NAME _____ DATE_____ PERIOD _____

Atoms WS #3: Determining Molecular Weights

In many problems in chemistry it is necessary to know the molecular weight (MW) of a given compound. The units for molecular weight are atomic mass unit (amu). The Molecular weight (sometimes called molecular mass or formula mass) is the sum of the masses of all atoms represented in the formula. In determining the molecular weight for this class you will only need to be accurate to the nearest tenth. So, you need to round your final answer accordingly. Here are the steps used to find MW.

1) First determine the total number of each type of atom present.
2) Find the atomic mass of each type of atom from the Periodic Chart.
3) Multiply the atomic mass of a specific type of atom by the number of that type of atom.
4) Add the total masses for each type of atom in the problem to determine the total MOLECULAR WEIGHT.

Example: CO_2 (carbon dioxide)

In carbon dioxide there is one (1) carbon atom and two (2) oxygen atoms. The atomic mass of carbon is 12.0 amu (atomic mass units), and the atomic weight of oxygen is 16.0 amu (when rounded to the nearest tenth). Now multiply the 1 carbon atom by carbon's atomic weight (1 X 12.0) to get 12.0. Next, multiply the 2 oxygen atoms by oxygen's atomic mass (2 X 16.0) to get 32.0. Finally, we add the 12.0 and the 32.0 to get the MOLECULAR WEIGHT of carbon dioxide (CO_2), which is 44.0 amu. This process is mathematically represented below.

CARBON		OXYGEN		CARBON DIOXIDE
(1 X 12.0 amu)	+	(2 X 16.0 amu)	=	44.0 amu

MOLECULAR FORMULA	CALCULATION	MW
CO_2	(1 X 12.0) + (2 X 16.0) =	44.0 amu
FeS		
NaCl		
$Al_2(CO_3)_3$		
SiO_2		
H_2O		
H_2SO_4		
$Al_2(CO_3)_3$		
$C_{12}H_{22}O_4$		
Fe_2O_3		
$ZnCl_2$		
$Ca(OH)_2$		
CH_4		
NH_3		
H_2O_2		
$NaHCO_3$		
$C_6H_{12}O_6$		