

Name: _____ Date: _____ Period: _____

Milestone Review part 3 - Chemistry - Chemical Reactions and Properties of Matter

1. Find the density of the following objects showing your work

Object	Mass	Volume	Density
Large cylinder	28 g	5 ml	
Small cylinder	15 g	3 ml	
Small cube	27 g	6 cm ³	

2. Which two samples of the three types of items above do you think is made of the same material? Why?

3. What is the difference between an ionic compound and a covalent compound?

4. What is a valence electron?

5. What is an oxidation number?

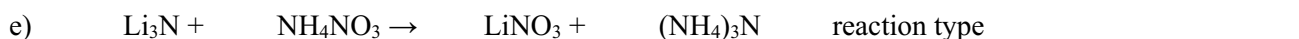
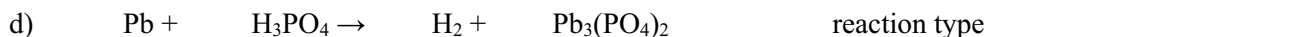
6. What is the difference between a cation and an anion?

7. Fill in the missing information:

Ionic/Covalent	1 st element w/ charge if ionic	2 nd element w/ charge if ionic	Chemical formula	Chemical Name
	Na ⁺¹	Cl ⁻¹	NaCl	Sodium Chloride
	K	S		
	Ca	Cl		
	C	O		Carbon dioxide
	N	O	N ₂ O ₅	
	Mg	O		Magnesium oxide
	S	O		Sulfur trioxide
	Mg	P		
	Al	O		
				Oxygen trifluoride
			CCl ₄	
	Al	Cl		
	Ca	O		
			P ₂ O ₅	
	Na	S		

8. B

Balance the following equations and tell what type of reaction it is



Classify the following chemical reactions

1. $C_4H_8 + 6O_2 \rightarrow 4CO_2 + 4H_2O$	2. $HCl + NaOH \rightarrow H_2O + NaCl$
3. $2KNO_{3(s)} \rightarrow 2KNO_{2(s)} + O_{2(g)}$	4. $AgNO_3 + NaCl \rightarrow NaNO_3 + AgCl$
5. $2Mg + O_2 \rightarrow 2MgO$	6. $2Ag + S \rightarrow Ag_2S$
7. $MgCO_{3(s)} \rightarrow MgO_{(s)} + CO_{2(g)}$	8. $Cl_2 + 2KBr \rightarrow 2KCl + Br_2$

9. In the following examples identify the solute and the solvent.

- a) Sugar dissolved in water - solute _____ solvent _____
b) Salt dissolved in water - solute _____ solvent _____
c) Carbon dioxide in soda - solute _____ solvent _____

10. What are the three things that will increase the rate of solubility of a solid in a liquid?

11. What are the two things that will increase the rate of solubility of a gas into a liquid?

12. List 3 properties specific to acids:

- a)
b)
c)

13. List 3 properties specific to bases:

- a)
b)
c)

14. List 2 properties that acids and bases share:

- a)
b)

15. Explain what happens when an acid neutralizes a base.

16. Indicate whether the following substances are strong acids, weak acids, neutral, weak bases, or strong bases based on their pH.

- a) _____ Baking soda pH = 8
b) _____ Liquid plumber pH = 12
c) _____ Pepsi pH = 2.6
d) _____ Pickle juice pH = 5
e) _____ Lye pH = 13
f) _____ Ajax liquid pH = 7.8
g) _____ Nail polish Remover pH = 6.5
h) _____ Purified water pH = 7

