrons with the carbon atom. What is this type of bond called?
- a. triple covalent  
b. double covalent  
c. polar covalent  
d. ionic
- \_\_\_ 70. Which of the following bonds is polar?
- a.  $F-F$   
b.  $O-H$   
c.  $O-O$   
d.  $H-H$
- \_\_\_ 71. What is the group number for elements that have a stable number of electrons in their outer energy level?
- a. 18  
b. 17  
c. 2  
d. 1
- \_\_\_ 72. Which of the following compounds is not likely to have ionic bonds?
- a.  $LiF$   
b.  $NaCl$   
c.  $CH_4$   
d.  $MgF_2$
- \_\_\_ 73. Aspartame is an artificial sweetener; its formula is  $C_{13}H_{16}N_2O_5$ . Which element in the formula has the largest number of atoms?
- a. carbon  
b. hydrogen  
c. nitrogen  
d. oxygen
- \_\_\_ 74. Which of the following notations represents a molecule?
- a.  $NaCl$   
b.  $He$   
c.  $H_2O$   
d.  $Li$

- \_\_\_ 75. How many dots are shown in the electron dot diagram for calcium, element number 20?
- one
  - two
  - eight
  - twenty
- \_\_\_ 76. Sulfur, element 16, forms a negative ion. How many dots would you have to show in the electron dot diagram for the sulfur ion?
- two
  - six
  - eight
  - sixteen
- \_\_\_ 77. What is the name given to the units that make up covalently bonded compounds?
- molecules
  - ions
  - electrons
  - energy levels
- \_\_\_ 78. Which of the following elements will likely form a negative ion in its ionic compounds?
- Li, lithium
  - Al, aluminum
  - Mg, magnesium
  - Cl, chlorine
- \_\_\_ 79. Which of the following statements about the atom is false?
- Each atom has a tiny nucleus at its center.
  - All the protons and neutrons are located in the nucleus.
  - Electrons travel in definite circular pathways around the nucleus.
  - All atomic nuclei are positively charged.
- \_\_\_ 80. The surface tension in a cup of water is caused by \_\_\_\_.
- attractive forces between the water and its container
  - attractive forces between water molecules
  - adhesive forces between water molecules
  - adhesive forces between the water and its container
- \_\_\_ 81. The measure of the average kinetic energy of the particles of a substance is the \_\_\_\_.
- temperature
  - heat
  - thermal energy
  - kinetic energy
- \_\_\_ 82. The \_\_\_\_ is a unit of force.
- pascal
  - atmosphere
  - newton
  - kilopascal
- \_\_\_ 83. Archimedes' Principle helps to explain the relationship between \_\_\_\_.
- kinetic energy and density
  - temperature and density
  - pressure and density
  - buoyancy and density
- \_\_\_ 84. As a sample of matter is cooled, which property of its particles increases?
- average kinetic energy
  - pressure
  - buoyancy
  - cohesive forces
- \_\_\_ 85. The freezing point of a substance is \_\_\_\_ the melting point of the same substance.
- greater than
  - less than
  - equal to
  - unrelated to
- \_\_\_ 86. Kinetic energy is the \_\_\_\_ of motion.
- temperature
  - energy
  - heat
  - state

- \_\_\_ 87. Pascal's Principle can be applied to \_\_\_\_.
- a. all states of matter
  - b. solids and gases only
  - c. solids and liquids only
  - d. any matter that can flow
- \_\_\_ 88. Which of these objects is least like a crystalline solid?
- a. a pillowcase full of Halloween candy
  - b. a spider web
  - c. a checkerboard
  - d. a chain-link fence
- \_\_\_ 89. Which of the following factors does NOT affect the behavior of a gas in a closed container?
- a. the number of particles
  - b. the average kinetic energy
  - c. the cohesive forces within the gas
  - d. the size of the container
- \_\_\_ 90. An amorphous solid \_\_\_\_.
- a. flows freely at any temperature
  - b. has no true melting point
  - c. has a repeating unit structure
  - d. becomes less viscous as it cools
- \_\_\_ 91. Viscosity is a measure of a fluid's \_\_\_\_.
- a. resistance to flow
  - b. adhesive forces
  - c. average kinetic energy
  - d. buoyancy
- \_\_\_ 92. For most substances, the distance between particles is smallest when the substance \_\_\_\_.
- a. exists as a gas
  - b. exists as a liquid
  - c. exists as a crystalline solid
  - d. exists as an amorphous solid
- \_\_\_ 93. A cork is able to float on water because it is \_\_\_\_.
- a. a crystalline solid
  - b. equal in density to water
  - c. small in size
  - d. less dense than the water
- \_\_\_ 94. Speed is the rate of change in \_\_\_\_.
- a. velocity
  - b. time
  - c. direction
  - d. distance
- \_\_\_ 95. To describe velocity you need to know \_\_\_\_.
- a. speed and direction
  - b. speed and time
  - c. direction and acceleration
  - d. speed and acceleration
- \_\_\_ 96. When you graph the motion of an object, you put \_\_\_\_ on the horizontal axis and \_\_\_\_ on the vertical axis.
- a. speed, time
  - b. distance, time
  - c. time, speed
  - d. time, distance
- \_\_\_ 97. Acceleration involves a change in \_\_\_\_.
- a. time
  - b. direction
  - c. speed
  - d. both b and c
- \_\_\_ 98. Acceleration is a change in \_\_\_\_.
- a. speed
  - b. velocity
  - c. displacement
  - d. position
- \_\_\_ 99. On a speed-time graph, a horizontal line shows the change in speed is \_\_\_\_.
- a. -10
  - b. 10
  - c. 1
  - d. 0
- \_\_\_ 100. Inertia \_\_\_\_.
- a. depends on direction
  - b. is a property of matter
  - c. resists a change in motion of an object
  - d. is the same for all objects





