Prelab Assignment: The Density of Solids and Liquids

1. Circle the correct responses in the following statement:
   Density is a **physical** / **chemical** property of matter and an **intensive** / **extensive** property of matter.

2. What devices will you use to measure the **mass** and the **volume** of water in Part A of this lab?

3. In Part B of this lab you will perform several measurements in order to determine the density of a metal.
   a. Name this metal. ________________________________
   b. Describe the technique you will use to measure the volume of this metal.

4. Consider the tabulated data collected by a student for an unknown metal sample. Use this data to calculate the density of the metal (in g/cm³). Show your work clearly.

   | Mass of Empty Beaker          | 44.656 g |
   | Mass of Beaker and Metal sample | 124.400 g |
   | Initial volume of water in cylinder | 12.7 mL   |
   | Final volume of water and Metal sample | 21.6 mL   |

5. In Part C of this lab, you will measure the mass, height and diameter of four cylinders composed of some unknown material.
   a. Calculate the volume (in cm³) of a cylinder with a measured height of 11.76 cm and a diameter of 7.22 cm. Show your work clearly.

   b. Each pair of mass and volume values (for each cylinder) will be plotted on a scatter plot, with mass on the y-axis and volume on the x-axis. A best-fit line will then be applied to the plotted data.
      - How will you calculate the value of the slope of this best-fit line?

      - How will the value of the slope help you identify the unknown material that the cylinders are made of?