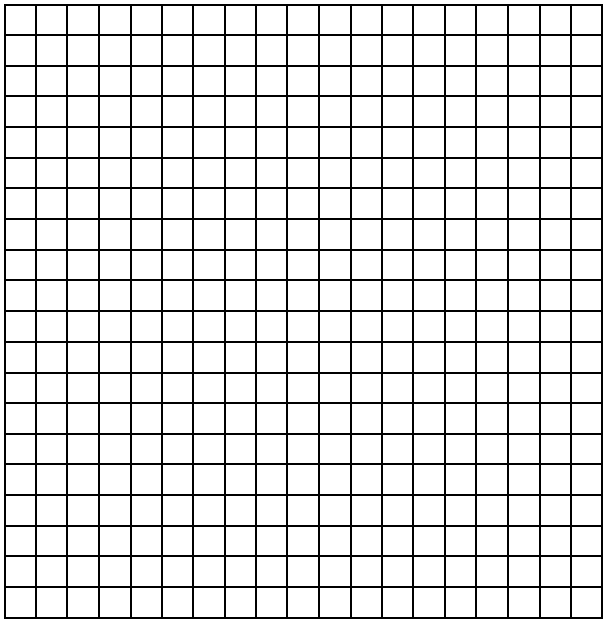
Chem 106 / Dr. Rusay

Names: _____ (*2 or 3 Lab Groups: one odd unknown bag #; one even unknown #*)

Density & Buoyancy

Part III: *Fundamental Measurements / Questions*

On the blank graph below, plot all Lab Group experimental values for mass (y-axis) and volume (x-axis) respectively for the metal shot and metal cylinder unknowns (NOTE: only use the volume data obtained by displacement.) Plot the points after reviewing everyone's values and deciding the value to assign for each line (the scale) for the vertical (y-axis) and horizontal (x-axis) so that each line on the axis has the same value beginning with (0,0) (x,y). Provide a ***LEGEND*** *that clearly identifies each of the individual plotted points in the graph with an individualized symbol and unknown #. Draw a straight line between each point and the origin.*



Since each of your lines is two points with one being the origin (0,0) (x,y), the change in the mass (your measured mass – zero) equals your measured mass, and the change in volume (your measured volume – zero) equals your measured volume. Dividing the change in mass by the change in volume for an object of the same material with any shape will provide its density. Experimentally it is impossible to have a measurement that includes the origin, but the method will still work. Provide short sentences in answer to the following questions. Attach an additional sheet if necessary.

What do you notice in the plots of the shot relative to the cylinder for the all of unknowns? Any similarities?

Are there similarities in any of the calculated densities in Part I? How do they relate to the plots?

Would having additional experimental data for an object of the same material, but with various different shapes improve the accuracy of the results? (*Answer in terms of how you could draw only one line using all of the data for objects of the same material.)*