

Name: _____ Date: _____

Chemistry

Physical Quantities: Atomic Masses and Formula Masses

Part 1: Formula mass (molecular mass). Use the periodic table of the elements to assist you. Calculate the formula mass (molecular mass) of the compound. Complete the tables.

1. **F₂** (diatomic fluorine).

Element	Number of atoms		Atomic Mass		Product
F:		X		=	

2. **K₂S** (potassium sulfide).

Element	Number of atoms		Atomic Mass		Product
S:		X		=	
K:		X		=	
Formula mass				=	

3. **CH₃CO₂H** (Acetic acid)

Element	Number of atoms		Atomic Mass		Product
C:		X		=	
H:		X		=	
O:		X		=	
Formula mass				=	

4. **NaHSO₄** (Sodium hydrogen sulfate)

Element	Number of atoms		Atomic Mass		Product
Na:		X		=	
H:		X		=	
S:		X		=	
O:		X		=	
Formula mass				=	

5. **Ca₃(PO₄)₂** (Calcium phosphate)

Element	Number of atoms		Atomic Mass		Product
Ca:		X		=	
P:		X		=	
O:		X		=	
Formula mass				=	

Part 2: Percent Mass Composition: The formula mass (molecular mass) and the elemental information for the compounds in Part 1. Solve for the % Mass Composition of each element in the compound.

1. **K₂S** (potassium sulfide).

Element	
%S =	
%K =	

2. **CH₃CO₂H** (Acetic acid)

Element	
%C =	
%H =	
%O =	

3. **NaHSO₄** (Sodium hydrogen sulfate)

Element	
%Na =	
%H =	
%S =	
%O =	

Part 3: Mass to moles. Convert mass to moles then moles to number of atoms. Use the periodic table for atomic masses. Use Avogadro's number.

Element	Atomic mass (g/mol)	Mass (g)	Moles	Number of atoms
Mg		120		
Te		4.50		
U		3000		

Convert mass to moles then moles to number of molecules. Use the formula masses you calculated in the previous section. Use Avogadro's number.

Element	Formula mass (g/mol)	Mass (g)	Moles	Number of molecules
K₂S		30		
CH₃CO₂H		130		
NaHSO₄		500		

Part 3: Mass to moles. Convert mole quantities to masses. Use the periodic table for atomic masses. Use the formula masses from the previous section.

Element	Atomic mass (g/mol)	Moles	Mass (g)
Mg		0.035	
Te		2.70	
U		1.60	

Element	Formula mass (g/mol)	Moles	Mass (g)
K₂S		30	
CH₃CO₂H		130	
NaHSO₄		500	