Name:_____ Date:_____

8th Grade Term 2 Review

1) Which of the following is an example of a physical change?
   A. lighting a match
   B. breaking a glass
   C. burning of gasoline
   D. rusting of iron

2) Study the list of potential chemical and physical changes below. Then answer the question that follows.
   A. Jim uses baking soda and vinegar to make bubbles to erupt a model volcano.
   B. Fred left a sack of steel nails out on the porch where they got wet and rusted.
   C. Jack scraped flint across steel to light his cigarette lighter.
   D. The door panel of Jan's old truck has the paint scraped off and is rusted.
   E. Jane strikes a sulfur match rapidly across a hard surface to light it.
   F. Jill uses baking powder in her biscuits to cause bubbles to form in the cooking dough.

   What conditions would indicate rusting might take place in some of these chemical reactions?
   A. wet metal in air
   B. heat generated
   C. energy is absorbed
   D. bubbles in air

3) The scientific discovery of the chemical and physical properties of atoms took place over several centuries. Which discoveries were the most important to understand atoms?
   A. finding the boiling and melting points of the substances
   B. the discoveries that helped us know that gasses had mass and volume.
   C. the discoveries showing that all the Earth's crust was solid.
   D. each discovery was important because it would often lead to another.

4) Examine the following table to answer the question that follows. Which of these tests measured chemical properties?
   A. physical description and reaction to heat
   B. physical description and reaction to acid
   C. reaction to water and physical description
   D. reaction to acid and reaction to heat

Substance	Physical Description	Reaction to Acid (weak HCl solution)	Reaction to Water	Reaction to Heat
Sugar	Small, white, hard crystals	None	None	Caramelizes (turns brown and bubbly)
Salt	Small, white, hard crystals	None	None	None
Baking Soda	Fine, white, smooth powder	Bubbles and fizzes	None	None
Flour	Fine, white, smooth powder	None	None	None

5) Which substance would be considered the most reactive with acid?
   A. sugar
   B. salt
   C. baking soda
   D. flour

6) Which of the following examples is evidence of a physical change?
   A. Ice cream melts in a bowl.
   B. A silver spoon tarnishes over time.
   C. An electrical current splits water into hydrogen and oxygen.
   D. A person inhales oxygen and exhales carbon dioxide and water.

7) What is one way that a plastic soda bottle is better than a glass one?
   A. It is transparent
   B. It doesn't flavor the drink
   C. It is recyclable
   D. It doesn't shatter

8) Which of the following is true of chemical properties?
   A. They describe the phase the substance is in
   B. They describe characteristics of a substance such as size, color, and shape
   C. They explain how the substance reacts with other substances
   D. They describe what chemical changes the substance is currently going through

9) A student out on a hike finds an interesting rock. He observes the rock and looks on the Internet to see if he can find out its name. How is the student using scientific methods?
   A. he is out hiking and looking all around.
   B. he is using the Internet to look up information.
   C. he is classifying a substance based on its characteristics.
   D. he is dong an experiment with a controlled variable.

10) The following data were collected by a group of students as they tested four different types of plastics.

Plastic	Acetone	Flame test	Heat	Crease color
1	No effect	Green color	Softens	None
2	Softened	No change	No change	White
3	No effect	Red color	Softens	None
4	No effect	Green color	Softens	None

Which plastic would be best to put in a microwave?

A. 1
B. 2
C. 3
D. 4

11) Which of the plastics might be the same?

A. 1 & 2
B. 2 & 3
C. 3 & 4
D. 1 & 4

12) Which plastic would be unsafe to use to store products that contain acetone?

A. 1
B. 2
C. 3
D. 4

13) Terry and Jean experimented with several items to see what would happen under different conditions. Below is the data table they wrote at the conclusion of the experiment.

	Put in water over night	Held in candle flame for 30 seconds	Connected to the terminals of a 12 volt battery
Steel wool	Rusted	Burned	Burned
Paper	Got soppy	Burned	No change
Copper wire	Got wet	Got hot, bent in the middle	Got hot, melted in half
Wood splinter	Swelled up with water	Burned	No change

Which substance changed physically under all three conditions?

