Particle to Mole & Molar Mass (15pts)

Moles and Avogadro's Number

Hint: *One mole of a substance contains Avogadro's Number (6.02×10^{23}) of molecules.*

How many molecules are In the quantities below? SHOW WORK

1. 2.0 moles _____ = _____
2. 1.5 moles _____ = _____
3. 0.75 mole _____ = _____
4. 15 moles _____ = _____

How many moles are in the number of molecules below? SHOW WORK

1. 6.02×10^{23} molecules _____ = _____
2. 1.204×10^{24} molecules _____ = _____
3. 1.5×10^{20} molecules _____ = _____
4. 7.5×10^{19} molecules _____ = _____

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Calculation of Molar Mass
Molar Mass = Mass of 1 mole of an ionic compound or covalent molecule

Calculation of Molar Mass—Sum of the atomic masses (from the periodic table) of all atoms present in the chemical formula

11 Na *Atomic Mass* →22.990 Sodium	17 Cl *Atomic Mass* →35.453 Chlorine

Examples:
Calculate the molar mass of sodium chloride. Round the Molar Mass to the hundredths.

NaCl	1 Na	1 x 22.99 = 22.99 (Find the mass of Na on periodic table)
	1 Cl	1 x 35.45 = 35.45 (Find the mass of Cl on periodic table)
	Molar Mass	58.44 g/mole

Calculate the molar mass of ammonium sulfate

$(NH_4)_2SO_4$	2 N	2 x 14.01 = 28.02
	8 H	8 x 1.01 = 8.08
	1 S	1 x 32.07 = 32.07
	4 O	4 x 16.00 = 64.00
	Molar Mass	132.17 g/mole

Molar Mass Practice: Calculate the molar mass for the following compounds. SHOW WORK

1. **LiCl**

# of atoms	Element	Multiplication
Total Molar Mass =		

2. **$AlBr_3$**

# of atoms	Element	Multiplication
Total Molar Mass =		

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3. $Ca(NO_3)_2$

# of atoms	Element	Multiplication
Total Molar Mass =		

4. $Al_2(SO_4)_3$

# of atoms	Element	Multiplication
Total Molar Mass =		

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