Chemistry Vocabulary Matching

<ol style="list-style-type: none"> 1. Neutralize 2. Neutral 3. Acid rain 4. Acid 5. Base 	<ol style="list-style-type: none"> a. When pollution causes rain to be acidic (pH of less than 5.6). b. To mix acids and bases to cancel each other out and make salt and water. c. Equal number of H⁺ and OH⁻ ions; water is an example. d. A compound that adds OH⁻ ions to water. e. A compound that adds H⁺ ions to water. 	<ol style="list-style-type: none"> 1. Weak acid 2. pH 3. Strong Acid 4. Salt Water 5. Weak Base 	<ol style="list-style-type: none"> a. The measure of acids and bases. b. The product of a neutralization reaction between an acid and a base. c. A compound that adds a few H⁺ ions to water. d. A compound that adds a lot of H⁺ ions to water. e. A compound that adds a few OH⁻ ions to water. 														
<ol style="list-style-type: none"> 1. Alpha Particle 2. Gamma Ray 3. Beta Particle 4. Radioactive 5. Uranium 	<ol style="list-style-type: none"> a. The largest natural element. Fuel for fission reactors. b. Can be stopped by wood; occurs when a neutron breaks into a proton and electron. c. An atom that emits energy or a particle. d. A helium nucleus (2 protons and 2 neutrons); low in energy. e. Powerful radiation that can cause biological damage; takes many feet of concrete to stop. 	<ol style="list-style-type: none"> 1. Chain reaction 2. Fission 3. Fusion 4. Half-life 5. Carbon Dating 	<ol style="list-style-type: none"> a. Combining smaller atoms into larger atoms. b. Splitting large atoms into smaller ones. Toxic by-products. c. When one fission causes another and another, etc... d. Using the known decay of an isotope to determine the age of objects. e. The time necessary for 50% of a radioactive sample to decay. 														
<ol style="list-style-type: none"> 1. Solution 2. Alloy 3. Dissolve 4. Suspension 5. Colloid 6. Insoluble 	<ol style="list-style-type: none"> a. When a substance cannot be dissolved into a solution. b. A mixture of two metals. c. A mixture that is homogeneous at the molecular level. d. When something seems to disappear into a solution. e. A mixture that scatters light and the particles do not settle out. f. A temporary mixture; the particles will settle into layers. 	<ol style="list-style-type: none"> 1. Supersaturated 2. Saturated 3. Unsaturated 4. Solute 5. Solvent 	<ol style="list-style-type: none"> a. When a solution can hold more solute. b. When a solution can't hold more solute. c. When a solution has more solute than it can hold. d. The part of a solution that is biggest. (The water in salt water.) e. The part of a solution that is smallest. (The salt is salt water.) 														
<ol style="list-style-type: none"> 1. Ion 2. Cation 3. Anion 4. Neutral 5. Octet Rule 	<ol style="list-style-type: none"> a. A negatively charged ion: non-metals b. A positively or negatively charged atom because electrons have been gained or lost c. An atom with the same number of protons and electrons d. Says the atoms will gain, loses, or share electrons in order to have 8 valance electrons e. A positively charged ion: metals 	<p>Draw Lewis diagram for following elements:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">Calcium</td> <td style="width: 50%;">Oxygen</td> </tr> <tr> <td style="width: 50%;">Silicon</td> <td style="width: 50%;">Indium</td> </tr> </table>		Calcium	Oxygen	Silicon	Indium										
Calcium	Oxygen																
Silicon	Indium																
<p>Identify as Acid, Base, or Neutral</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">_____ pH below 7</td> <td style="width: 50%;">_____ pH above 7</td> </tr> <tr> <td>_____ pH of 7</td> <td>_____ taste bitter</td> </tr> <tr> <td>_____ taste sour</td> <td>_____ feels slippery</td> </tr> <tr> <td>_____ pure water</td> <td>_____ lemon juice</td> </tr> <tr> <td>_____ bleach</td> <td>_____ hydrogen acceptor</td> </tr> <tr> <td>_____ produces OH⁻¹</td> <td>_____ hydrogen donor</td> </tr> <tr> <td>_____ produces H⁺¹</td> <td>_____ equal # of H⁺¹ and OH⁻</td> </tr> </table>		_____ pH below 7	_____ pH above 7	_____ pH of 7	_____ taste bitter	_____ taste sour	_____ feels slippery	_____ pure water	_____ lemon juice	_____ bleach	_____ hydrogen acceptor	_____ produces OH ⁻¹	_____ hydrogen donor	_____ produces H ⁺¹	_____ equal # of H ⁺¹ and OH ⁻	<p>Give the number of Valance Electrons for:</p> <p>Lithium ___ Nitrogen ___ Chlorine ___ Calcium ___</p> <p>Phosphorous ___ Aluminum ___ Selenium ___</p> <p>Give oxidation number (charge) for:</p> <p>Lithium ___ Nitrogen ___ Chlorine ___ Calcium ___</p> <p>Phosphorous ___ Aluminum ___ Selenium ___</p>	
_____ pH below 7	_____ pH above 7																
_____ pH of 7	_____ taste bitter																
_____ taste sour	_____ feels slippery																
_____ pure water	_____ lemon juice																
_____ bleach	_____ hydrogen acceptor																
_____ produces OH ⁻¹	_____ hydrogen donor																
_____ produces H ⁺¹	_____ equal # of H ⁺¹ and OH ⁻																