1. Consider the following equation:

\[ \text{NH}_4\text{NO}_3 (s) \rightarrow \text{N}_2\text{O} (g) + \text{H}_2\text{O} (g) \]

a. (1 point) Write the balanced equation.

b. (1 point) If 7.0-mol of NH\(_4\)NO\(_3\) are completely reacted, how many moles of N\(_2\)O could be formed?

c. (1 point) If 7.0-mol of NH\(_4\)NO\(_3\) are completely reacted, how many moles of H\(_2\)O could be formed?

2. Consider the following equation:

\[ \text{Mg} (s) + \text{N}_2 (g) \rightarrow \text{Mg}_3\text{N}_2 (s) \]

a. (1 point) Write the balanced equation.

b. (2 points) If 13.0-mol of Mg are reacted with 4.0-mol of N\(_2\), which is the limiting reactant? Briefly explain how you determined that.

c. (2 points) If 13.0-mol of Mg are reacted with 4.0-mol of N\(_2\), how many moles of Mg\(_3\)N\(_2\) could be formed?

3. (2 points) Name both NH\(_4\)NO\(_3\) and Mg\(_3\)N\(_2\).
1. Consider the following equation:

\[ \text{NH}_4\text{NO}_3 (s) \rightarrow \text{N}_2\text{O} (g) + \text{H}_2\text{O} (g) \]

a. (1 point) Write the balanced equation.

b. (1 point) If 4.0-mol of NH\(_4\)NO\(_3\) are completely reacted, how many moles of N\(_2\)O could be formed?

c. (1 point) If 4.0-mol of NH\(_4\)NO\(_3\) are completely reacted, how many moles of H\(_2\)O could be formed?

2. Consider the following equation:

\[ \text{Ba} (s) + \text{N}_2 (g) \rightarrow \text{Ba}_3\text{N}_2 (s) \]

a. (1 point) Write the balanced equation.

b. (2 points) If 9.0-mol of Ba are reacted with 2.0-mol of N\(_2\), which is the limiting reactant?

c. (2 points) If 9.0-mol of Ba are reacted with 2.0-mol of N\(_2\), how many moles of Ba\(_3\)N\(_2\) could be formed?

3. (2 points) Name both NH\(_4\)NO\(_3\) and Ba\(_3\)N\(_2\).
1. Consider the following equation:

\[ \text{NH}_4\text{NO}_3 (s) \rightarrow \text{N}_2\text{O} (g) + \text{H}_2\text{O} (g) \]

a. (1 point) Write the balanced equation.

b. (1 point) If 12.0-mol of \( \text{NH}_4\text{NO}_3 \) are completely reacted, how many moles of \( \text{N}_2\text{O} \) could be formed?

c. (1 point) If 12.0-mol of \( \text{NH}_4\text{NO}_3 \) are completely reacted, how many moles of \( \text{H}_2\text{O} \) could be formed?

2. Consider the following equation:

\[ \text{Ca} (s) + \text{N}_2 (g) \rightarrow \text{Ca}_3\text{N}_2 (s) \]

a. (1 point) Write the balanced equation.

b. (2 points) If 8.0-mol of \( \text{Ca} \) are reacted with 2.0-mol of \( \text{N}_2 \), which is the limiting reactant?

c. (2 points) If 8.0-mol of \( \text{Ca} \) are reacted with 2.0-mol of \( \text{N}_2 \), how many moles of \( \text{Ca}_3\text{N}_2 \) could be formed?

3. (2 points) Name both \( \text{NH}_4\text{NO}_3 \) and \( \text{Ca}_3\text{N}_2 \).
1. Consider the following equation:

\[ \text{NH}_4\text{NO}_3 (s) \rightarrow \text{N}_2\text{O} (g) + \text{H}_2\text{O} (g) \]

a. (1 point) Write the balanced equation.

b. (1 point) If 4.0-mol of \( \text{NH}_4\text{NO}_3 \) are completely reacted, how many moles of \( \text{N}_2\text{O} \) could be formed?

c. (1 point) If 4.0-mol of \( \text{NH}_4\text{NO}_3 \) are completely reacted, how many moles of \( \text{H}_2\text{O} \) could be formed?

2. Consider the following equation:

\[ \text{Sr} (s) + \text{N}_2 (g) \rightarrow \text{Sr}_3\text{N}_2 (s) \]

a. (1 point) Write the balanced equation.

b. (2 points) If 15.0-mol of \( \text{Sr} \) are reacted with 6.0-mol of \( \text{N}_2 \), which is the limiting reactant?

c. (2 points) If 13.0-mol of \( \text{Sr} \) are reacted with 4.0-mol of \( \text{N}_2 \), how many moles of \( \text{Sr}_3\text{N}_2 \) could be formed?

3. (2 points) Name both \( \text{NH}_4\text{NO}_3 \) and \( \text{Sr}_3\text{N}_2 \).

Mg \( \rightarrow \) magnesium \quad N \( \rightarrow \) nitrogen \quad H \( \rightarrow \) hydrogen \quad O \( \rightarrow \) oxygen \quad Ba \( \rightarrow \) barium
Ca \( \rightarrow \) calcium \quad Sr \( \rightarrow \) strontium