Counting Atoms and Determining whether Equations are Balanced or Unbalanced

Name: _____
Date: _____
Period: _____ Page: _____

Objective: _____
_____

Atom/Element: _____
_____

Molecule/Compound: _____
_____
_____

Reactant: _____
_____

Product: _____
_____

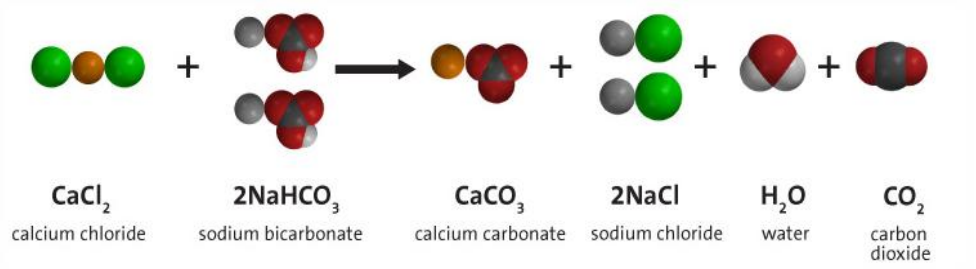
Subscript: _____
_____

Coefficient: _____
_____

Directions: In this activity, what you will be doing is using different colored squares to model different atoms to form the molecules in different chemical equations. Use the following directions to guide you through the activity.

1. The following atoms are represented by the following colors: **pink = oxygen (O), purple = carbon (C) white = hydrogen (H), yellow = sodium (Na), orange = calcium (Ca), and green = chlorine (Cl)**
2. Please share the atoms with your table. You may not need all of the different types of atoms.
3. Pull out the atoms you need for the reactant side, and create a model for each reactant molecule (left side of equation). Count out the amount of atoms you have in your reactant side of the equation .
4. Pull out the atoms you need for the product side, and create a model for each product molecule (right side of equation). Count out the amount of atoms you have in your product side of the equation.
5. Determine whether your equation is balanced or not. If it is balanced, you should have the same number of atoms for each atom type.
6. Answer the questions in complete sentences and define the words not mentioned in the beginning of the lesson.

Calcium Chloride and Sodium Bicarbonate



$CaCl_2$	$2NaHCO_3$	$CaCO_3$	$2NaCl$	H_2O	CO_2
calcium chloride	sodium bicarbonate	calcium carbonate	sodium chloride	water	carbon dioxide

How many of each type of atom appears on each side of the chemical equation?		
Atom	**Reactant side**	**Product side**

1. Is the equation balanced or not?

_____

_____

2. How do you know your equation is balanced or not?

_____

_____

3. If an equation does not have a balanced number of atoms on both the product and reactant sides of the chemical equation, how can balance the equation?

_____

_____

4. Why do you think we used different colors to represent the different atoms?

_____

_____

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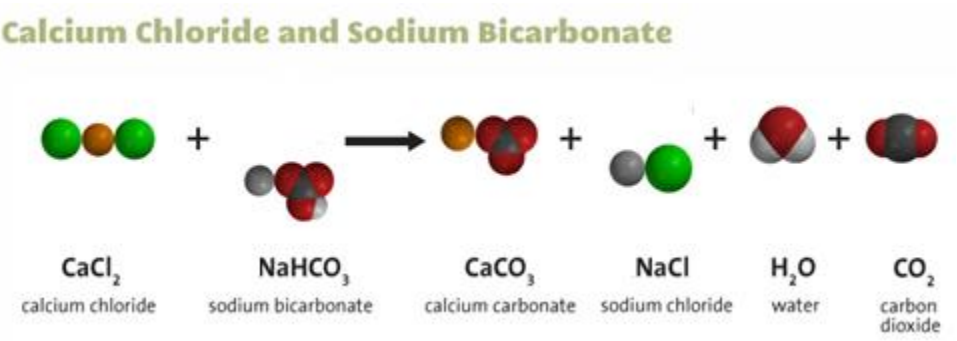
Directions: In this activity, what you will be doing is using different colored squares to model different atoms to form the molecules in different chemical equations. Use the following directions to guide you through the activity.

