Name _____ Period _____

Balancing Equations – PhET Simulator

Instructions: Open the ***Balancing Chemical Equations*** simulator via the PhET website or app. Choose the **"Introduction"** option. Choose the **Bar Graph** on the top-right corner in "**Tools**."

At the bottom of the page, choose the Make Ammonia option.

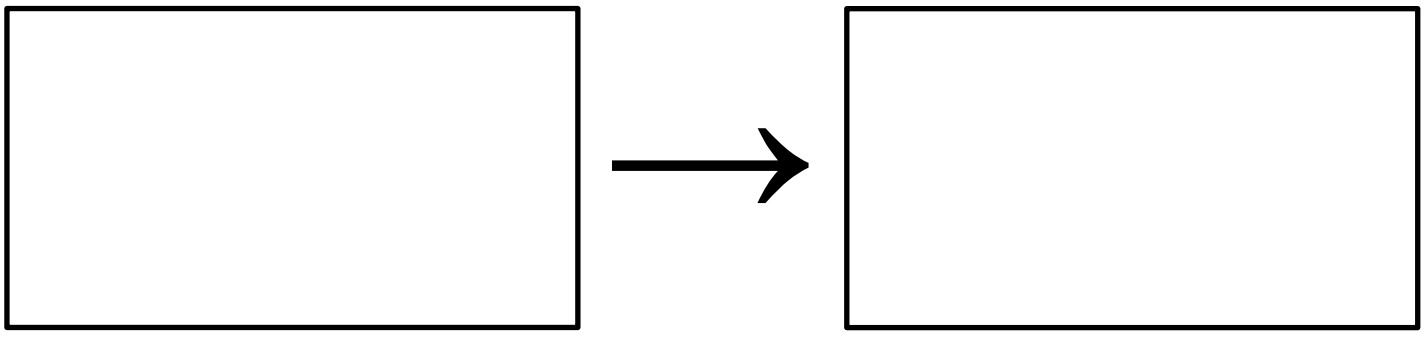
1) In the equation, is N_2 considered a **reactant** or a **product**? _____

2) In the equation, is NH_3 considered a **reactant** or a **product**? _____

3) **Balance** the equation using the simulator. Write the balanced coefficients below.

$$\_\_\_\ N_2 + \_\_\_\ H_2 \rightarrow \_\_\_\ NH_3$$

4) In the spaces below, draw the particles representing the **balanced equation**:



5) A bar graph is displayed above the particle diagrams. What do these bars tell us? (Choose the **Bar Graph** in the **"Tools"** menu if you haven't already)

6) In the **"Tools"** menu, choose the **Scale** icon. What does the scale tell us?

7) The **Law of Conservation of Mass** states that the **mass of the** _____ must be equal to the **mass of the** _____.

At the bottom of the page, choose the <u>Separate Water</u> option.

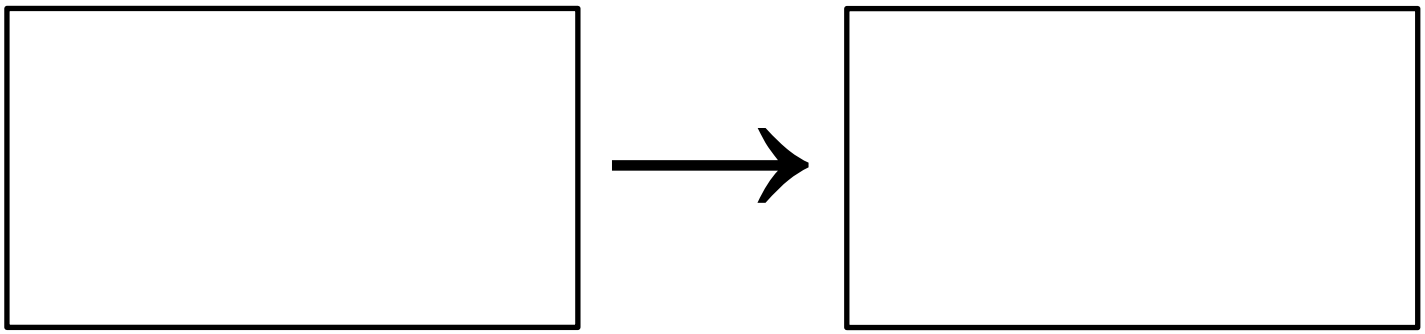
8) In the equation, is O_2 considered a **reactant** or a **product**? _____