A. steel wool
B. paper
C. copper wire
D. wood splinter

14) Which substance changed chemically under all three conditions?

A. steel wool
B. paper
C. copper wire
D. wood splinter

15) What would be a good conclusion for this experiment?

A. Steel wool is the most reactive
B. Paper is the most reactive
C. Copper wire is the most reactive
D. Wood splinter is the most reactive

16) A scientist places 10 mL of water in a test tube and heats the liquid over a Bunsen burner for 2 minutes. The liquid boils and escapes as steam. This experiment is a good example of

A. a chemical change involving phase changes
B. a physical change involving phase changes
C. a chemical change involving chemical reactions
D. a physical change involving chemical reactions

17) Two students mix vinegar and baking soda. They observe bubbles forming, the baking soda dissolving, and the vinegar turning cloudy. They infer that a chemical change has occurred. Which data support this inference?

A. light was given off
B. baking soda dissolved
C. vinegar turned cloudy
D. bubbles formed

18) While investigating the chemical and physical properties of a new substance created in class, Sally and Tyler record the following observations:

The new substance is solid.
The new substance is smooth.
The new substance looks like it will tear easily.
The new substance forms into thin flat sheets.
The new substance will burn.
The new substance looks like it will dissolve in acid easily.

Which of their statements would be an inference about a chemical property?

A. The new substance forms into thin flat sheets
B. The new substance is smooth
C. The new substance will burn
D. The new substance looks like it will dissolve in acid easily

19) Marie Curie was the first scientist to purify and name the substance Radon. What must she have done to describe Radon to other scientists?

A. discovered its chemical and physical properties
B. taken pictures of it and shown them to others
C. described the equipment she used to purify Radon
D. looked all over the world for other samples of pure Radon

20) As Jean and Terry mixed the dry ingredients with the wet ingredients while making a snack, the mixture began to bubble. They could assume that:

A. a gas was being produced, therefore a chemical change was taking place
B. a gas was being produced, therefore a physical change was taking place
C. a liquid was being produced, therefore a chemical change was taking place
D. a liquid was being produced, therefore a physical change was taking place

21) Block X and Block Y have the same mass. Both blocks are placed into a container of pure water. Block X floats in the water, and Block Y sinks to the bottom of the container. Which of the following statements is an accurate conclusion from this demonstration?

A. Block Y is heavier than Block X.
B. Block Y is less dense than Block X.
C. Block Y has a smaller volume than Block X.
D. Block Y would float if more water were added.

22) How is rust different from the other three reactions?

A. It happens outdoors.
B. It uses water.
C. It doesn't involve carbon.
D. It cannot be measured.

Reactions Involving Atmospheric Oxygen

Reaction	Speed- measured in	Reactants	Products
Rust	Hours	Metals, often water	Rust
Fire	Minutes/secs	Fuel (carbon compounds)	Carbon dioxide, water
Respiration	Hours	Food (carbon compounds)	Carbon dioxide, water
Photosynthesis	Hours	Carbon dioxide, water	Sugar, oxygen

23) What is the main difference between fire and respiration?

A. the products formed
B. the fuels that are burned
C. how quickly they happen
D. they are identical

24) As Terry and Jean poured melted chocolate over their ice cream, they noticed that it became hard. They could assume that:

A. The chocolate had changed phases, which is a physical change
B. The chocolate had changed phases, which is a chemical change
C. The chocolate had changed into a new substance, which is a physical change
D. The chocolate had changed into a new substance, which is a chemical change

25) Which of the following is a characteristic of **all** chemical changes?

A. A different state of matter is produced.
B. Some mass is converted to energy.
C. Some form of light is given off.
D. A new material is formed.

26) Which of the following is an example of a chemical change?

A. Baking soda in vinegar
B. Magnet in water
C. Bending steel
D. Sawing a board

27) In a laboratory experiment, you mix two colorless liquids together. After a few minutes you notice the liquid has turned purple. What can you infer has happened?

