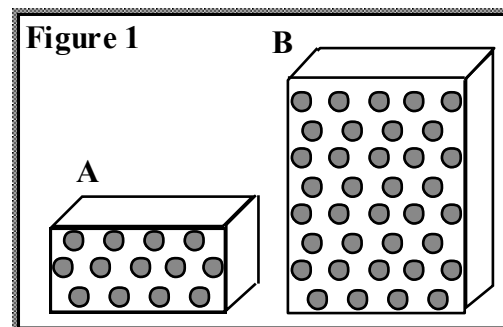


Density Practice
Week 5 – Assignment

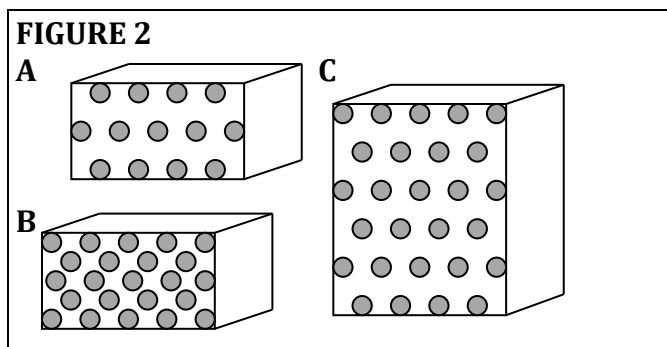
Name: _____
 Date/Block: _____

1. Use Figure 1 to fill out the following table. Each dot represents a particle of matter. [Assume the particles are uniformly distributed throughout each object, and particles of the same size have the same mass.]
 - a. In the table below, show how the masses, volumes, and densities of A and B compare by adding the symbol $<$, $>$, or $=$ to the statement in the second column.
 - b. Explain your reasoning for each answer in the last column.



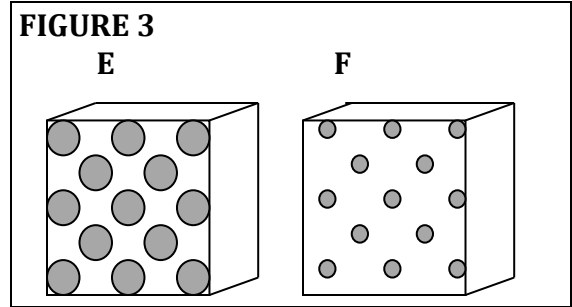
Property	Relationship	Explanation
Mass	A ____ B	
Volume	A ____ B	
Density	A ____ B	

2. Use Figure 2 to fill out the following table. [Assume the particles are uniformly distributed throughout each object, and particles of the same size have the same mass.]
 - a. In the table below show how the masses, volumes, and densities compare by adding the symbol $<$, $>$, or $=$ to the statement in the second column.
 - b. Explain your reasoning for each answer in the last column.

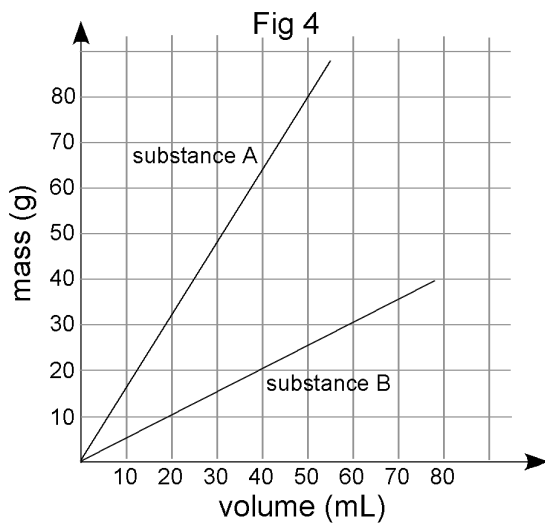


Property	Relationship	Explanation
Mass	A ____ B ____ C	
Volume	A ____ B ____ C	
Density	A ____ B ____ C	

3. Compare the density of object E to object F. [Assume the particles are uniformly distributed throughout each object, and particles with a larger size have a larger mass.] Explain your reasoning in 2-3 sentences.



