Yes, notebook. Bean Lab #2 Today.
Give Whiteboard presentations tomorrow

Purpose UNDERSTAND MATH RELATIONSHIPS BETWEEN MASS, RELATIVE MASS, AND COUNTING

Warmup These nails (draw them) are _____ moles of nails.

This should be very easy for you by friday.

Solution to today's warmup:

$$7 \text{ nails} \times \left(\frac{\text{moles}}{\text{nails}} \right) = \text{moles}$$

Always put words before you put numbers.

From yesterday's notes we know

$$1 \text{ "mole"} = 6.02 \times 10^{23} \text{ "things"}$$

Those "things" can be shoes, atoms, hamburgers, or... nails!

$$7 \text{ nails} \times \left(\frac{1 \text{ mole}}{6.02 \times 10^{23} \text{ nails}} \right) = 1.16 \times 10^{-23} \text{ moles}$$

WARMUP ANSWER

KEY

How Dalton Estimated the mass of Hydrogen Atoms

CLeMis+ry: http://genest.weebly.com

Stop in for help every day at lunch and Tues & Thurs after school!

Name_____

Period_____

1. Can you see a molecule? No Way-
2. Explain why too Small!
3. Is there any easy way for an average person to accurately count how many molecules of air are in a balloon?

   Probably not; how can you count something too small to see?

4. What does Avogadro's Principle tell us about the number of particles in the four balloons shown below?

   ALL FOUR BALLOONS CONTAIN THE SAME # OF PARTICLES

   (each balloon contains one substance, an element. There are no compounds.)

2.999 liters of Substance A	2.999 liters of Substance B	2.999 liters of Substance C	2.999 liters of Substance D
184 grams	23 grams	276 grams	943 grams

5. Look at the balloons shown here. We won't use their volumes in any calculation: the volumes only serve to show that each balloon has the same number of particles.
   If we arbitrarily choose **the lightest substance** and divide the others by it, we can get relative ratios of the mass of single pieces. Do this for each substance.

   a. Relative Mass of Substance A

   $\frac{184 \text{ grams}}{23 \text{ g}} = 8$

   b. Relative Mass of Substance B

   $\frac{23 \text{ grams}}{23 \text{ grams}} = 1$

   c. Relative Mass of Substance C

   $\frac{276 \text{ grams}}{23 \text{ g}} = 12$

   d. Relative Mass of Substance D

   $\frac{943 \text{ grams}}{23 \text{ grams}} = 41$

6. What does Avogadro's Principle tell us about the number of particles in the four balloons shown below?

Because same volume of gas, All have the same # of particles

(each balloon contains one substance, an element. There are no compounds.)

4 liters of Substance E	4 liters of Substance F	4 liters of Substance G	4 liters of Substance H
			
85 grams	221 grams	17 grams	102 grams

7. IF we arbitrarily choose **the lightest substance** and divide the others by it, we can get relative ratios of the mass of single pieces. Do this for each substance.

a. Relative Mass of Substance E

$$\frac{85 \text{ grams}}{17 \text{ grams}} = 5$$

b. Relative Mass of Substance F

$$\frac{221 \text{ grams}}{17 \text{ grams}} = 13$$

c. Relative Mass of Substance G

$$\frac{17 \text{ grams}}{17 \text{ grams}} = 1$$

d. Relative Mass of Substance H

$$\frac{102 \text{ grams}}{17 \text{ grams}} = 6$$