Identifying Solids

You will design and carry out an investigation to use the physical properties of a substance to identify its classification

Helpful info: Electrical resistivity is an intrinsic property that quantifies how strongly a given material opposes the flow of electric current. A low resistivity indicates a material that readily allows the movement of electric charge.

Purpose: To determine the types of solids (ionic, metallic, or molecular covalent) of six unidentified substances

Equipment & Materials:

- Safety glasses
- List all other equipment you will require for this lab.

Procedure:

1. Write out a set of steps to collect data that will help you to identify the types of solids for six unidentified substances. Be sure to number your steps. Steps should be short but easy to follow. Describe any safety precautions you will take. Be sure to look at Table 1 to see what you will need to test.

2. Once your teacher has approved your design, carry out your procedure.

NOTE: The Materials and Procedure section of this lab will be worth 13/58 marks for this lab. Unlike future labs, you cannot just reference materials and procedure.

Observations and Data:

Be sure to record **detailed** observations **in addition** to completing the table:

Table 1: (copy into your lab report)

Unknown	Appearance at room temperature	Hardness	Solubility in water	Conductivity of aqueous solution	Conductivity of solid	Melting point (high or low)	(analysis) Type of Bond
A							
B							
C							
D							
E							
F							

Analysis:
Initial Paragraph: For each unknown, explain how you determined the type of bond (on a chemical level, be detailed. Ex. Ionic bonds dissolve in water because the dipoles of the water are able to pull the ions out of their crystalline lattice, Since ___ dissolved in water that lead us to believe it was bonded ionically).

1. What properties in general do **covalent-bonded** substances have?
2. What general properties do **ionic-bonded** substances have?
3. What general properties do **metallic-bonded** substances have?
4. Which compounds melted most easily? Using their determined bond types explain why some substances melt easily and the others do not melt at all.
5. What limitations are there in using your classification system (flow chart) to determine substance bond types?