Worksheet: Mole/Mole Problems

Answer each of the following questions using the equation provided. BE SURE TO BALANCE EACH EQUATION BEFORE SOLVING ANY PROBLEMS. SHOW ALL WORK.

1. \( \text{NO} \, + \, \text{O}_2 \, \rightarrow \, \text{NO}_2 \)
   
   a. 2 moles of NO will react with ______ mole(s) of \( \text{O}_2 \) to produce ______ mole(s) of \( \text{NO}_2 \).
   
   b. \( \text{? moles NO}_2 \, = \, 3.6 \, \text{moles O}_2 \times \frac{\text{moles NO}_2}{\text{moles O}_2} = \)
   
   c. How many moles of NO must react to form 4.67 moles of \( \text{NO}_2 \)?

2. \( \text{NH}_3 \, + \, \text{O}_2 \, \rightarrow \, \text{N}_2 \, + \, \text{H}_2\text{O} \)
   
   a. 20 moles of \( \text{NH}_3 \) are needed to produce ______ moles of \( \text{H}_2\text{O} \).
   
   b. How many moles of \( \text{N}_2 \) will be produced if 3.5 moles of \( \text{O}_2 \) react?
3. \[ \text{___AlF}_3 + \text{___O}_2 \rightarrow \text{___Al}_2\text{O}_3 + \text{___F}_2 \]

a. 20 moles of AlF\(_3\) will produce ______ moles of F\(_2\).

b. ______ moles of AlF\(_3\) will react with 0.6 moles of O\(_2\).

4. \[ \text{___C}_3\text{H}_8 + \text{___O}_2 \rightarrow \text{___CO}_2 + \text{___H}_2\text{O} \]

a. How many moles of oxygen react with 11 moles of C\(_3\)H\(_8\)?

b. How many moles of CO\(_2\) are produced if 3.5 moles of water are produced?

5. \[ \text{___O}_2 + \text{___Fe} \rightarrow \text{___Fe}_2\text{O}_3 \]

a. Fill in the following word equation--_______ moles of oxygen gas react with _______ moles of iron to produce _______ moles of iron (III) oxide.

b. _______ moles of O\(_2\) are required to produce 3.0 moles of iron (III) oxide.