

Chemical Quantities and Conversions Worksheet

NAME: _____

Perform the following conversions. Show all work with units!!!

Single step conversions. (Tier 1)

- | | | |
|-------------------|--|-----------|
| 1. O_3 | Calculate the molar mass | 1. _____ |
| 2. H_2S | Calculate the molar mass | 2. _____ |
| 3. $(NH_4)_2SO_4$ | Calculate the molar mass | 3. _____ |
| 4. $C_6H_{12}O_6$ | Calculate the molar mass | 4. _____ |
| 5. K_2O | find the number of moles in 9.42g | 5. _____ |
| 6. $MgCl_2$ | find the number of grams in 0.50 mol | 6. _____ |
| 7. Na_3N | find the number of grams in 0.020 mol | 7. _____ |
| 8. Ca_3P_2 | find the number of moles in 45.50 g | 8. _____ |
| 9. H_2 | find the number of moles in 2.9×10^{24} molecules | 9. _____ |
| 10. SF_6 | find the number of molecules in 2.50 mol | 10. _____ |
| 11. $FeCl_2$ | find the number of formula units in 5.0×10^{-6} mol | 11. _____ |
| 12. $KMnO_4$ | find the number of moles in 3.50×10^{22} molecules | 12. _____ |

Multi step conversions. (Tier 2)

13. $(\text{NH}_4)_2\text{Cr}_2\text{O}_7$ find the number of formula units in 9.50g 13. _____
14. CO_2 find the number of grams in 3.62×10^{23} molecules 14. _____
15. H_2O find the number of molecules in 250 grams 15. _____
16. CO find the mass, in grams, of 3.50×10^{25} molecules 16. _____
17. HF find the number of molecules in 11.42 g 17. _____
18. SO_3 find the mass in grams of 1 molecule 18. _____

***Advanced problems. (Tier 3)**

19. Diamond is a natural form of pure carbon. How many atoms of carbon are in a 1.25 carat diamond, given that 1 carat = 0.200g? 19. _____
20. What is the mass of 1 atom of gold, Au, in grams? 20. _____
21. The molecular formula of acetylsalicylic acid (aspirin) is $\text{C}_9\text{H}_8\text{O}_4$. If an aspirin tablet contains 1.505×10^{22} carbon atoms, how many moles of aspirin does it contain, and what is the mass of the aspirin tablet? 21. _____

22. Complete the following table. Show your work on a separate sheet and attach to this one.

Mass of Sample	Moles of Sample	Molecules in Sample	Total Atoms in Sample
4.24 g C_6H_6			
	0.224 mole H_2O		
		2.71×10^{24} molecules CO_2	
			3.35×10^{22} total atoms in CH_3OH