# Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Block: \_\_\_\_\_

Science 9

**Lab: Physical and Chemical Properties of Matter**

**Purpose:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Materials:**

* 6 different substances to do visual observations
* Several different metals to test malleability and conductivity
* Different objects to test density (ex. rock, wood, copper, rubber stopper, styrofoam)
* Different compounds to test solubility (ex. salt, sugar, copper sulphate, potassium chloride)

**Procedure:**

* 1. Determine the colour of each substance.
  2. Determine how malleable each metal is, from least to most malleable.
  3. Determine the thermal conductivity of the different metals.
  4. Calculate the density of the four different materials.
  5. Determine the solubility of each of the four compounds, measure how much compound dissolves in water.
  6. Test the reaction to acid of each of the 4 different metals.

**Data:**

**Part 1: Visual Observations** (Write down your observations of each mineral.)

|  |  |  |  |
| --- | --- | --- | --- |
| **Substance Name** | **Observations** | **Substance Name** | **Observations** |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

**Part 2: Malleability** (Put in order from least malleable to most malleable.)

Least malleable Most malleable

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**Part 3: Thermal Conductivity** (How fast does the metal warm up in hot water?)

Least conductive Most conductive

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**Part 4: Density** (Measure and calculate the density of the following items.)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Granite | Wood | Rubber | Copper | Styrofoam |
| Volume(mL) |  |  |  |  |  |
| Mass(g) |  |  |  |  |  |
| Density  (g/cm3) (g/mL) |  |  |  |  |  |

**Part 5: Solubility** (How much do you need to add until the solution is saturated?)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Salt | Sugar | Copper Sulfate (CuSO4) | Potassium Chloride (KCl) |
| Number of Spoons that dissolved |  |  |  |  |
| Final Volume (mL of saturated solution) |  |  |  |  |

**Part 6: Acid Test** (Describe if there is a reaction between the acid and the metal.)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Copper | Magnesium | Zinc | Lead |
| Reaction  (yes or no)  Describe reaction |  |  |  |  |

**Conclusion:**

1. What did you find out?

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1. Describe the difference between a physical property and a chemical property.

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On a separate piece of line paper, describe the procedure you used to find out each of the properties listed below. Remember to use proper sentences and draw an illustration for each part.

* Malleability
* Thermal conductivity
* Solubility
* Density of a solid object
* Reaction with acid