

Chemical Change Unit Test

 Student Name _____

 Class _____

Properties of Matter

1. Aluminum foam is used to create lighter, safer cars. The reason that a lighter car is a safer car is because aluminum foam is ...

- A. less rigid
- B. much cheaper than aluminum
- C. unable to be dented
- D. able to absorb more impact energy

2.



This symbol means ...

- A. flammable
- B. corrosive
- C. dangerously reactive
- D. biohazardous

3.



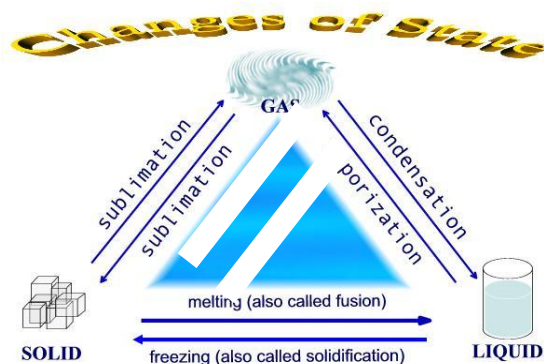
This symbol means ...

- A. caution
- B. warning
- C. danger
- D. special care

4.

When a substance undergoes a change of state it can use energy or give off energy. The change that occurs when a substance changes **from a gas to a solid** is referred to as ...

- A. fusion
- B. deposition
- C. sublimation
- D. condensation



5. A substance's ability to resist being scratched is the physical property of matter known as ...

- A. ductility
- B. malleability
- C. hardness
- D. conductivity

6. An obvious chemical property of pancakes is ...

- A. ability to combine ingredients easily
- B. the positive reversibility of the process
- C. the heat it gives off
- D. the new substance that appears to form

7. The difference between an element and a compound is that an element ...


- A. is a pure substance and a compound is a mixture
- B. has only one substance, while a compound has more than one substance
- C. can be made into a mixture, but a compound cannot
- D. Can be a pure substance, while a compound cannot be a pure substance

8. A cloudy mixture in which the particles of the suspended substance are so small they cannot be easily separated out is called a ...
- A. **mechanical mixture**
 - B. **suspension**
 - C. **colloid**
 - D. **solution**
9. Physical or chemical change can be identified by evidence. When a substance undergoes a chemical change the pieces of evidence used include all of the following, **EXCEPT** ...
- A. **colour**
 - B. **odour**
 - C. **state**
 - D. **formation of a gas**
10. Freeze-drying is a technique used to preserve food for long periods of time. In the freeze-drying method the first step is to ...
- A. **add hot water**
 - B. **put it in a pressure chamber**
 - C. **freeze the water, in the food**
 - D. **refrigerate the food**
11. MRE's are especially useful for astronauts, soldiers and mountain climbers. They are heated in a special package called a 'flameless ration heater'. MRE stands for ...
- A. **Military Ration Envelope**
 - B. **Mission Ration Envelope**
 - C. **Meal, Ready to Eat**
 - D. **Meals Requiring Energy**


Nature of Matter – Periodic Table

12. The first chemists lived before 8000 B.C. Because metals had not been discovered, humans used only simple tools made from these ...
- A. **rocks, scissors and paper**
 - B. **wood pulp and ink**
 - C. **stones and bones**
 - D. **plants and animal remains**
13. This is derived from "khemeia" (a Greek word) ...
- A. **Caustic**
 - B. **Chemistry**
 - C. **Copper**
 - D. **Copernicus**
14. 'alkimiya' (an Arabic word) translates as ...
- A. **Alchemy**
 - B. **Alkali**
 - C. **Apostle**
 - D. **The Chemist**
15. The scientist who developed the 'billiard ball' model of the atom was ...
- A. **Lavoisier**
 - B. **Boyle**
 - C. **Libeu**
 - D. **Dalton**

16. Most models of the atom include the sub-atomic particles, called electrons, orbiting the nucleus. The quantum model of the atom has these electrons in ...
- a charged cloud
 - fixed orbits
 - random patterns
 - scattered orbits

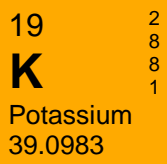
17.  This ancient element symbol means ...

- copper
- silver
- gold
- tin

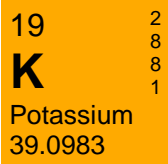
18.  This element symbol means ...

- oxygen
- hydrogen
- silver
- carbon

19. Demitri Mendeleev wanted to find a pattern that would allow him to predict the properties of elements not yet discovered. By using information cards he charted the pattern that seemed to work. The characteristic that showed that the properties of elements vary periodically was the ...
- color
 - atomic number
 - atomic mass
 - symbol

20.  In this element – **Potassium** – 19 refers to the ...

- mass
- reactivity
- number
- Ion charge

21.  In this element – **Potassium** – 39.0983 refers to the ...

- mass
- reactivity
- number
- Ion charge

Use this periodic table information to answer the next two questions

1.0 H 1																	4.0 He 2		
6.9 Li 3	9.0 Be 4	Periodic Table of Elements												10.8 B 5	12.0 C 6	14.0 N 7	16.0 O 8	19.0 F 9	20.2 Ne 10
23.0 Na 11	24.3 Mg 12													27.0 Al 13	28.1 Si 14	31.0 P 15	32.1 S 16	35.5 Cl 17	39.9 Ar 18
39.1 K 19	40.1 Ca 20	45.0 Sc 21	47.9 Ti 22	50.9 V 23	52.0 Cr 24	54.9 Mn 25	55.8 Fe 26	58.9 Co 27	58.7 Ni 28	63.5 Cu 29	65.4 Zn 30	69.7 Ga 31	72.6 Ge 32	74.9 As 33	79.0 Se 34	79.9 Br 35	83.8 Kr 36		
85.5 Rb 37	87.6 Sr 38	88.9 Y 39	91.2 Zr 40	92.9 Nb 41	95.9 Mo 42	(99) Tc 43	101.1 Ru 44	102.9 Rh 45	106.4 Pd 46	107.9 Ag 47	112.4 Cd 48	114.8 In 49	118.7 Sn 50	121.8 Sb 51	127.6 Te 52	126.9 I 53	131.3 Xe 54		
132.9 Cs 55	137.3 Ba 56	138.9 La 57	178.5 Hf 72	181.0 Ta 73	183.9 W 74	186.2 Re 75	190.2 Os 76	192.2 Ir 77	195.1 Pt 78	197.0 Au 79	200.6 Hg 80	204.4 Tl 81	207.2 Pb 82	209.0 Bi 83	(210) Po 84	(210) At 85	(222) Rn 86		

22. In the table above the following elements would be described as the Noble Gases.
- He, Ne, Ar, Kr, Xe, Rn
 - Li, Na, K, Rb, Cs, Fr
 - Be, Mg, Ca, Sr, Ba, Ra
 - Rf, Db, Sg, Bh, Hs, Mt, Uun

23. How many neutrons does Potassium have?
- A. 15
 - B. 17
 - C. 19
 - D. 20
24. As you move across the periodic table the properties of the elements change. The most reactive metals include ...
- A. sodium and lithium
 - B. iron and copper
 - C. aluminum and carbon
 - D. lead and zinc
25. The periodic table is organized by the patterns of the properties of the elements. The rows in the periodic table vary with the amount of elements they contain. These rows are called ...
- A. groups
 - B. families
 - C. periods
 - D. metals

Formation of Ionic and Molecular Compounds

26. Compounds are formed when elements combine in different chemical reactions. This identifies which elements combine and how many of them are present in the compound.
- A. Chemical Name
 - B. Atomic Mass Unit
 - C. Atomic Number
 - D. Chemical Formula
27. In the formula for baking soda [$\text{NaHCO}_3(\text{s})$] the following indicates how many atoms are present in each molecule ...
- A. 1 sodium, 1 hydrogen, 3 carbon dioxide
 - B. 1 atom of each element
 - C. 1 sodium, 1 hydrogen, 1 carbon, 3 oxygen
 - D. 1 sodium, 1 hydrogen, 1 calcium and 3 oxygen
28. In the formula for baking soda $\text{NaHCO}_3(\text{s})$ the (s) indicates that this molecule is ...
- A. safe
 - B. stable
 - C. strong
 - D. solid
29. Pure substances formed as a result of the attraction between charged particles of opposite charges are ...
- A. Stable elements
 - B. Ionic compounds
 - C. Molecular compounds
 - D. Charged elements
30. When ionic compounds are formed, the ions combine to form a ...
- A. crystal
 - B. block
 - C. irregular pattern
 - D. cloud

31. When sodium (a very reactive metal) is placed in chlorine (a green gas), the sodium explodes with a bright yellow flame. As it burns, this white, coarse-grained powder is produced.

- A. silicon
- B. carbon
- C. alum
- D. salt

32. A group of ions 'that act as one' are called ...

- A. Subatomic ions
- B. Polyatomic ions
- C. Molecular ions
- D. Aqueous ions

33. When naming ionic compounds there are two rules to remember: The first is that the name of the metal is always placed first, the second is the name of the non-metal ion(s) changes to

- A. 'ous'
- B. 'ade'
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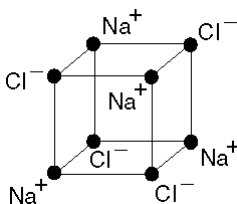
34. The ion charges of a particular element will help you determine the chemical formula for the compound that is formed. Calcium [Ca^{2+}] combines with chlorine [Cl^{-}] to produce Calcium Chloride. The correct formula for Calcium Chloride is ...