A. A physical change has taken place, and a mixture has formed
B. A chemical change has taken place, and a mixture has formed
C. A physical change has taken place, and a new substance has formed
D. A chemical change has taken place, and a new substance has formed

28) When you turn up the thermostat on your furnace several things happen. Which of these would be considered a chemical change?

A. Air circulates throughout the room
B. Fuel in the furnace burns
C. The temperature in the room increases
D. Heat in the room rises

29) In making a pizza, which process involves a chemical change?

A. mixing spices for the sauce
B. slicing pepperoni for the topping
C. spreading cheese on the pizza
D. baking the dough to form the crust

30) Which of the following is an example of a chemical change?
A. Bending a pop can
B. Evaporation of milk
C. Melting wax
D. Burning paper

31) Which of the following is an example of a physical change but **not** a chemical change?
A. A log gives off heat and light as it burns.
B. A tree stores energy from the Sun in its fruit.
C. A penny lost in the grass slowly changes color.
D. A water pipe freezes and cracks on a cold night.

32) What are the reactants for photosynthesis?
A. soil and chlorophyll
B. water and carbon dioxide
C. water and minerals
D. oxygen and carbon dioxide

33) As Terry mixed some Kool-aid for her little brother, she noticed that as the powder mixed into the water that the water changed to the same color as the powder. She could assume that:
A. the flavoring dissolved into the water, which is a physical change
B. the flavoring dissolved into the water, which is a chemical change
C. the flavoring created a new substance, which is a chemical change
D. the flavoring created a new substance, which is a physical change

34) Which of the following is an example of a physical change?
A. evaporation in a swamp cooler
B. electricity produced by a dry cell
C. digestion of a hamburger
D. rusting of a car body

35) Which substances are necessary for plants to produce sugar during photosynthesis?
A. water, soil, chlorophyll
B. water, carbon dioxide, chlorophyll
C. water, minerals, cell wall
D. water, roots, oxygen

36) A student puts out fire on the stove by dumping baking soda on the flame. How has the student used science in his daily life?
A. He knew a chemical property of baking soda is that it doesn't burn
B. He knew a physical property of baking soda is that it doesn't melt
C. He knew a chemical property of baking soda is that it dissolves in water
D. He knew a physical property of baking soda is that it is white in color

37) Kelley mixes and stirs two chemical solids together. While stirring she notices that the beaker is getting hot. What is happening?
A. The reaction of the two chemicals is taking in heat
B. The beaker is getting hot because of the stirring
C. The reaction of the two chemicals is releasing heat
D. The beaker is getting hot because the solids are changing phase

38) During an experiment Joe mixed two chemicals together. The chemicals smoked and a very strange odor came from them. This indicated that:
A. one or more chemical changes had taken place
B. one or more physical changes had taken place
C. a color change was going to happen next
D. the molecules had diffused throughout the mixture

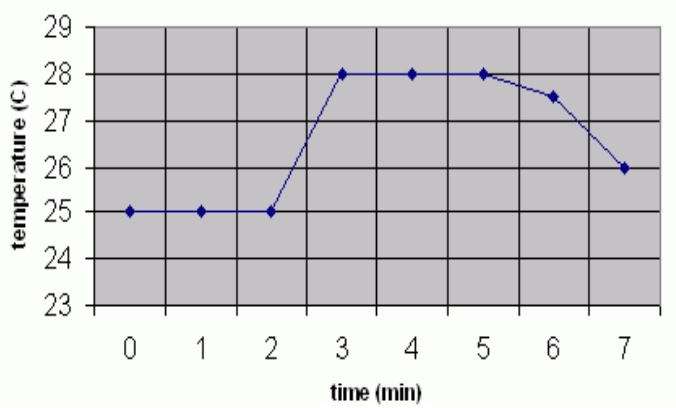
39) Which of the following is an example of a chemical change?
A. burning a scented candle
B. cutting an apple into slices
C. freezing liquid water into an ice cube
D. melting a stick of butter to pour over popcorn

40) Four gases are all observed to have the same temperature. Which of the following conclusions is supported by this observation?
A. All four gases must have the same mass.
B. All four gases must have the same pressure.
C. All four gases must have equal numbers of particles.
D. All four gases must have equal average kinetic energies.