9) In the equation, is H_2O considered a **reactant** or a **product**? _____

10) **Balance** the equation using the simulator. Write the final coefficients below.

$$\_\_\_\ H_2O \rightarrow \_\_\_\ H_2 + \_\_\_\ O_2$$

11) In the spaces below, draw the particles representing the **balanced equation**:



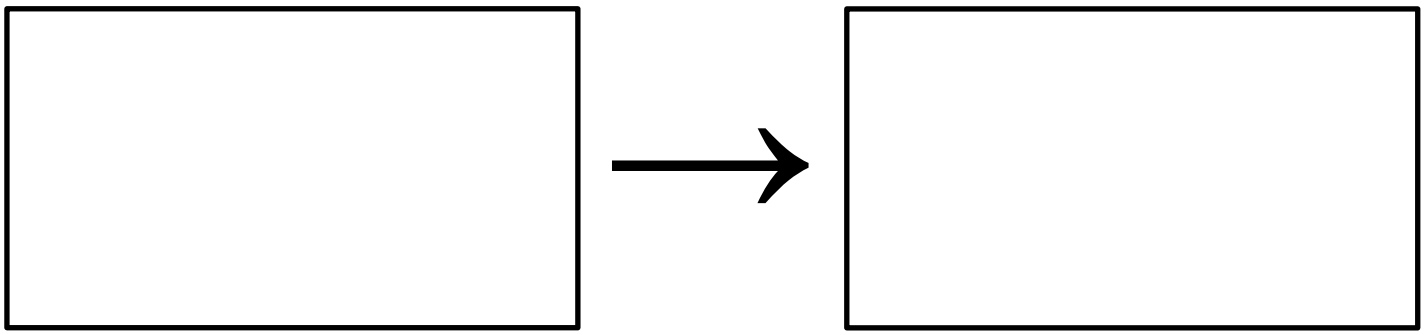
At the bottom of the page, choose the <u>Combust Methane</u> option.

12) In the equation, is CO_2 considered a **reactant** or a **product**? _____

13) **Balance** the equation using the simulator. Write the final coefficients below.

$$\_\_\_\ CH_4 + \_\_\_\ O_2 \rightarrow \_\_\_\ CO_2 + \_\_\_\ H_2O$$

14) In the spaces below, draw the particles representing the **balanced equation**:



Choose the Game option, then choose Level 1. Write each balanced equation below.

1)

2)

3)

4)

5)

Choose "Level 2." Write each completed and balanced equation below.

1)

2)

3)

4)

5)

Choose "Level 3." Write each completed and balanced equation below.

1)

2)

3)

4)

5)

Name _____ Period _____

Balancing Equations – Problems

Instructions: Balance the chemical equations below.

1) ____ CH_2O + ____ H_2 → ____ CH_3OH

2) ____ NH_3 → ____ N_2 + ____ H_2

3) ____ C_2H_6 → ____ C_2H_4 + ____ H_2

4) ____ N_2 + ____ O_2 → ____ N_2O

5) ____ CO → ____ C + ____ CO_2

6) ____ C_2H_2 + ____ H_2 → ____ C_2H_6

7) ____ CS_2 + ____ O_2 → ____ CO_2 + ____ SO_2

8) ____ CH_4 + ____ H_2O → ____ H_2 + ____ CO

9) ____ SO_2 + ____ H_2 → ____ H_2S + ____ H_2O

10) ____ CH_4 + ____ S → ____ CS_2 + ____ H_2S

11) ____ CO_2 + ____ H_2O → ____ C_2H_6 + ____ O_2

12) ____ NO_2 + ____ H_2O → ____ NH_3 + ____ O_2