

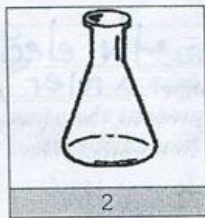
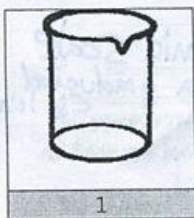


Name ANSWERS  
Date \_\_\_\_\_

This is material for Test 1 - October 1<sup>st</sup>.

Handy metric reference table! This will be printed on the test.																				
G	?	?	M	?	?	k	?	?	?	c	m	?	?	μ	?	?	n	?	?	p
giga			mega			kilo			base	centi	milli			micro			nano			pico

- Convert 70.1 Mg to grams: 70100000. grams
- Convert 0.0009177 L to  $\mu\text{L}$ : 917.7
- In the measurement 302300 g, which digit is estimated? the second '3'
- What are the correct names of these two pieces of lab equipment?



- a) item 1 is a beaker  
b) item 2 is a flask (sometimes called an ERLENMEYER FLASK)

Use the syllabus for these questions. If a statement is correct, simply write **CORRECT** in the blank. If false, write a word or phrase to replace the word in the underlined portion to make the statement true. Two of the questions shown below will be on the test. **No other material from the syllabus will be on the test.**

- The biggest percentage of your grade in chemistry comes from tests.  
TRUE
- Chemists study just two things: matter and how it changes.  
three things: matter, how it changes, and the energy
- The final exam in June does not cover material from first semester.  
does
- If absent you must make up a missed lab day.  
you don't need to
- If absent you must make up a missed test.  
true!
- If absent you must make up a missed quiz.  
you don't need to



11. Mr Genest is here to give help every day after school.

Tuesday and Thursday

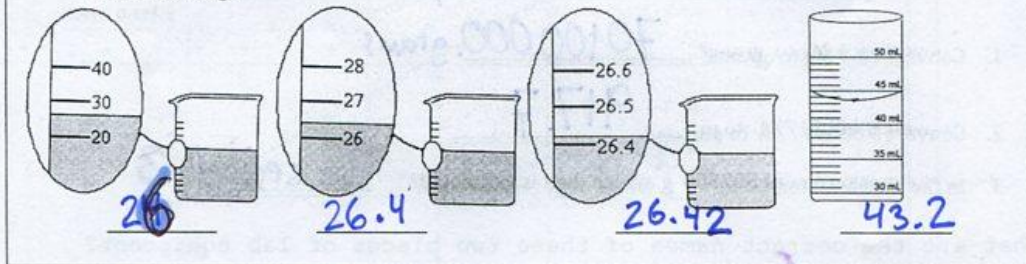
12. Mr. Genest is here for help two days a week at lunch.

every day

15. What is the density of water in g/mL? Write a "For every..." sentence for this fact:

1 gram/mL "For every 1 gram of water there is 1 mL of water."

13. Estimate the level of liquid in the four containers. Remember: read between the lines and add only ONE MORE digit



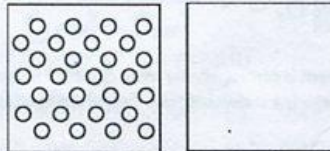
14. What equipment have you used in our room to measure mass?

the electronic scale

15. What equipment have you used in our room to measure volume?

a ruler, a graduated cylinder

16. If the box at left contains atoms of iron in steel wool, represent the atomic structure of the steel wool after strong heating in the box at right. Remember, steel wool seemed to gain weight after it was heated.



17. What was the change of mass in each experiment we did?

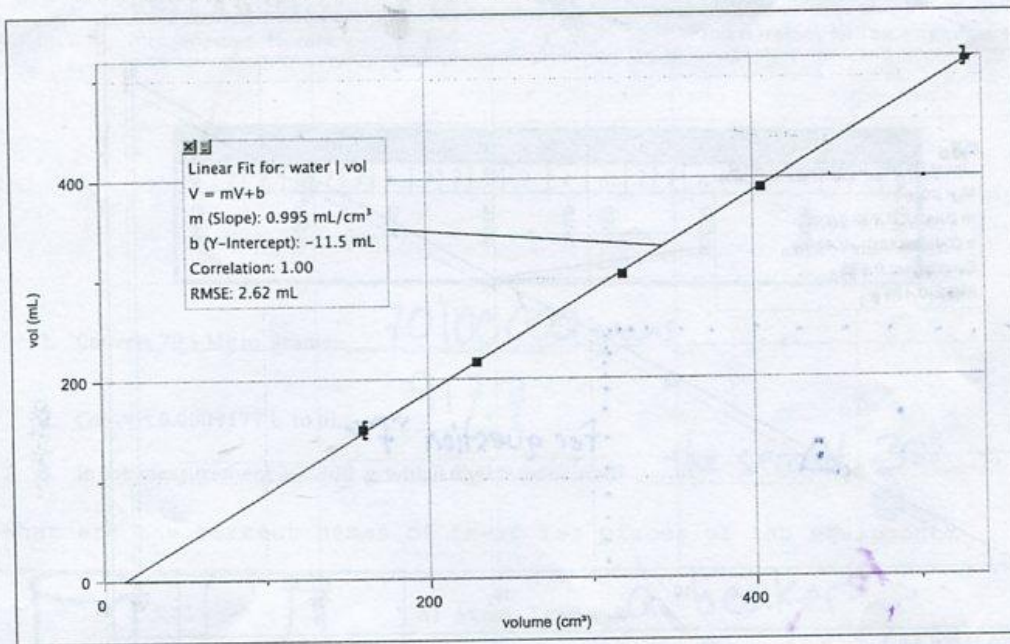
Experiment	Was the change of mass (- / 0 / +)?
Alka Seltzer fizzing	<u>-</u>
White precipitate forming	<u>0</u>
Iron burning	<u>+</u>
Sugar dissolving	<u>0</u>

