

## Exercise 9.2a

### Stoichiometry

Name: \_\_\_\_\_

Date: \_\_\_\_\_ Per: \_\_\_\_\_

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***DIRECTIONS: Solve the following problems.***

1. Given the equation  $\text{NH}_3 + \text{HCl} \rightarrow \text{NH}_4\text{Cl}$ , find the number of formula units of  $\text{NH}_4\text{Cl}$  formed if 65.0 g of  $\text{NH}_3$  reacts with an excess of  $\text{HCl}$ .
2. Given the equation  $\text{WO}_3 + \text{H}_2 \rightarrow \text{W} + \text{H}_2\text{O}$ , find the mass of  $\text{W}$  formed if  $4.03 \times 10^{25}$  formula units of  $\text{WO}_3$  reacts with an excess of  $\text{H}_2$ .
3. Given the equation  $\text{Zn} + \text{CrCl}_3 \rightarrow \text{CrCl}_2 + \text{ZnCl}_2$ , find the number of formula units of  $\text{CrCl}_2$  formed if  $7.02 \times 10^{14}$  formula units of  $\text{CrCl}_3$  reacts with an excess of  $\text{Zn}$ .
4. Given the equation  $\text{RbCl} + \text{O}_2 \rightarrow \text{RbClO}_4$ , find the mass of  $\text{RbClO}_4$  formed if  $5.00 \times 10^{20}$  formula units of  $\text{RbCl}$  reacts with an excess of  $\text{O}_2$ .
5. Given the equation  $\text{C}_3\text{H}_5(\text{NO}_3)_3 \rightarrow \text{N}_2 + \text{O}_2 + \text{CO}_2 + \text{H}_2\text{O}$ , find the mass of  $\text{CO}_2$  formed if 5.62 g  $\text{C}_3\text{H}_5(\text{NO}_3)_3$  decomposes.

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6. Given the equation  $\text{NH}_3 + \text{HCl} \rightarrow \text{NH}_4\text{Cl}$ , find the mass of  $\text{NH}_3$  needed to form 15.0 g  $\text{NH}_4\text{Cl}$ .
7. Given the equation  $\text{WO}_3 + \text{H}_2 \rightarrow \text{W} + \text{H}_2\text{O}$ , find the mass of  $\text{WO}_3$  needed to form  $7.30 \times 10^{21}$  formula units of W.
8. Given the equation  $\text{Zn} + \text{CrCl}_3 \rightarrow \text{CrCl}_2 + \text{ZnCl}_2$ , find the mass of  $\text{ZnCl}_2$  formed if  $1.20 \times 10^{24}$  formula units of  $\text{CrCl}_3$  reacts with an excess of Zn.
9. Given the equation  $\text{RbCl} + \text{O}_2 \rightarrow \text{RbClO}_4$ , find the mass of  $\text{O}_2$  necessary to completely react 87.5 g RbCl.