Name: _____

Unit 06 - Reactions	6.1 Balancing Equations PhET Simulation

Pre-Lab

Before beginning, review the terms molecule and atom.

1. Define them
   a. Atom – _____
   b. Molecule -
   _____
2. Circle the *molecules* in the following list: N_2, H_2O, CH_4, CO_2, Fe
3. What atoms are present in ethanol, C_2H_5OH?
4. Water has 2 hydrogens and 1 oxygen. Write the formula for the molecule that has 2 hydrogens and 2 oxygens. Is this still water? Why or why not?
5. What do subscripts indicate to you – use C_2H_5OH to help you explain your answer?

Load the simulation Balancing Chemical Equations (Google: pHET balancing equation)
http://phet.colorado.edu/en/simulation/balancing-chemical-equations

Explore the ***Balancing Chemical Equations*** simulation (go to the "introduction" first). Start with a "1" in front of each compound first.

6. What are the different ways that the simulation indicates when an equation is balanced? (look at the tools)

7. Click on the "graph" button under "tool". Then, for each ***balanced*** reaction, indicate the total number of *ATOMS* in the table below.

Make Ammonia

Reactants			Products	
Number of N	Number of H		Number of N	Number of H
25				

Separate Water

Reactants			Products	
Number of H	Number of O		Number of H	Number of O

Combust Methane

Reactants				Products		
Number of C	Number of H	Number of O		Number of C	Number of H	Number of O

8. Is the number of total MOLECULES on the left side of a balanced equation always equal to the number of total MOLECULES on the right side of the equation? Give an example.

9. Is the number of *total* ATOMS on the left side of a balanced equation always equal to the number of total ATOMS on the right side of the equation?

10. Play level 1 of the balancing equation game. Write down EACH (there are 5) equation after you have correctly balanced it.
    a.

    b.

    c.

    d.

    e.

11. In this simulation:
    a. Were you able to use non-integer numbers (like ½ or 0.43) for the coefficients in a balanced equation? Why do you think this is?

    b. Which of the following are coefficients you could use in a balanced equation?
    ☐ ½ ☐ ¾ ☐ 1 ☐ 2