18. Use words or a picture to explain the result for the alka seltzer fizzing:

at been that way

at been that way

19. The 8<sup>th</sup> period chemistry class produced the following graph when they plotted the volume of water in mL vs. the volume of the container measured in cm<sup>3</sup>.



What does the slope of the above graph tell you?

*It tells the milliliters per cm<sup>3</sup> for water.  
Memorize that 1 cm<sup>3</sup> of anything = 1 mL*

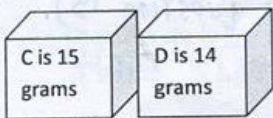
16. Block A and Block B have the same mass.

Object A has a lower volume than Object B.

Object A is ( less / more ) dense than Object

A is 5 grams

B is 5 grams



Object C and Object D have the same volume.

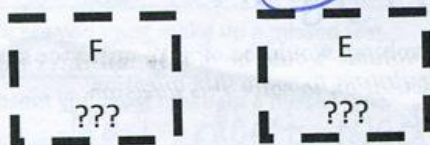
Object C has a higher mass than Object D.

Object C is ( less / more ) dense than Object D.

Object E and Object F have the same density.

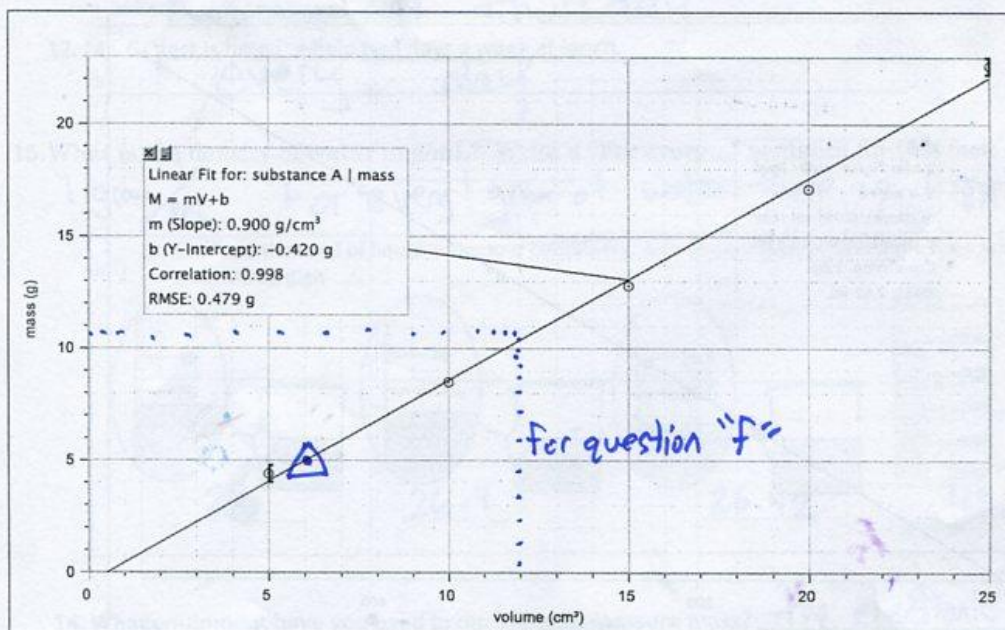
Object E has a lower mass than Object F.

Object E has a volume that is ( lower / higher ) than the volume of Object F.





20. The 9<sup>th</sup> Hr chemistry class produced the following graph when they were measuring the mass and volume of a set of objects in the lab.



- a. Calculate the slope. I used the point  $\triangle$   

$$\text{slope} = \frac{\Delta y}{\Delta x} = \frac{5\text{g} - 0\text{g}}{6\text{cm}^3 - 0\text{cm}^3} = 0.83 \frac{\text{g}}{\text{mL}}$$
 (OR the graph has slope written in the box!)
- b. What information is given by the slope of the graph?  
 The density (since the units are mass/volume).
- c. If you put one of the objects from this experiment into water would it sink or float? Why?  
 Float because its density is less than water's density (see question 15).
- d. Write a "For every..." sentence for this substance.  
 MANY POSSIBLE  
 "FOR EVERY 6 mL there are 5 grams"  
 OR  
 "FOR EVERY 0.83 grams there are 1 mL."
- e. Use the information in your For Every sentence to mathematically calculate what the mass would be of a 450 mL piece of this substance.  

$$450\text{mL} \times (0.83 \frac{\text{g}}{\text{mL}}) = 375 \text{ grams}$$
- f. Draw a line in the graph above to show what the volume would be of a 12 milliliter sample of this substance. Do not use mathematical calculation to solve this question.  
 10.7 grams



# How do chemists know what a mystery substance is?

Name

Date

Test 1 is Wednesday

ANSWERS

For Test 1 review all the notes and homework with the help of <http://genest.weebly.com>



**Uranium.** U: atomic mass 238.029; atomic number 92; oxidation states 6+, 5+, 4+, 3+. Occurrence in the earth's crust  $2 \times 10^{-5}\%$ ; melting point 1132.3°C; boiling point 3818°C; density 19.05 g/cm<sup>3</sup>. Silver-white radioactive metal, softer than glass. Uranium is malleable, ductile, and can be polished. Half-life of the U-238 isotope is  $4.51 \times 10^9$  years. Specific heat is 0.117 J/g°C; heat of fusion 12.1 kJ/mol; heat of vaporization 460 kJ/mol. Burns in air at 150–175°C to form U<sub>3</sub>O<sub>8</sub>. When finely powdered, it slowly decomposes in cold water, more quickly in hot water. Burns in fluorine to form a green, volatile tetrafluoride; also burns in chlorine, bromine, and iodine. Reacts with acids with the liberation of hydrogen and the formation of salts with the 4+ oxidation state. Not attacked by alkalis.

Element	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
Uranium	19.10
Gold	19.30

- Based on the above information, tell what pieces of **lab equipment** from our room you would need to determine whether a bullet were made of Uranium:

graduated cylinder a scale water

- If you found a ring, in a locked chest, under a mountain, in a dragon's lair, behind the PDQ, and you took mass and volume measurements, you might find the following:

DATA:

Mass: 15.28 g  
 Final volume: 43.7 mL  
 Initial volume: 42.2 mL  
 Volume of ring: 1.5 mL  
 Density: 10.2 g/mL

① Subtract to find the volume  
 $43.7 - 42.2 = 1.5 \text{ mL}$

② density is  $\frac{\text{mass}}{\text{Volume}}$

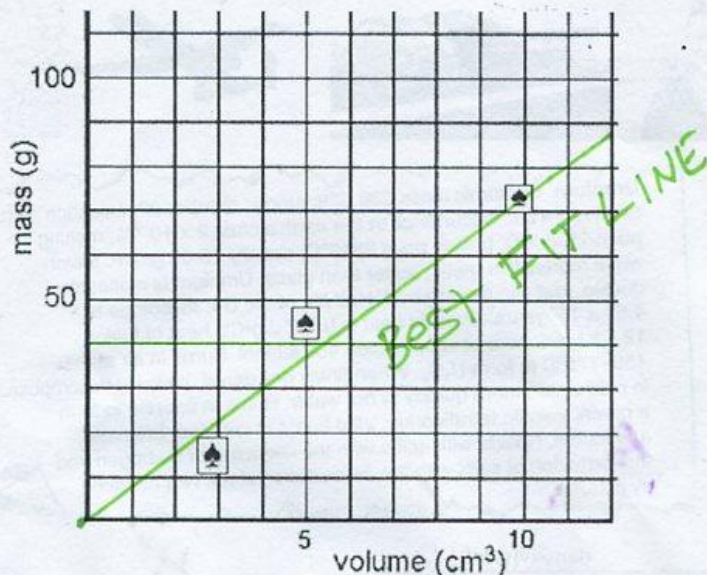
$$d = \frac{15.28 \text{ g}}{1.5 \text{ mL}} \quad d = 10.2 \frac{\text{g}}{\text{mL}}$$

What material is the ring made of?

On this chart It's closest to SILVER



- 20370
3. If you were on a werewolf tour, walking near Timisoara, Romania and found several large bullets, and measured their mass and volume, you might get the graph above. Chemical tests show that the bullets are all three made of the same pure element. Draw a best fit line that takes into account the point (0,0) and your three data points (♣)



a. What is the slope of the graph? CHOOSE AN ARBITRARY POINT, divide mass by volume  
 $\frac{30g}{4ml} = 7.5 \frac{g}{ml}$

b. We didn't measure (0,0), why are we allowed to include it in our data?  
 A volume of zero should have a mass of zero.

c. Are these bullets effective against werewolves? Explain.  
 The density is 7.5 g/mL. The chart says this is either tin or iron. Since they're

d. Why are these data points not all in a straight line? not silver werewolves will be unimpeded. 😬

Important!  
 You should know that lab data sometimes has errors: spills, improper technique, weighing a wet sample...