7. The following atoms are represented by the following colors: **pink = oxygen (O), purple = carbon (C) white = hydrogen (H), yellow = sodium (Na), orange = calcium (Ca), and green = chlorine (Cl)**
8. Please share the atoms with your table. You may not need all of the different types of atoms.
9. Pull out the atoms you need for the reactant side, and create a model for each reactant molecule (left side of equation). Count out the amount of atoms you have in your reactant side of the equation .
10. Pull out the atoms you need for the product side, and create a model for each product molecule (right side of equation). Count out the amount of atoms you have in your product side of the equation.
11. Determine whether your equation is balanced or not. If it is balanced, you should have the same number of atoms for each atom type.
12. Answer the questions in complete sentences and define the words not mentioned in the beginning of the lesson.



How many of each type of atom appears on each side of the chemical equation?		
Atom	**Reactant side**	**Product side**

5. Is the equation balanced or not?

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_____

6. How do you know your equation is balanced or not?

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7. If an equation does not have a balanced number of atoms on both the product and reactant sides of the chemical equation, how can balance the equation?

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8. Why do you think we used different colors to represent the different atoms?

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16. Pull out the atoms you need for the product side, and create a model for each product molecule (right side of equation). Count out the amount of atoms you have in your product side of the equation.
17. Determine whether your equation is balanced or not. If it is balanced, you should have the same number of atoms for each atom type.
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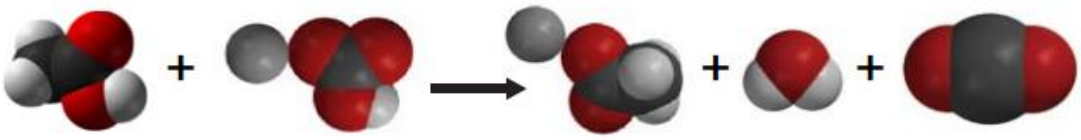

$C_2H_4O_2$ acetic acid + $NaHCO_3$ sodium bicarbonate → $NaC_2H_3O_2$ sodium acetate + H_2O water + CO_2 carbon dioxide

How many of each type of atom appears on each side of the chemical equation?		
Atom	**Reactant side**	**Product side**

9. Is the equation balanced or not?

_____

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10. How do you know your equation is balanced or not?

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11. If an equation does not have a balanced number of atoms on both the product and reactant sides of the chemical equation, how can balance the equation?

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12. Why do you think we used different colors to represent the different atoms?

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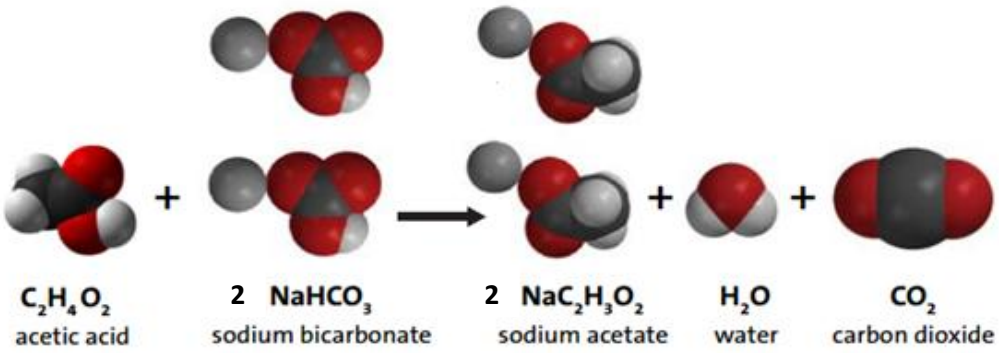
23. Determine whether your equation is balanced or not. If it is balanced, you should have the same number of atoms for each atom type.
24. Answer the questions in complete sentences and define the words not mentioned in the beginning of the lesson.



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Atom	**Reactant side**	**Product side**

13. Is the equation balanced or not?

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14. How do you know your equation is balanced or not?

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15. If an equation does not have a balanced number of atoms on both the product and reactant sides of the chemical equation, how can balance the equation?

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16. Why do you think we used different colors to represent the different atoms?

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