

Objective: to utilize the concept of moles as a measurement; we will measure various elements and compounds and convert these masses to mole measurements.

Safety: DO NOT OPEN ANY CONTAINERS, for any reason. No goggles required.

Before you start this lab, as a class, let us fill in this chart together.

formula	molar mass	given mass	How many moles of this do you have?
Hg		603 grams	
Pb		235 grams	
H <sub>2</sub> O		90.0 grams	
NaCl		64.5 grams	

You may do Part A or Part B first.

Part A: Each of the ten jars has exactly ONE MOLE of a particular element. Measure the mass of these ten jars. Note that each jar has an indicated mass of the container and lid. Subtract this container mass from your total mass to get the NET MASS of just the element inside. Record data into table A. Using your periodic table, determine what element each container contains. Write the element symbol and name into Table A.

Part B: Each of the six jars contains a certain amount of a compound. The compound formula are listed in table B. Determine the MOLAR MASS for each compound and then determine how much of a mole of each compound is in each jar. Record all data into table B.

Part C: 20 Questions (half a point each) record your answers only on the page marked 20 Q, and show all work on looseleaf!

Part D: Conclusion: conclude some basic facts about moles, molar mass, grams per mole, and give some examples.

<b>DATA Table A</b>			NET MASS this is one mole of the unknown element	Symbol of the Element present in the jar
Jar Number	Total mass of container + element in grams	mass of container only		
A				
B				
C				
D				
E				
F				
G				
H				
I				
J				
K				

<b>DATA Table B</b> Look at the different colors & different textured compounds	<u>Assume</u> you have this many grams of this compound in your jar	State the MOLAR MASS of the compound	How many moles would be present in the jar?
COMPOUND FORMULA write compound name below the formulas			
KI	36.52 g		
$K_2Cr_2O_7$	36.75 g		
$NiSO_4$	15.51 g		
$CuSO_4$	25.75 g		
$Na_2C_2O_4$	26.80 g		
$Cu(C_2H_3O_2)_2$	109.2 g		

20 Questions: put answers here, put work on loose leaf paper and attach. Make sure that the work is clearly labeled 1-21 so that I can check it if I need to.

1. How many grams does 1.0 mole of He gas weigh?
2. How many grams does 3.0 moles of He gas weigh?
3. How many grams does 6.5 mole of O<sub>2</sub> weigh?
4. How many grams does 3.00 liters of O<sub>2</sub> weigh at STP?
5. How many grams does 5.50 moles of Hg weigh?
6. Convert 327 liters of Ne into moles of Ne gas at STP.
7. 6.35 moles of C has how many atoms?
8.  $5.54 \times 10^{24}$  molecules of CO gas has what mass?
9. 0.404 moles of CuSO<sub>4</sub> has how many particles?
10. C<sub>12</sub>H<sub>22</sub>O<sub>11</sub> is sucrose or table sugar. There are 1.20 grams sucrose in one serving of Cheerios. How many moles of sucrose is that?
11. 50.0 grams of MgO is how many moles?
12. Exactly 0.750 moles of NaCl is dissolved into 8.70 moles of dihydrogen monoxide. How much does the total homogeneous mixture weigh?
13. skip this one
14. 423 grams of MgSO<sub>4</sub> are in a jar. How many moles of magnesium sulfate are present?
15. You have 99.0 grams of barium permanganate. How many moles do you have?
16. You have 3.00 moles of LiSCN. How many grams of LiSCN do you have?
17. You eat 124 grams of potassium chloride, which is salt substitute. How many formula units is that?
18. NaHCO<sub>3</sub> is bakin' soda. A box of this says 454 grams. How many moles is that?
19. What is the molar mass of ammonium dichromate?
20. What is the molar mass of sodium hydroxide?
21. What is the molar mass of cesium thiosulfate?

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skip this one!	
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This lab requires:	This information	POINTS
Cover page	title and short intro	1 + 1 = 2 points
2	Table A	5 points
3	Table B	5 points
4	20 Q	10 points
5	Conclusion: conclude some basic facts about moles, molar mass, grams per mole, and give some examples.	3 points
Report due on: _____		25 points

**OPTIONAL:**

Write a short note to your teacher. What is it that you still feel unsure about in our class. What do you like, or not like about this class. You may type this and stick it in the in box unattached to your lab report and you can remain anonymous. I would hope you would be honest, in a hopeful attempt to improve your learning. You can keep it stapled to your lab if you don't mind me knowing it was you, and it certainly would not be used to change my attitude towards you, I think all of my students are wonderful (and very different from each other!).

Thanks.