41) A student is making vegetable soup on a stove top. He learned in science class that liquids boil at the same temperature until they change to a gas. How will what he learned help him cook the soup and save energy?
A. he will turn the heat up so that it just barely boils.
B. he will turn the heat up a little under where it needs to be for boiling.
C. he will turn the heat up much hotter than needed for boiling.
D. he will add water to the soup until it boils.

42) Students place a thermometer in a beaker of vinegar and begin to record the temperature. When they added a spoonful of baking soda, a bubbling reaction occurred. They continued to record the temperature and then created the graph.
Which title would be best for this graph?

A. A Reaction Done in a Chemistry Lab
B. Vinegar and Baking Soda Added Together
C. Chemical Reactions and Energy
D. Temperature Change in a Chemical Reaction



43) How can this reaction be described in terms of energy?

A. energy is released when the temperature rises
B. energy is taken in when the temperature rises
C. energy is released as light as the bubbles rise.
D. energy is taken in as light when the bubbles rise.

44) What evidence from the graph shows that the baking soda was added to the vinegar at minute 2?

A. the temperature dropped
B. the temperature rose
C. the temperature stayed the same
D. the time was recorded in minutes.

45) Which of the following is an example of how understanding chemical change helps people?

A. The invention of plastics allowed new ways of making things.
B. The launching of weather balloons made better weather forecasts.
C. Underwater submarines discovered of sea floor mountains.
D. Increasing crop production allowed a rise in human populations.

46) A pot of cold water was heated on a stove until the water boiled. Which of the following **best** explains why the water was able to boil?

A. The hot stove absorbed cold from the pot.
B. The cold water absorbed heat from the pot
C. The hot stove gave off heat to the surrounding air.
D. The cold water gave off cold to the surrounding air.

47) Which of the following statements best explains why a substance changes from a liquid to a gas when heated?

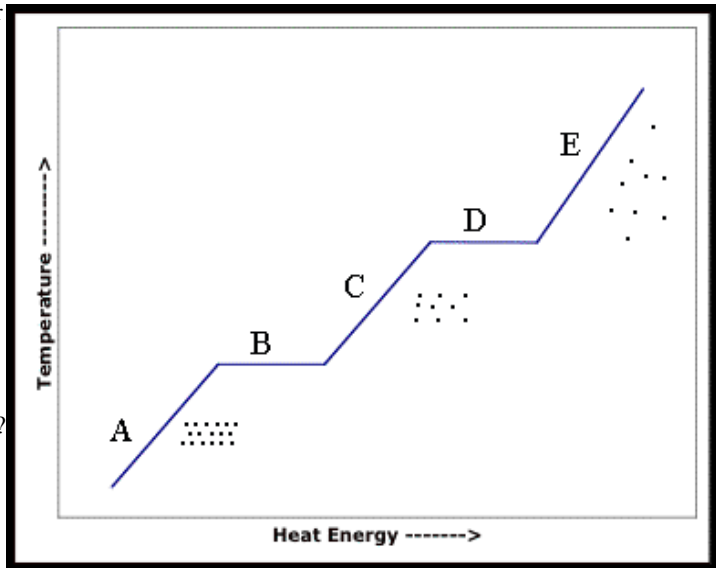
A. The heat energy causes molecules to move faster and they move farther apart. Some of the molecules have enough energy to escape the liquid as a gas.
B. Things get bigger when they are heated because the heat causes more motion in the substance. The substance expands into a gas.
C. The molecules of water change to hydrogen and oxygen. They are gases and escape from the water.
D. A liquid turns into a gas when heated because it expands and the container can no longer hold it. The molecules spill out the sides of the container.

48) Toniqua and Juan decide to do an experiment. One of them will put a drop of food coloring in hot water; the other will put a drop of food coloring in cold water. Based on knowledge of energy and the motion of particles, predict the results of their experiment.

A. The coloring will move through both containers of water at the same speed because water always has the same energy
B. The coloring will move through the cold water faster because cold water has more energy
C. The coloring will move through the hot water faster because hot water has more energy
D. The coloring will float on top of the water until your put energy into it by stirring it

49) Heat is energy that causes particles of matter to move faster and farther apart. As particles move faster, they leave one phase and enter another. Using the diagram above where the dots represent the position of the particles, answer the following question:
At which point is the substance a solid?

