Name ______________________________ Teacher ________________ Date __________

Activity 3.4: Molecular Models for Soda Water Fizzing Worksheet

You will use models to learn about soda water fizzing at the atomic-molecular scale, as you continue to look for answers to “unanswered questions” from your investigation.

A. Introduction

“Carbonated water” gets its name from a weak acid called carbonic acid (H_2CO_3). That’s what gives soda its sharp, “fizzy” taste. Use the molecular models to show how carbonic acid can break up into molecules of water and carbon dioxide when soda water loses its fizz.

B. Using molecular models to show the chemical change

Work with your partner to make a model of the reactant molecule, carbonic acid.

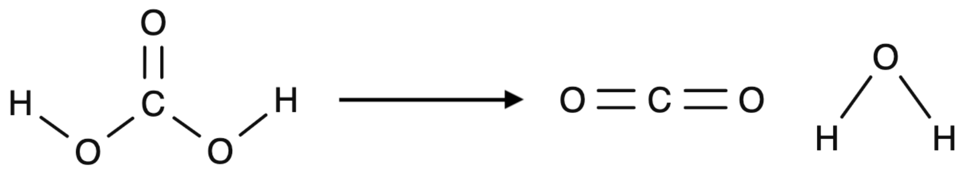
1. □ Make a model of a carbonic acid molecule (H_2CO_3) and put it on the *reactant* side of the *Molecular Models Placemat*.
2. □ When you are finished creating the reactant molecule (H_2CO_3), put away all extra pieces that you didn’t use from the molecule kit. <u>This is an important step!</u>

Show how the atoms of the reactant molecule can come apart and recombine into product molecules: carbon dioxide and water.

3. □ Take the carbonic acid molecule apart and recombine the atoms into carbon dioxide (CO_2) and water (H_2O) molecules. Put these molecules on the *product* side of the *Molecular Models Placemat.*

C. Atoms last forever!

Account for all the atoms in your models. Then answer the "Check Yourself" questions.



(Reactants) (Products)

1. Circle all of the Carbon ATOMS in the reactants. How many are there? ___
2. Circle all of the Carbon ATOMS in the products. How many are there? ___

3. Underline all of the Hydrogen ATOMS in the reactants. How many are there? ___
4. Underline all of the Hydrogen ATOMS in the products. How many are there? ___

5. Put a square around all of the Oxygen ATOMS in the reactants. How many are there? ___
6. Put a square around all of the Oxygen ATOMS in the products. How many are there? ___

Check Yourself!

1. How do we know that no matter has been lost in the reaction?

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2. Why do the numbers of atoms have to stay the same?

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D. Writing the chemical equation

Use the molecular formulas (H_2CO_3, CO_2, H_2O) and the yield sign ($\rightarrow$) to write a balanced chemical equation for the reaction:

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