- A. Ca_2Cl
- B. CaCl_2
- C. 2CaCl
- D. $\text{Ca}2\text{Cl}$

35. The alkali metals include Lithium and Sodium, each having an ion charge of 1+, are often reactive with the elements that have an ion charge of 1-. The group of elements that alkali metals react with are called the ...

- A. Halogens
- B. Earth Metals
- C. Non-Metals
- D. Metalloids

36. This type of lattice structure represents the compound, **sodium chloride**.



The characteristic that identifies this compound as an ionic compound is its **distinct crystal** ...

- A. size
- B. shape
- C. ion
- D. element

37. N_2O_3 is a molecular compound. The chemical name - following the rules for naming molecular compounds - for N_2O_3 is ...

- A. trinitrogen oxide
- B. dinitrogen oxide
- C. trinitrogen dioxide
- D. dinitrogen trioxide

38. Sugar $\text{C}_{12}\text{H}_{22}\text{O}_{11}$ is a molecular compound. This compound contains ...

- A. 3 carbon atoms, 4 hydrogen atoms and 2 oxygen atoms
- B. 3 calcium atoms, 4 helium atoms and 2 organic atoms
- C. 12 carbon atoms, 22 hydrogen atoms and 11 oxygen atoms
- D. 12 calcium atoms, 22 helium atoms and 11 oxidizing atoms

39. Use the information in the following table to answer this question.

Compound	Formula	Melting Point °C	Boiling Point °C
baking soda	NaHCO ₃	455°	1550°
carbon dioxide	CO ₂	sublimates	-79°
rubbing alcohol	CO ₃ H ₈ O	-90°	82°
salt	NaCl	801°	1413°

The molecular compounds from the table above are ...

- A. baking soda and salt
 B. rubbing alcohol and salt
 C. carbon dioxide and baking soda
 D. carbon dioxide and rubbing alcohol
40. A Tetra Pak is a drink container that is used by manufacturers to provide juice in a handy convenient format. Tetra means ...
- A. recyclable
 B. four
 C. wax paper
 D. convenient

Chemical Reactions

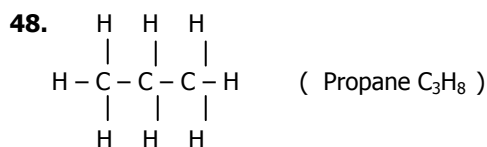
41. A chemical reaction takes place when two or more ...
- A. molecular compound are mixed
 B. ionic compounds are mixed
 C. substances are mixed
 D. substances combine to form new substances
42. Use the following chemical reaction word equation to answer the question.
- wood + oxygen → carbon dioxide + water + energy released
- The reactants in this chemical word equation are ...
- A. wood and oxygen
 B. carbon dioxide and water
 C. oxygen and energy
 D. wood and energy
43. A chemical reaction occurs when this evidence is present ...
- A. a solution is formed
 B. a change of state occurs
 C. energy is needed or released
 D. the reaction is reversible
44. The following word equation identifies what happens when hydrogen peroxide is left out in the sun. It changes to water and oxygen gas.
- A. Water + Oxygen → Hydrogen peroxide
 B. Hydrogen peroxide + Energy → Water + Oxygen
 C. Water + Energy + Oxygen → Hydrogen peroxide
 D. Hydrogen peroxide + Oxygen → Water + Energy
45. Alexander performed an experiment with Alka-Seltzer and water. He carefully weighed the reactants and found that the total mass was 110 g. When he recovered the products and weighed them the combined mass was only 106g. The difference was 4g. What would account for the difference in mass?
- A. The mass of the reactants didn't account for the oxygen need for the reaction to occur.
 B. The mass of the products didn't account for the gas bubbles that were released.
 C. The total mass did not include the mass of the beaker he used.
 D. The beaker had a crack in it and some of the water leaked out.

46. A catalyst was used in an experiment. The effect that the catalyst had was ...

- A. There was no effect at all
- B. The reaction happened slower
- C. The reaction produced more products
- D. The reaction happened faster

47. By crushing a tablet of medicine before you take it, you are changing the reaction rate by changing the ...

- A. temperature
- B. surface area
- C. concentration
- D. a catalyst



The burning of propane (C_3H_8) in a barbeque is an exothermic reaction that produces heat to cook the food. If the heat is too intense, the products being cooked (will be burnt) will be changed into.

- A. hydrocarbons
 - B. hydrogen dioxide
 - C. carbon monoxide
 - D. pure carbon
49. Burning fossil fuels (such as propane) produces carbon monoxide, carbon dioxide, sulfur oxides, nitrogen oxides, smoke, soot, ash and heat. These products are called ...
- A. pesticides
 - B. pollutants
 - C. combustibles
 - D. hydrocarbons
50. Some substances are used in foods to slow down decomposition. Plant seeds prevent germination until the right conditions are present by these natural ...
- A. reactors
 - B. enzymes
 - C. catalysts
 - D. inhibitors

Chemical Change Unit Test

ANSWER KEY

Student Name _____

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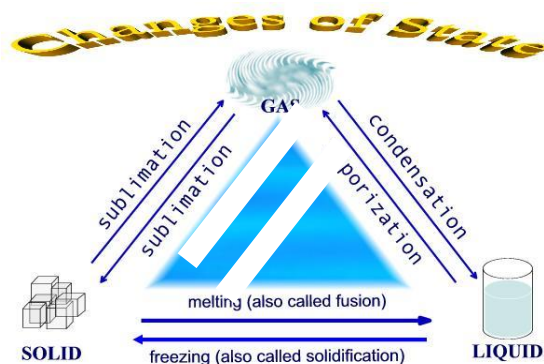
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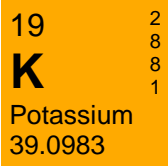
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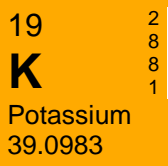
- A. oxygen
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- B. Polyatomic ions
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- D. Aqueous ions

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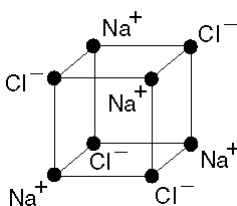
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- C. Non-Metals
- D. Metalloids

36. This type of lattice structure represents the compound, sodium chloride.



The characteristic that identifies this compound as an ionic compound is its **distinct crystal** ...

- A. size
- B. shape
- C. ion
- D. element

37. N_2O_3 is a molecular compound. The chemical name - following the rules for naming molecular compounds - for N_2O_3 is ...

- A. trinitrogen oxide
- B. dinitrogen oxide
- C. trinitrogen dioxide
- D. dinitrogen trioxide

38. Sugar $\text{C}_{12}\text{H}_{22}\text{O}_{11}$ is a molecular compound. This compound contains ...

- A. 3 carbon atoms, 4 hydrogen atoms and 2 oxygen atoms
- B. 3 calcium atoms, 4 helium atoms and 2 organic atoms
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- A. recyclable
 B. four
 C. wax paper
 D. convenient

Chemical Reactions

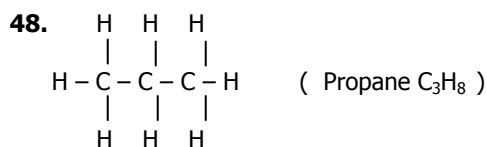
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- A. molecular compound are mixed
 B. ionic compounds are mixed
 C. substances are mixed
 D. substances combine to form new substances
42. Use the following chemical reaction word equation to answer the question.
- wood + oxygen → carbon dioxide + water + energy released
- The reactants in this chemical word equation are ...
- A. wood and oxygen
 B. carbon dioxide and water
 C. oxygen and energy
 D. wood and energy
43. A chemical reaction occurs when this evidence is present ...
- A. a solution is formed
 B. a change of state occurs
 C. energy is needed or released
 D. the reaction is reversible
44. The following word equation identifies what happens when hydrogen peroxide is left out in the sun. It changes to water and oxygen gas.
- A. Water + Oxygen → Hydrogen peroxide
 B. Hydrogen peroxide + Energy → Water + Oxygen
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- A. The mass of the reactants didn't account for the oxygen need for the reaction to occur.
 B. The mass of the products didn't account for the gas bubbles that were released.
 C. The total mass did not include the mass of the beaker he used.
 D. The beaker had a crack in it and some of the water leaked out.

46. A catalyst was used in an experiment. The effect that the catalyst had was ...

- A. There was no effect at all
- B. The reaction happened slower
- C. The reaction produced more products
- D. The reaction happened faster

47. By crushing a tablet of medicine before you take it, you are changing the reaction rate by changing the ...

- A. temperature
- B. surface area
- C. concentration
- D. a catalyst



The burning of propane (C_3H_8) in a barbeque is an exothermic reaction that produces heat to cook the food. If the heat is too intense, the products being cooked (will be burnt) will be changed into.

- A. hydrocarbons
- B. hydrogen dioxide
- C. carbon monoxide
- D. pure carbon

49. Burning fossil fuels (such as propane) produces carbon monoxide, carbon dioxide, sulfur oxides, nitrogen oxides, smoke, soot, ash and heat. These products are called ...

- A. pesticides
- B. pollutants
- C. combustibles
- D. hydrocarbons

50. Some substances are used in foods to slow down decomposition. Plant seeds prevent germination until the right conditions are present by these natural ...

- A. reactors
- B. enzymes
- C. catalysts
- D. inhibitors