LAB ACTIVITY: Physical and Chemical Properties

Name_____Date_____Per____

Purpose:
1) To observe physical and chemical properties.
2) To decide if an observed change is physical or chemical.

Part 1: The Physical Properties of Matter – Examine each substance carefully. Do not touch the substance. Leave the substance in the container. Record examined observations of physical appearance.

Part 1 Data Table:

SUBSTANCE	FORMULA	PHYSICAL STATE	COLOR	ODOR (Yes or No)	ELEMENT OR COMPOUND
Example: CARBON	*C*	*Solid*	*Black*	*No*	*Element*
ALUMINUM					
SULFUR					
IRON					
ZINC					
COBALT NITRATE					
NICKLE SULFATE					
SODIUM BICARBONATE					
SILICON DIOXIDE					
SODIUM CHLORIDE					
AMMONIUM HYDROXIDE					
WATER					
VINEGAR					
OXYGEN					

Part 2: Complete the following 6 experiments (complete in any order).

1) Place 5 drops of $AgNO_3$ in a well; add 5 drops of K_2CrO_4. Observe, record, and **clean** well.

2) Place 5 drops of NH_4OH in well, add 5 drops $Co(NO_3)_2$. Observe, record, and **clean** well.

3) Place 5 drops of $NaHCO_3$ in well; add 5 drops of vinegar. Observe, record, and **clean** well.

4) Light the wax candle. Watch the candle burn (C_{25} H_{52}). Observe very closely what is happening. Blow out the candle. There are multiple changes and observations to record.

5) Obtain a small piece of magnesium (Mg) ribbon. Pinch with a pair of tongs and ignite with the Bunsen burner. When it ignites, drop into the evaporating dish. DO NOT LOOK DIRECTLY at the burning Mg. Observe, record, and **clean** dish.

6) Remove the lid of the acetone (CH_3COCH_3). Dip a Q-tip into the acetone. Quickly put the lid back on, so it does not evaporate. Try to write your name on the table with the wet Q-tip. See how many letters you can write before they disappear.

Part 2 Data Table:

		Physical Sate (s, l, g, aq)	Color	Observations
Experiment 1	**$AgNO_3$**			
	K_2CrO_4			
Experiment 2	**NH_4OH**			
	$Co(NO_3)_2$			
Experiment 3	**$NaHCO_3$**			
	Vinegar			
Experiment 4	**Light a Candle**			
Experiment 5	**Magnesium Ribbon**			
Experiment 6	**Acetone**			

*****see attached page for post-lab / conclusion questions!***

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Conclusion Questions:

1) Briefly differentiate between the following terms:

- Chemical Property and Physical Property:

- Chemical Change and a Physical Change:

2) For each of the experiments in Part 2, determine whether a physical or chemical change occurred. *Provide evidence to back up your claim.*

	Physical or Chemical Change?	**Evidence**
Experiment 1		
Experiment 2		
Experiment 3		
Experiment 4		
Experiment 5		
Experiment 6		

3) Which experiments were the easiest to determine whether or not they were chemical changes? **Why were they easier?**

4) Choose one of the experiments above and use Claim, Evidence, Reasoning (CER) to explain why the experiment was a physical or chemical change (or both?!).

- **Claim**: Was it a physical change, chemical change, or both?_____

- **Evidence**: Provide data to support your claim. (what evidence did you SEE to support your claim?)

_____

_____

- **Reasoning**: Logical explanation of HOW your evidence supports your claim._____

_____

(OVER!)

5) Indicate whether the following are physical or chemical changes.

Process:	**Chemical or physical change?**
a) melting candle wax	
b) tearing Mg ribbon	
c) adding HCl to Mg	
d) tearing paper	
e) grinding $CuSO_4$	
f) burning paper	
g) heating $CuSO_4$	
h) dissolving NaCl	
i) mixing NaCl and sand	

6) Describe the difference between **elements**, **compounds**, and **mixtures**. Give an example (could be from this activity!) of an element, that can also be part of a compound (example), which is also part of a mixture.

7) Can a **compound** be broken down to smaller components (i.e. elements or smaller compounds) by **physical** means? By **chemical** means?

8) Describe the difference between a **homogenous mixture** and a **heterogeneous mixture.** Give an example of each.

9) Discuss **why physical properties** are better to use to separate mixtures than chemical properties.

10) Explain what type of change occurs (physical or chemical) when **INTRINSIC PROPERTIES** change.