A. A
B. B
C. C
D. E



50) At which point is a phase change taking place?

A. A
B. B
C. C
D. E

51) Which physical change does a swamp cooler use to cool air?

A. Gas to liquid
B. Liquid to gas
C. Liquid to solid
D. Solid to liquid

52) The boiling point of water at sea level is 100 degrees Celsius. What phase would you expect water to be if it were heated to 110 degrees Celsius?

A. solid, because the molecules are moving more slowly
B. liquid, because some of the molecules are still boiling at 110 degrees.
C. gas, all the molecules have enough energy to have escaped at 110 degrees.
D. plasma, all the molecules have enough energy to glow

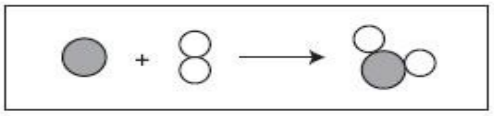
53) Acid rain is found in parts of the country where there are many cars and power plants. Water in the form of rain is chemically combined with sulfur dioxide and oxygen to create sulfuric acid, which becomes acid rain.
In the reaction above, which substances are considered the reactants?

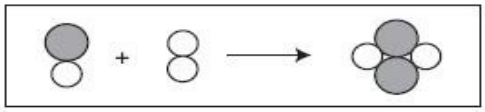
A. sulfur dioxide, oxygen, and water
B. oxygen, water, and sulfuric acid
C. water, sulfuric acid and sulfur dioxide
D. sulfuric acid, sulfur dioxide, and oxygen

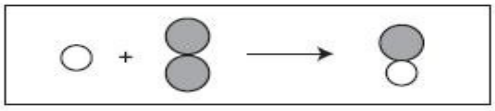
54) If four carbon atoms undergo a chemical reaction with oxygen to form CO2 molecules, how many carbon atoms will be found in the product?

A. one
B. two
C. three
D. four

55) The law of conservation of mass can be demonstrated by a chemical reaction. Which of the following models of a chemical reaction **best** represents the law of conservation of mass?

A. 

B. 

C. 

D. 

56) Jenna suspects that she can affect the rate of the chemical change that takes place when vinegar is combined with baking soda to make her model volcano erupt at different rates. The best way for her to know for sure would be to:

A. ask her science teacher who does it all of the time in the laboratory at school
B. experiment with several variables such as crushing, heating, stirring, cooling etc.
C. read about it in her textbook, under chemical reactions
D. look it up on the Internet to see what Bill Nye suggests

57) A biologist studies photosynthesis and describes it as a biological process. A chemist studies photosynthesis and describes it as a chemical reaction. Which scientist is correct?

A. both, they use different terms but agree on the reactants and products.
B. neither, if scientists don't agree, then conclusions cannot be made.
C. the chemist because photosynthesis has both reactants and products.
D. the biologist because it is a biological process occurring in cells.

58) Acid rain is found in parts of the country where there are many cars and power plants. Water in the form of rain is chemically combined with sulfur dioxide and oxygen to create sulfuric acid, which becomes acid rain.
In the reaction above, which substance is considered the product of the reaction?

A. sulfur dioxide
B. water
C. oxygen
D. sulfuric acid

59) Which are the reactants in this reaction? $6CO_2 + 6\ H_2O \Longrightarrow C_6H_{12}O_6 + 6O_2$

A. $C_6H_{12}O_6$
B. $C_6H_{12}O_6 + 6O_2$
C. $6CO_2$
D. $6CO_2 + 6\ H_2O$

60) A student uses clay to model the conservation of mass. First, she weighs a block of clay on a balance. Then she molds the clay into a different shape, without adding or removing clay. She weighs it again. How will her results model this law?

A. they will show that the shape has changed, but the weight is the same.
B. they will show that the shape has changed and the weight has also.
C. they will show the changing shape has changed the weight of the clay.
D. they will show that the larger the shape, the greater the weight.