

Name:  
Date:  
Period:

6.3 Tracked Assignment (Obj 1 e)

Directions: Make the following conversions. SHOW WORK (Problems without work receive no credit) AND INCLUDE UNITS.

1. 48 g NaF to formula units NaF

$$\begin{array}{l} 1 \text{ Na} \times 22.99 \\ 1 \text{ F} \times 19.00 \\ \hline 41.99 \end{array} \quad 48 \text{ g NaF} \times \frac{1 \text{ mol NaF}}{41.99 \text{ g NaF}} \times \frac{6.02 \times 10^{23} \text{ formula units NaF}}{1 \text{ mol NaF}} = \boxed{6.88 \times 10^{23} \text{ formula units NaF}}$$

2. 2.5 L SO<sub>2</sub> to g SO<sub>2</sub>

$$\begin{array}{l} 1 \text{ S} \times 32.07 = 32.07 \\ 2 \text{ O} \times 16.00 = 32.00 \\ \hline 64.07 \end{array} \quad 2.5 \text{ L SO}_2 \times \frac{1 \text{ mol SO}_2}{22.4 \text{ L SO}_2} \times \frac{64.07 \text{ g SO}_2}{1 \text{ mol SO}_2} = \boxed{7.15 \text{ g SO}_2}$$

3.  $5.42 \times 10^{26}$  formula units CaS to g CaS

$$\begin{array}{l} 1 \text{ Ca} \times 40.08 \\ 1 \text{ S} \times 32.07 \\ \hline 72.15 \end{array} \quad 5.42 \times 10^{26} \text{ formula units CaS} \times \frac{1 \text{ mol CaS}}{6.02 \times 10^{23} \text{ formula units CaS}} \times \frac{72.15 \text{ g CaS}}{1 \text{ mol CaS}} = \boxed{64459 \text{ g CaS}}$$

4. 340 g H<sub>2</sub>S to L H<sub>2</sub>S

$$\begin{array}{l} 2 \text{ H} \times 1.01 = 2.02 \\ 1 \text{ S} \times 32.07 = 32.07 \\ \hline 34.09 \text{ g} \end{array} \quad 340 \text{ g H}_2\text{S} \times \frac{1 \text{ mol H}_2\text{S}}{34.09 \text{ g H}_2\text{S}} \times \frac{22.4 \text{ L H}_2\text{S}}{1 \text{ mol H}_2\text{S}} = \boxed{223 \text{ L H}_2\text{S}}$$

5. 78.67 L N<sub>2</sub>O to molecules N<sub>2</sub>O

$$78.67 \text{ L N}_2\text{O} \times \frac{1 \text{ mol N}_2\text{O}}{22.4 \text{ L N}_2\text{O}} \times \frac{6.02 \times 10^{23} \text{ molecules N}_2\text{O}}{1 \text{ mol N}_2\text{O}} = \boxed{2.11 \times 10^{24} \text{ molecules N}_2\text{O}}$$

6.  $7.5 \times 10^{24}$  molecules NO<sub>3</sub> to L NO<sub>3</sub>

$$7.5 \times 10^{24} \text{ molecules NO}_3 \times \frac{1 \text{ mol NO}_3}{6.02 \times 10^{24} \text{ molecules NO}_3} \times \frac{22.4 \text{ L NO}_3}{1 \text{ mol NO}_3} = \boxed{279 \text{ L NO}_3}$$

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7.  $6.41 \times 10^{25}$  atoms Rn to L Rn

$$6.41 \times 10^{25} \text{ atoms Rn} \times \frac{1 \text{ mol Rn}}{6.02 \times 10^{23} \text{ atoms Rn}} \times \frac{22.4 \text{ L Rn}}{1 \text{ mol Rn}} = \boxed{2385 \text{ L Rn}}$$

8. 741 L He to atoms He

$$741 \text{ L He} \times \frac{1 \text{ mol He}}{22.4 \text{ L He}} \times \frac{6.02 \times 10^{23} \text{ atoms He}}{1 \text{ mol He}} = \boxed{1.99 \times 10^{25} \text{ atoms He}}$$

9. 110 g CH<sub>4</sub> to L CH<sub>4</sub>

$$110 \text{ g CH}_4 \times \frac{1 \text{ mol CH}_4}{16.05 \text{ g CH}_4} \times \frac{22.4 \text{ L CH}_4}{1 \text{ mol CH}_4} = \boxed{154 \text{ L CH}_4}$$

$1 \text{ C} \times 12.01 = 12.01 \text{ g}$   
 $4 \text{ H} \times 1.01 = 4.04 \text{ g}$   
 $\hline 16.05 \text{ g}$

10. 413 g V<sub>2</sub>(SO<sub>3</sub>)<sub>5</sub> to form units

$$413 \text{ g V}_2(\text{SO}_3)_5 \times \frac{1 \text{ mol V}_2(\text{SO}_3)_5}{502.23 \text{ g V}_2(\text{SO}_3)_5} \times \frac{6.02 \times 10^{23} \text{ form unit V}_2(\text{SO}_3)_5}{1 \text{ mol V}_2(\text{SO}_3)_5} = \boxed{4.95 \times 10^{23} \text{ form unit V}_2(\text{SO}_3)_5}$$

$2 \text{ V} \times 50.94 = 101.88$   
 $5 \text{ S} \times 32.07 = 160.35$   
 $15 \text{ O} \times 16.00 = 240.00$   
 $\hline 502.23 \text{ g}$

11.  $5.40 \times 10^{21}$  molecules SiCl<sub>2</sub>F<sub>2</sub> to g SiCl<sub>2</sub>F<sub>2</sub>

$$5.40 \times 10^{21} \text{ molec SiCl}_2\text{F}_2 \times \frac{1 \text{ mol SiCl}_2\text{F}_2}{6.02 \times 10^{23} \text{ molec SiCl}_2\text{F}_2} \times \frac{136.99 \text{ g SiCl}_2\text{F}_2}{1 \text{ mol SiCl}_2\text{F}_2} = \boxed{1.23 \text{ g SiCl}_2\text{F}_2}$$

$1 \text{ Si} \times 28.09 = 28.09$   
 $2 \text{ Cl} \times 35.45 = 70.90$   
 $2 \text{ F} \times 19.00 = 38.00$   
 $\hline 136.99 \text{ g}$

12. 52.9 L C<sub>4</sub>H<sub>10</sub> to g C<sub>4</sub>H<sub>10</sub>

$$52.9 \text{ L C}_4\text{H}_{10} \times \frac{1 \text{ mol C}_4\text{H}_{10}}{22.4 \text{ L C}_4\text{H}_{10}} \times \frac{58.14 \text{ g C}_4\text{H}_{10}}{1 \text{ mol C}_4\text{H}_{10}} = \boxed{137 \text{ g C}_4\text{H}_{10}}$$

$4 \text{ C} \times 12.01 = 48.04$   
 $10 \text{ H} \times 1.01 = 10.10$   
 $\hline 58.14 \text{ g}$