

1. Define, using words only, the following terms:

- a. Mass:
- b. Volume:
- c. Density:
- d. Chemistry:

2. Label each with correct units:

- a. Mass ____
- b. Volume ____ and _____. What is the difference between these two? What is the similarity?
- c. Density ____

3. What is the equation to determine each quantity?

- a. Mass
- b. Volume
- c. Density

4. Rank the following metric units in order of largest to smallest.

Grams ____ Milligrams ____ Kilograms ____ Centigrams ____

Mass and Change Lab

5. State the Law of Conservation of Mass in your own words.

6. Provide an example of when system mass was conserved in the experiment. Explain why.

7. Provide an example of when system mass was not conserved in the experiment. Explain why.

8. If your system was made up of a beaker (100 g), a test tube (13 g) and some water (10 g), what is the mass of the system? Show work.

Comparing Volume Units Lab

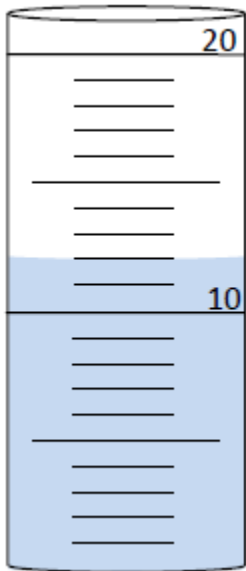
9. Briefly (4-5 sentences) describe the Comparing Volume Units lab.

10. What conclusions did we draw from:

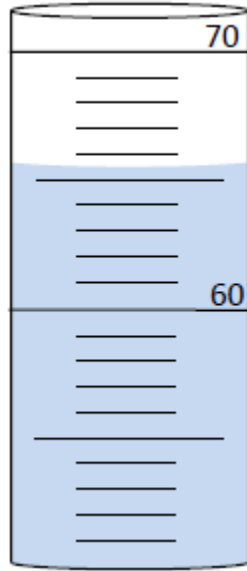
i. The slope of the line?

ii. The y-intercept of the line?

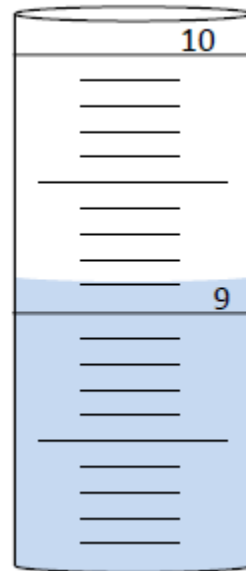
11. Read the following measuring instruments to the correct number of significant figures.



A



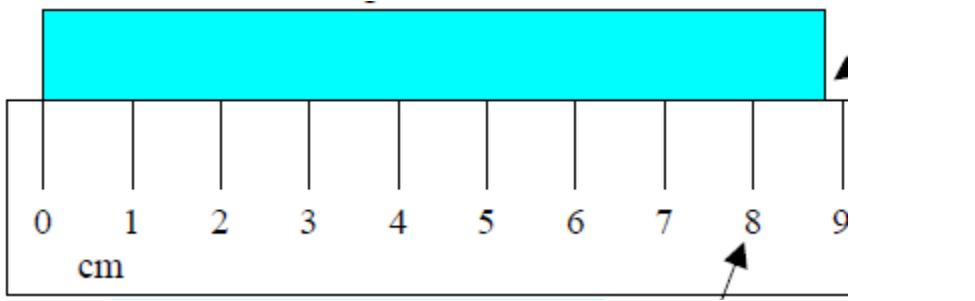
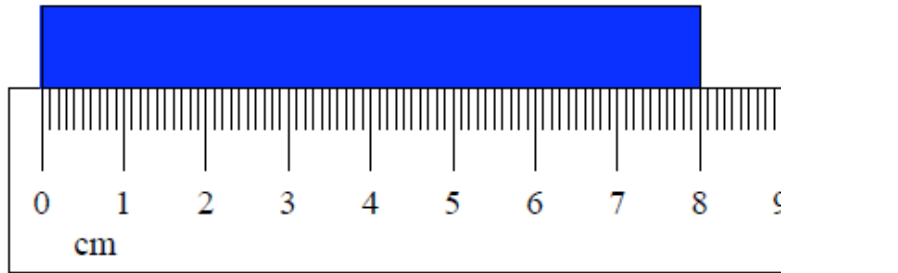
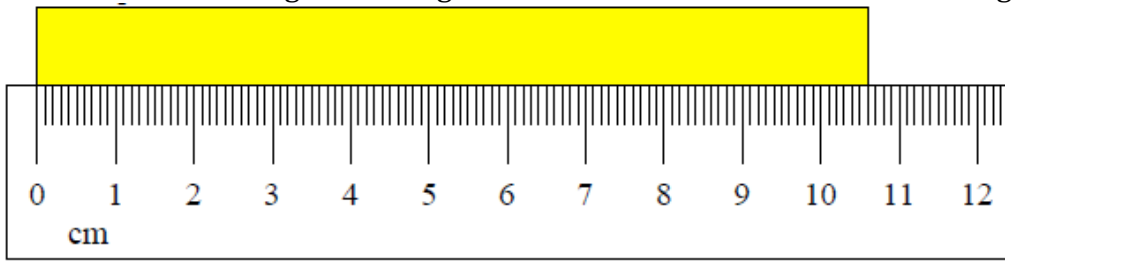
B



C

12. Which graduated cylinder would give the most precise value? Explain.

13. Read the following measuring instruments to the correct number of significant figures.



Mass and Volume Lab

14. Briefly (4-5 sentences) describe what you did in the Mass and Volume Lab.

15. What conclusions did we draw from:

i. The slopes of the lines?

ii. The y-intercepts of the lines?