- \_\_\_ 126. Vibrating charged particles make \_\_\_ fields.
- a. electric
  - b. magnetic
  - c. radio
  - d. both a and b
- \_\_\_ 127. Electromagnetic waves \_\_\_.
- a. are compressional waves
  - b. carry radiant energy
  - c. must have a medium
  - d. are generated by static electricity
- \_\_\_ 128. The longest wavelength in the electromagnetic spectrum is the \_\_\_.
- a. gamma ray
  - b. ultraviolet ray
  - c. radio wave
  - d. infrared ray
- \_\_\_ 129. The electromagnetic waves with wavelengths slightly longer than visible light are \_\_\_.
- a. microwaves
  - b. infrared waves
  - c. ultraviolet waves
  - d. x rays
- \_\_\_ 130. The frequency of purple light is \_\_\_ than that of yellow light.
- a. higher than
  - b. lower than
  - c. the same as
  - d. faster than
- \_\_\_ 131. \_\_\_ are used for medical imaging.
- a. Ultraviolet waves
  - b. Infrared ways
  - c. X rays
  - d. Gamma rays
- \_\_\_ 132. Your body needs \_\_\_ to make vitamin D.
- a. infrared waves
  - b. microwaves
  - c. visible light
  - d. ultraviolet waves
- \_\_\_ 133. Television uses \_\_\_ to transmit signals.
- a. microwaves
  - b. radio waves
  - c. ultraviolet waves
  - d. inferred waves
- \_\_\_ 134. Temperature is a measure of \_\_\_ of the particles in an object.
- a. the difference between the potential and kinetic energy
  - b. the sum of the potential and kinetic energy
  - c. the average potential energy
  - d. the average kinetic energy
- \_\_\_ 135. The lowest possible temperature is \_\_\_.
- a.  $0^{\circ}$
  - b.  $-273^{\circ}\text{F}$
  - c.  $0^{\circ}\text{K}$
  - d.  $-273^{\circ}\text{K}$
- \_\_\_ 136. A liquid thermometer works because liquid \_\_\_ when warmed.
- a. expands
  - b. contracts
  - c. solidifies
  - d. condenses
- \_\_\_ 137. The thermal energy of an object is \_\_\_.
- a. its potential energy
  - b. its average kinetic energy
  - c. its potential energy minus its kinetic energy
  - d. its kinetic energy plus its potential energy
- \_\_\_ 138. Heat is thermal energy transferred from one object to another because of a difference in \_\_\_.

- a. mass
- b. temperature
- c. volume
- d. potential energy

- \_\_\_ 139. Fast food restaurants keep food hot with infrared lamps. The heat is transferred to the food by \_\_\_\_.
- a. condensation
  - b. conduction
  - c. convection
  - d. radiation
- \_\_\_ 140. When a pot of water is put on a stove, the water at the top gets hot primarily by \_\_\_\_.
- a. radiation
  - b. conduction
  - c. convection
  - d. condensation
- \_\_\_ 141. When a cold can of soda is insulated, the heat flow into the can on a hot day \_\_\_\_.
- a. increases
  - b. decreases
  - c. stays the same
  - d. both b and c
- \_\_\_ 142. Water makes a good coolant because it has a \_\_\_\_.
- a. high specific heat
  - b. high boiling point
  - c. low specific heat
  - d. low freezing point
- \_\_\_ 143. All objects emit \_\_\_\_ radiation.
- a. electromagnetic
  - b. kinetic
  - c. thermal
  - d. solar
- \_\_\_ 144. Heat is \_\_\_\_ energy that is transferred from one object at a certain temperature to another at a different temperature.
- a. kinetic
  - b. thermal
  - c. solar
  - d. electromagnetic
- \_\_\_ 145. Most materials \_\_\_\_ when they are heated.
- a. condense
  - b. freeze
  - c. expand
  - d. contract
- \_\_\_ 146. A heat engine \_\_\_\_.
- a. changes mechanical energy to thermal energy
  - b. changes mechanical energy into electrical energy
  - c. changes thermal energy into mechanical energy
  - d. changes kinetic energy into thermal energy
- \_\_\_ 147. In a diesel engine, the fuel is ignited by \_\_\_\_.
- a. spark plugs
  - b. compression
  - c. expansion
  - d. glow plug
- \_\_\_ 148. A device that can be used both for cooling and heating is a \_\_\_\_.
- a. heat engine
  - b. compressor
  - c. heat pump
  - d. vaporizer