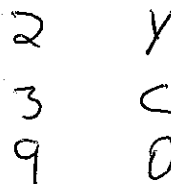
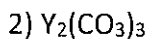
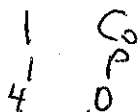
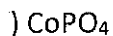


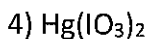
Atom counts - List elements and number of each element.



Calculate the molar mass of each compound. Show work.

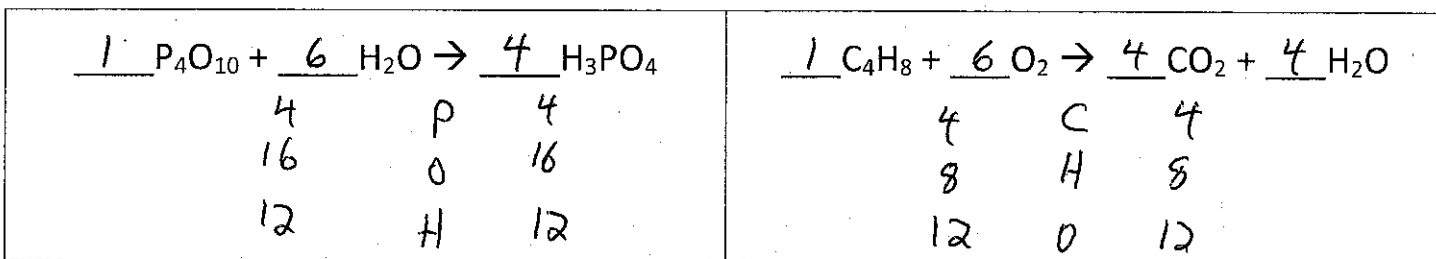


$$\begin{array}{r} 107.87 \\ + 10.81 \\ + (4 \times 19.00) \\ \hline = 194.68 \frac{\text{g}}{\text{mol}} \end{array}$$



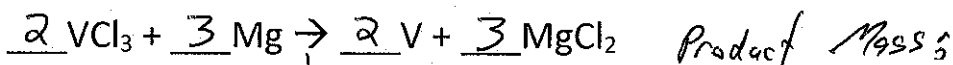
$$\begin{array}{r} 200.59 \\ + (2 \times 126.90) \\ + (6 \times 16.00) \\ \hline = 550.39 \frac{\text{g}}{\text{mol}} \end{array}$$

5, 6) Balance each equation.



7. Balance the following reaction, then prove that mass is conserved

(add up total mass for each side of the reaction). Show work.



Reactant mass:  
 2 moles  $\text{VCl}_3$   $(2 \times 157.29) = 314.58 \text{ g}$   
 3 moles  $\text{Mg}$   $(3 \times 24.31) = 72.93 \text{ g}$

Total = 387.51 g

2 moles  $\text{V}$   $(2 \times 50.94) = 101.88 \text{ g}$   
 3 moles  $\text{MgCl}_2$   $(3 \times 95.21) = 285.63 \text{ g}$

Total = 387.51 g

Substance Formula	Molar Mass	Amount in moles	Amount in grams
8) $\text{NH}_3$	$17.04 \frac{\text{g}}{\text{mol}}$	2.32 mol	39.5 g
9) $\text{Rb}_2\text{O}$	$186.94 \frac{\text{g}}{\text{mol}}$	5.35 mol	1001 g
10) $\text{CSe}_2$	$171.95 \frac{\text{g}}{\text{mol}}$	1.95 mol	335 g
11) $\text{Co}(\text{SCN})_2$	$175.09 \frac{\text{g}}{\text{mol}}$	0.46 mol	80.5 g

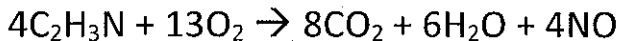
### Mole Ratios

12) How many moles of  $\text{MnCl}_2$  are produced when you react 2.80 moles of  $\text{HCl}$ ? Show work.



$$2.80 \text{ mol } \cancel{\text{HCl}} \times \left( \frac{1 \text{ mol } \text{MnCl}_2}{4 \text{ mol } \cancel{\text{HCl}}} \right) = 0.70 \text{ mol } \text{MnCl}_2$$

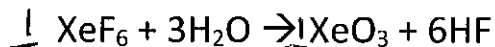
13) If 1.21 moles of  $\text{C}_2\text{H}_3\text{N}$  are burned, how many moles of  $\text{H}_2\text{O}$  are released?



$$1.21 \text{ mol } \cancel{\text{C}_2\text{H}_3\text{N}} \times \frac{6 \text{ mol } \text{H}_2\text{O}}{4 \text{ mol } \cancel{\text{C}_2\text{H}_3\text{N}}} = 1.815 \text{ mol } \text{H}_2\text{O}$$

### Mass to Mass Stoichiometry

14) If you formed 83.7 g of  $\text{XeO}_3$ , how many grams of  $\text{XeF}_6$  did you start with? Show work.



a. Convert starting amount to moles. Show work.

$$\text{XeO}_3 \text{ molar mass: } 179.29 \frac{\text{g}}{\text{mol}}$$

$$83.7 \text{ g } \cancel{\text{XeO}_3} \times \left( \frac{1 \text{ mol } \text{XeO}_3}{179.29 \text{ g } \cancel{\text{XeO}_3}} \right) = 0.467 \text{ mol } \text{XeO}_3$$

(divide by molar mass to get moles)

b. Use a mole ratio to calculate moles of the other substance. Show work.

$$0.467 \text{ mol } \cancel{\text{XeO}_3} \times \left( \frac{1 \text{ mol } \text{XeF}_6}{1 \text{ mol } \cancel{\text{XeO}_3}} \right) = 0.467 \text{ mol } \text{XeF}_6$$

↑  
Balanced equation coefficients

c. Convert moles to grams for final answer. Show work.

$$\text{XeF}_6 \text{ molar mass: } 245.29 \frac{\text{g}}{\text{mol}}$$

$$0.467 \text{ mol } \cancel{\text{XeF}_6} \times \left( \frac{245.29 \text{ g } \text{XeF}_6}{1 \text{ mol } \cancel{\text{XeF}_6}} \right) = 114.5 \text{ g } \text{XeF}_6$$

(multiply by molar mass to get grams)