16. Briefly (2-3 sentences) describe how, when you mix two liquids, you can determine which will sink and which will float.

17. Object A has a mass of 6.8 grams and a volume of 15.3 mL. Calculate the density of the object. Show all work!

18. Object B occupies 52.6 cm³ of space and contains 12.1 grams of matter. What is the density of object B? Show all work!

19. If an cube is 1.5 cm on each side, and it has a mass of 6.57 g, what is it's density. Show all work.

20. Clara finds an object (object C) that she thinks might be silver. She decides to do a simple test that she learned in her chemistry class. First, she masses the object and finds that it has a mass of 54.9 grams. She then fills a graduated cylinder with 18.2 mL of water. After placing object C in the graduated cylinder, she finds that the volume rises to 28.5 mL. Is object C silver? (density of silver = 10.49 g/cm³) Show all work!

21. On the graph below is the plot of mass vs. density for graphite. In Table 1 are the densities of other types of matter. Roughly sketch the line for each of the objects in Table 1 on the graph and label.

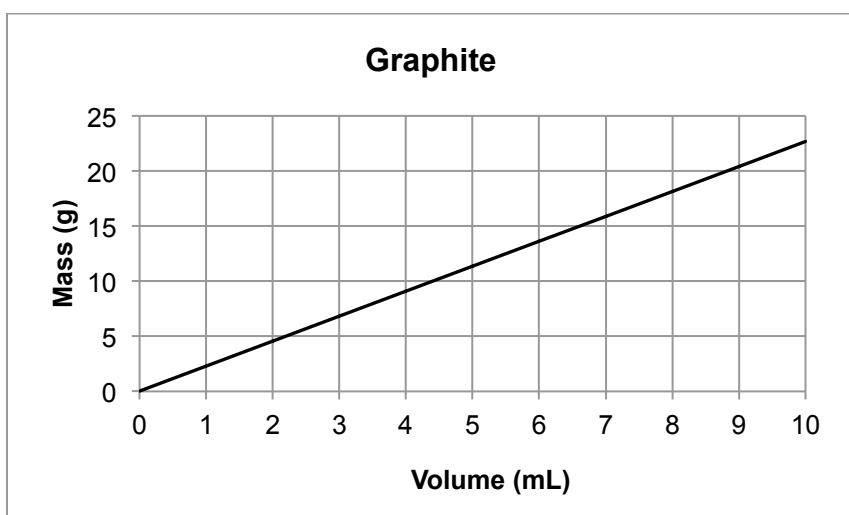
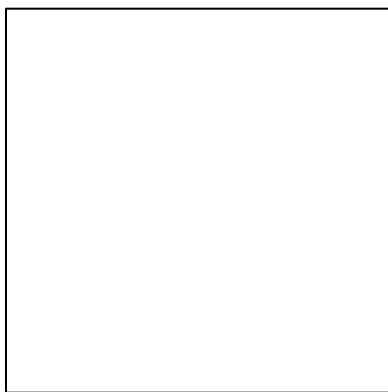


Table 1.

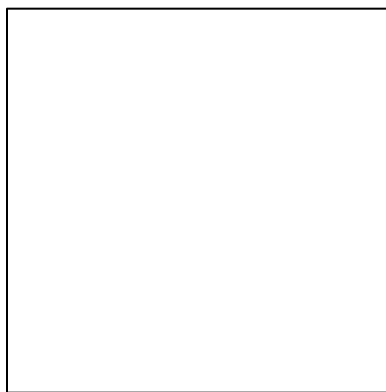
| Substance | Density (g/mL) |
|------------------|-----------------------|
| Graphite | 2.23 |
| Water | 1.00 |
| Aluminum | 2.70 |
| Titanium | 4.54 |
| Mercury | 13.55 |
| Gold | 19.30 |

Write 2-3 sentences comparing the steepness of their lines.

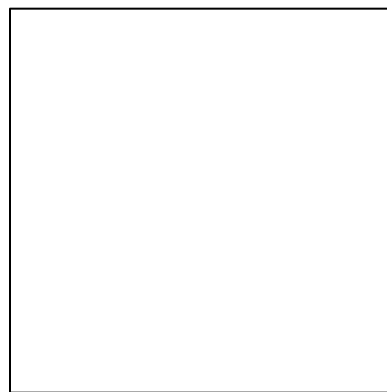
22. Draw particle diagrams representing the densities of solids, liquids and gases.



Solid



Liquid



Gas

Describe your thought process for each of the above diagrams.

Indicate if the change below is a PHYSICAL (P) or CHEMICAL (C) change.

23. Freezing Water: _____

24. Dry ice sublimating: _____

25. Wood burning: _____

26. Cooking a steak: _____

27. Shattering Glass: _____

28. Butter Melting: _____

Use Table 2 to answer questions 29 and 30.

Table 2. Densities of different elements

| Substance | Iron | Gold | Silver | Copper |
|-----------|------|-------|--------|--------|
| Density | 7.87 | 19.30 | 10.49 | 8.96 |

29. An element was found to have a mass of 32.3 g and a volume of 3.6 mL. What is the identity of this element? Show all work!

30. A student was measuring the density of copper. They performed three trials with the following calculated densities: 8.90 g/mL, 8.94 g/mL, and 8.96 g/mL. Write a 2-3 sentence summary of their accuracy and precision.