**Properties of Matter Lab** Name: \_\_\_\_\_\_\_\_\_\_\_

**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 (salt, sugar, potassium chloride)

**Part 1: Visual Observations** Write down your observations of each object (colour, texture…)

|  |  |  |  |
| --- | --- | --- | --- |
| **Substance** | **Observations** | **Substance** | **Observations** |
| Granite |  | Lead |  |
| Wood |  | Copper |  |
| Rubber |  | Styrofoam |  |

**Part 2: 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 3: Malleability** (Put each metal in order from LEAST to MOST malleable.) Least malleable Most malleable

**Part 4: Thermal Conductivity** (How fast does the metal warm up in hot water?)

Least conductive Most conductive

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

Obtain three 50ml beakers. **Fill each with 20ml of water**. Label each beaker according to substance below. To each beaker add one level scoop of each substance. Stir each beaker until each substance is dissolved. If a substance dissolves fully, add another scoop, stir. Repeat until no more substance can be dissolved.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Salt | Sugar | Potassium Chloride (KCl) |
| Number of Spoons that dissolved |  |  |  |
| Describe the solution. |  |  |  |
| What else has changed? |  |  |  |

**Part 6: Acid Test** (Describe if there is a reaction between the acid and the metal.) Obtain 4 small test tubes. Label according to metal below. Add about 1 cm ( a finger) of HCl acid to each tube. Place a small piece of metal in each of its corresponding tubes. Observe.

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

**Conclusion:**

1. Is density a qualitative or quantitative property of matter? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Which substance was the most dense? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. If the wood is cut in half, what properties would change? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Do you think this would be a physical***change*** or a chemical one? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. Why would it be important to know the malleability of different metals?

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1. List some applications where you see the malleability of a metal used.

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1. Is *solubility* a physical property of matter or a chemical one? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. What evidence was there in part 5 for a chemical change? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. What evidence was there in part 6 for a chemical change? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. Was there any evidence in part 6 for a physical change? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. Describe the difference between a qualitative and quantitative properties.

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Go back to the beginning and write a purpose for this lab.