4. In Figure 4 below, a graph shows the relationship between mass and volume for two substances, A and B. Use the graph to answer questions about these two substances.



- a. You have built a simple two-pan balance shown above to compare the masses of substances A and B. What would happen to the balance if you put equal **masses** of A and B in the two pans? Explain in 1-2 sentences.

- b. What would happen to the balance if you put equal **volumes** of A and B in the two pans? Explain in 1-2 sentences.

- c. Find the slope of the line for both A and B using correct units.

- d. What is the physical meaning of the slope for each substance?

- e. If you put 10.0 mL of A in one balance pan, what mass of B would you need in the other pan to make it balance? Explain in 1-2 sentences.
- f. If you put 35.0 mL of B in one balance pan, what volume of A would you need in the other pan to make it balance? Explain in 1-2 sentences.
- g. Water has a density of 1.00 g/mL. Sketch the line representing water on the graph in Figure 4.
- h. Determine whether substance A and B will sink or float when placed in a bucket of water.

A: sink float **B:** sink float (circle correct response)

Explain in 2-3 sentences.

5. You made some cubes out of each metal in the table that each measures 2.00 cm on every side. (all except mercury)

- a. What is the volume of each cube in **cm³**? in **mL**? (Show your thinking)

V = _____ cm³ V = _____ mL

- b. Find the mass of these metal cubes. Show your work.

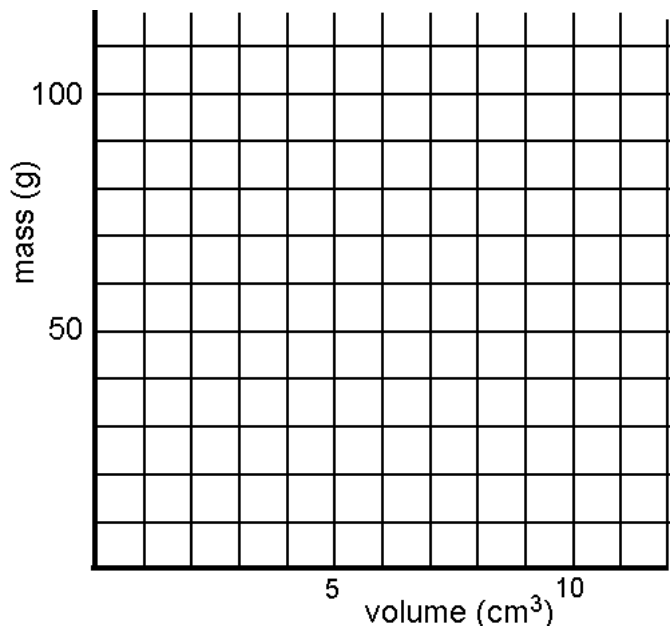
Substance	Density (g/mL)
Aluminum	2.70
Titanium	4.54
Zinc	7.13
Tin	7.31
Iron	7.87
Nickel	8.90
Copper	8.96
Silver	10.50
Lead	11.35
Mercury	13.55
Gold	19.30

Lead cube_____

Nickel cube_____

Zinc cube_____

6. Make a graph of mass vs. volume for aluminum, titanium and tin.



7. Alicia's cheapskate boyfriend gave her a ring he claims is 24 carat gold. Alicia is skeptical. After chem class the next day she measures the mass of the ring, finds the volume of the ring by water displacement, and then calculates the density of the ring. Should she treasure the ring as his first truly generous gift to her, or throw it at him the next time he walks by? Defend your answer.

Mass:	15.28 g	Volume of ring:	_____
Final volume:	43.7 mL	Density:	_____
Initial volume:	42.2 mL		

8. A student filled a graduated cylinder with water and read the meniscus at 25.8 mL. The student then dropped a solid material into the graduated cylinder and the water level rose to 35.9 mL. If the solid material had a density of 2.99 g/mL, determine the mass of the solid object.