Student Sheet **Name_____**

Title: Properties of Some Common Substances

Introduction: Imagine that you are a police officer investigating a crime scene. You find a bag with a white powder in it. The suspect says it is cornstarch. How do you know what is in the bag? Scientists have collected data on the physical and chemical properties of nearly all known substances. By having this information, a comparison can be made between properties of an unknown substance and properties of known substances. In this lab activity, you will test properties of some well-known common substances and see if you can correctly identify the substances in an unknown. You will also identify the bonding of each substance based on its properties.

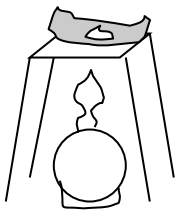
Materials: per group: 4 test tubes, test tube rack, HCl, water, beaker, hand lens, 4 aluminum foil squares, burner, wire rack or ring stand with ring, small graduated cylinder, 4 substances and the unknown

Procedures: **Safety Note: Do not taste substances, wear your googles!**

1. Test each substance by:
   a. appearance-use the hand lens to observe and describe the appearance.
   b. dissolving in water-mix a very small scoop of the substance with water in a test tube.
   c. reaction with HCL-mix a very small scoop of the substance with 5 ml HCL.
   d. burning-place a very small scoop of the substance on the aluminium foil square and place it on the wire stand. Heat with the burner carefully, stopping when the reaction is complete.
2. Fill in your data table for each.

Use your textbook to help identify the bonding type.

3. Answer the analysis questions and be prepared to defend your identification of the unknown.



Heat test

Data:

Substance	Appearance	Reaction to water	Reaction to acid	Reaction to heat	Bonding type

Analysis:

1. Which tests were best to identify each substance?

Why?

2. Which tests were not as useful?

Why?

3. Which substances were most alike?

4. What do their molecules have in common?

5. What do you think the unknown is a mixture of?

Why?

6. Some substances are well-known for their ability to put out a fire. Which of your substances would smother a grease fire on a stovetop?

7. Artificial sweeteners cannot be substituted in many baked goods for sugar. Why might that be?

8. If the “cornstarch” in the bag at the crime scene had the same properties as cornstarch tested in a lab except it melted at a lower temperature, would you think it was cornstarch?

Conclusion: