

CHEMICAL REACTIONS



**For
Special
Ed**

ENGAGING, HANDS-ON CHEMISTRY ACCESSIBLE TO ALL LEARNERS



For students who:

- are emerging or non-readers
- take alternate assessments
- are in special education
- short-attention span
- lack pre-requisite skills
- benefit from the use of pictures for support
- middle/high school

Chemical Reactions

By
Christa Joy
Special Needs for Special Kids



Christa Joy, Special Needs for Special Kids
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Also included in this resource as separate files:

- Lesson plans
- Links and directions to digital activities
- PowerPoint (this is the book in the lesson plans)
- Voice recorded PowerPoint
- Activities in black and white

This unit contains 12 days of material. There is a detailed lesson plan to help you make the most of everything in this unit, including how to add some group activities.

It comes in 2 separate files. One in color and one in black and white.

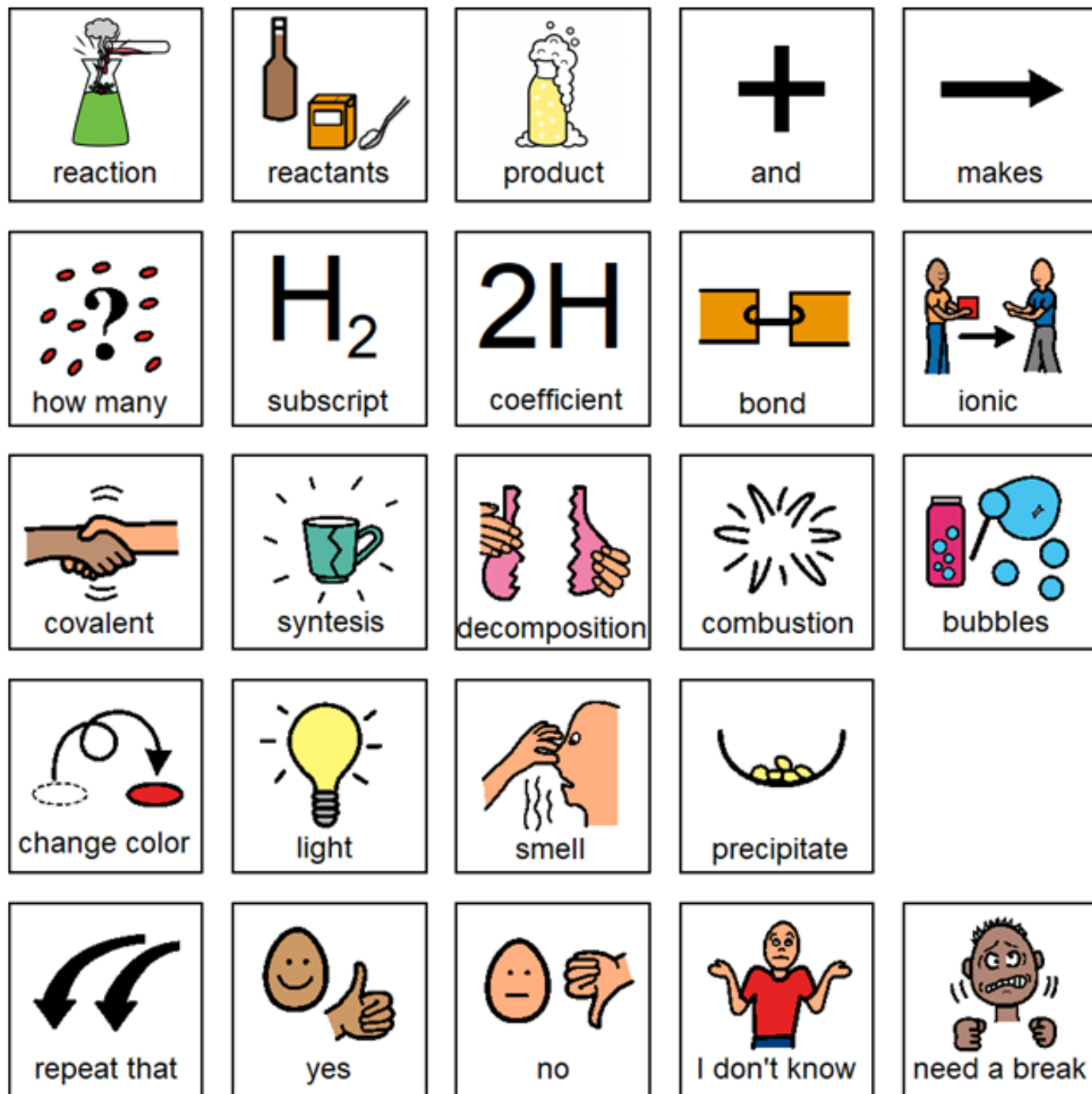
Quick Look

Day	Activity		Day	Activity
1	- PowerPoint - Vocab cards activity - Circle map		6	- PowerPoint - Vocab cards activity - Label chemical equations
2	- PowerPoint - Vocab cards activity - Circle map		7	- PowerPoint - Vocab cards activity - Label chemical equations
3	- PowerPoint - Vocab cards activity - Sorting activity		8	- PowerPoint - Ball-and-Stick models group activity - Sorting activities
4	- PowerPoint - Conservation of Matter group activity - Sequencing activity		9	- Po - Vc - pa - Cl
5	- PowerPoint - Vocab cards activity - Experiment		10	- Po - Vc - pa - Cl
6	- PowerPoint - Vocab cards activity - Sorting activity		11	- Po - Bi - Ex
			12	- As - Bi

Day 3		
Activity	Notes	
Read or listen to a recording of the PowerPoint (10 minutes)	- Read through the story, asking lots of questions - Continue to make connections between the PowerPoint and vocabulary board	
Vocabulary cards I Spy Game (10 minutes)	- Determine how many cards your students can handle in front of them. This can vary; some students may be able to have all the cards, so they may only be able to handle a field of 3-5 - This time, you can describe your card and see if students can figure out which card you are talking about	- ca set a set) - Vocabu board
Circle map review (5 minutes)	Review the circle map completed yesterday	Circle map activity completed yesterday
Sorting activity (10 minutes)	- Complete sorting activity on chemical and physical reactions - Add color coding if needed for more support - Make connections to PowerPoint and to real-life examples	- Sorting activity - Scissors - Glue
Sharing (10 minutes)	Each student shares their finished activity with the group using the communication method of their choice	- Completed activity - Communication devices

The lesson plans contain:

- Overall tips for teaching students with significant needs
- A quick look at what you will do each day
- Detailed instructions on how that day's lesson should run



This unit comes with a vocabulary board.

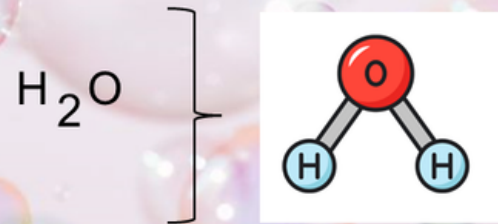
Vocabulary boards are great for ALL students, helping with participation and engagement in group discussions.

Tips on how to use in the unit!!

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There are some other special symbols used as well. A **subscript** shows **how many atoms** there are in a molecule. This is the formula for a water molecule.



The subscript of 2 tells you there are 2 atoms of hydrogen in one water molecule. If there is no subscript written, you assume it is 1. So, there is one atom of oxygen in a water molecule.

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These are not as easily recognized as the rust example. For example, hydrogen peroxide breaks apart into water and oxygen.



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There is a 50-page
PowerPoint for this unit using
simple text and photos.

It is also available as Google
Slides and a pre-recorded
MP4 file.

There are 16 vocabulary cards that come in color and black and white.

chemical reaction

A process where reactants change into new substances called products.



reactants

The starting substances in a chemical reaction.



product

A new substance made during a chemical reaction.



conservation of matter

Matter is not created or destroyed during a chemical reaction.



chemical bond

A force that holds atoms together.



ionic bond

Bond between two atoms where one atom gives up an electron and the other takes it.



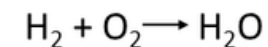
covalent bond

Bond between two atoms where electrons are shared.



chemical equation

A way to show a chemical reaction using chemical formulas and symbols.



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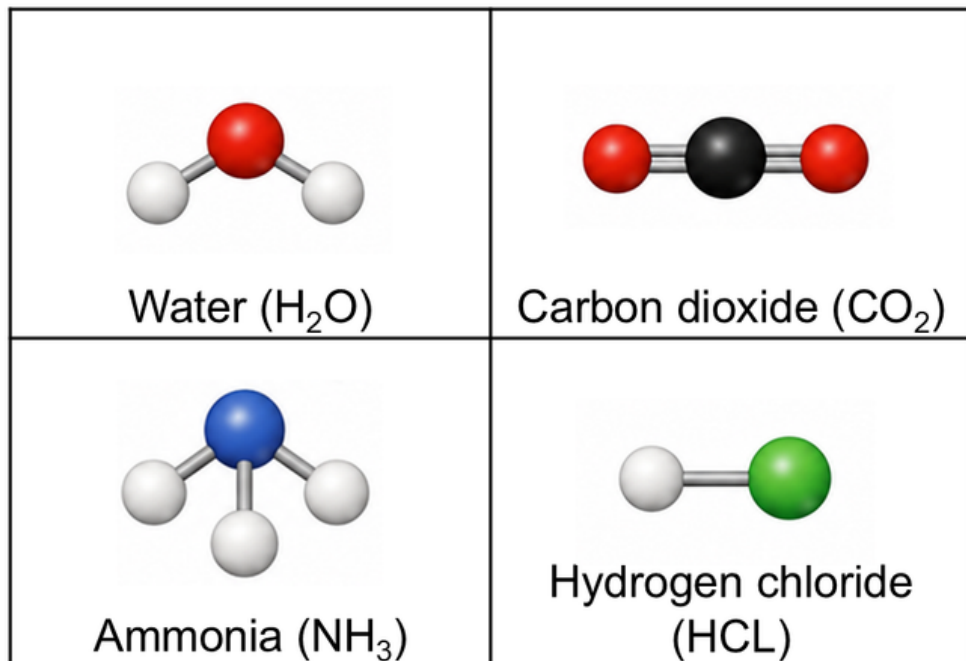
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- Included are suggestions for group activities to do with these each day.
- There is also a cut-and-paste activity.

Conservation of Matter Group Activity

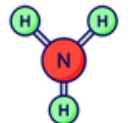
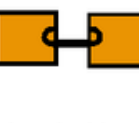
- Objective: Students work with manipulatives to identify reactants and products, demonstrating that the same number is present in both.
- Materials:
 - Counters (2 different colors)
 - Pom-poms (2 different colors)
 - Buttons (2 different colors)
 - 2 different types of small erasers
 - Lego blocks (2 different colors)
 - Chemical equation mats
- Directions:
 - Have students sort the manipulatives by color (or sameness) onto the two reactant mats.
 - Physically move the manipulatives so they are all on the product mat. Encourage students to arrange them in some sort of pattern. This will later reinforce that bonding is not random.

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Chemical Reactions

 combustion	 reactants	 compound	$2\text{H}_2\text{O}$ subscript
 covalent bond	 chemical reaction	$2\text{H}_2\text{O}$ chemical formula	 decomposition
 synthesis	$2\text{H}_2\text{O}$ coefficient	$\text{H}_2 + \text{O}_2 \rightarrow \text{H}_2\text{O}$ chemical equation	 element
 chemical bond	$=$ conservation of matter	 product	 ionic bond

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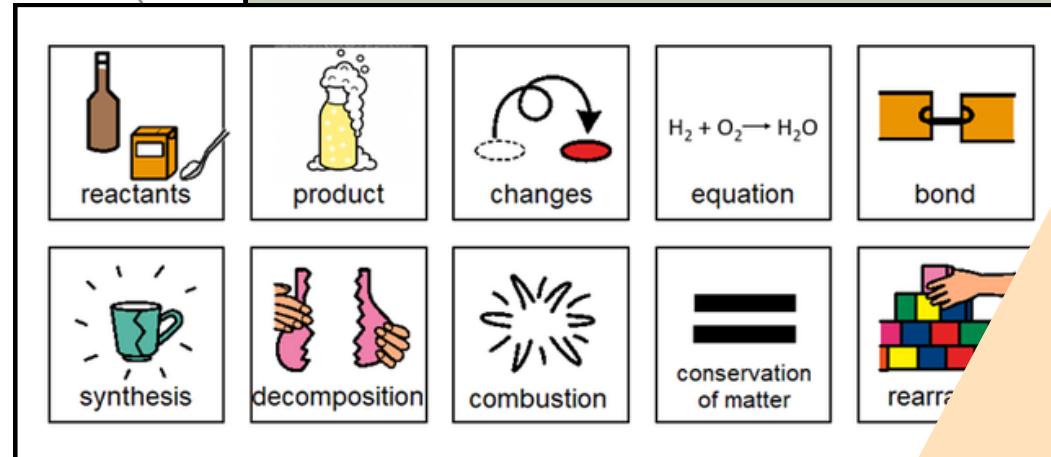
There are 3 group activities to review vocabulary.

- Conservation of Matter mats (reactants & products)
- Ball-and-Stick Models
- Bingo cards

SUGGESTIONS FOR USE IN SMALL GROUPS

ALSO IN BLACK & WHITE

ERRORLESS

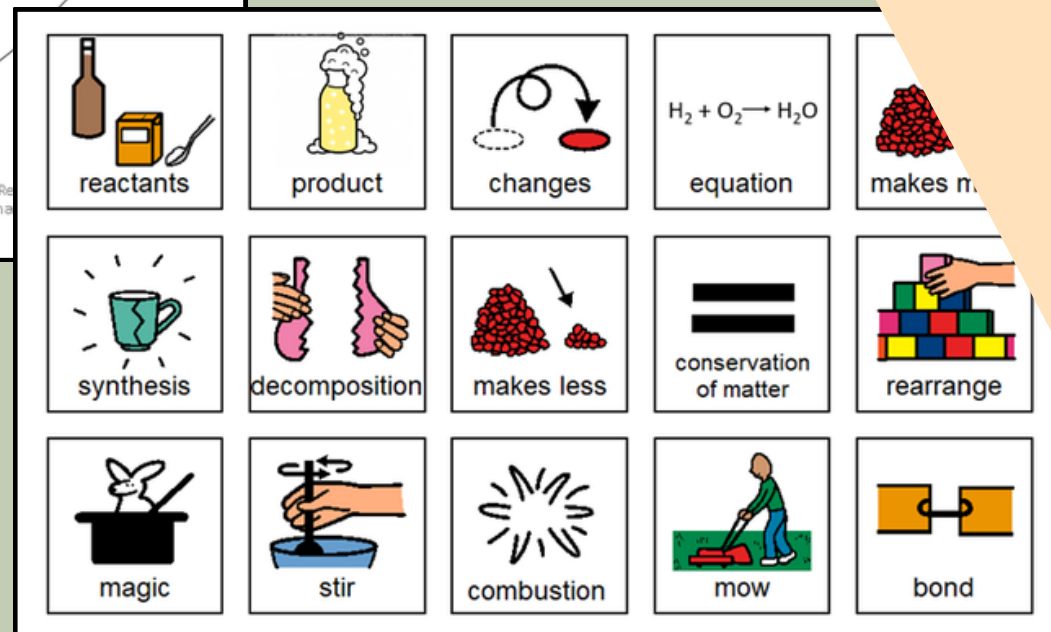


There are 2 circle maps.

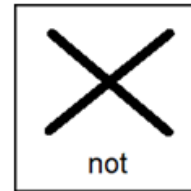
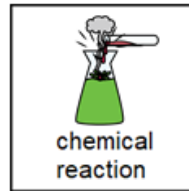
- Chemical reactions
- Signs of a chemical reaction

Circle maps are a great way for students to see the concept at a glance. There are 2 versions:

- Errorless
- Wrong answers mixed in



**WRONG ANSWERS
MIXED IN**



Students will sort examples of chemical reactions.

Suggestions for differentiation and an answer key are included.

3 WORKSHEETS

Students will sequence what happens in a chemical reaction. This is to demonstrate conservation of matter.

Suggestions for differentiation and an answer key are included.

Sequence the steps that occur when two reactants are mixed together.

Original atoms you are starting with. → The chemical reaction starts. → How you know a reaction is happening. → The atoms are still there, just rearranged into a new substance.

mix together reactants product smell changes

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Sequence the steps that occur when a log burns.

Original atoms (wood and air) you are starting with. → The chemical reaction starts. → How you know a reaction is happening. → The atoms are still there. They have been rearranged into new substances.

fire reactants product heat & light

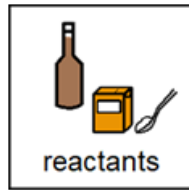
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Sequence the steps that occur when vinegar and baking soda are mixed.

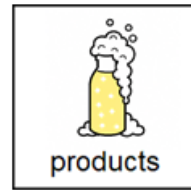
Original atoms you are starting with. → The chemical reaction starts. → How you know a reaction is happening. → The atoms are still there. They have been rearranged into new substances.

mix together reactants products bubbles form

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reactants



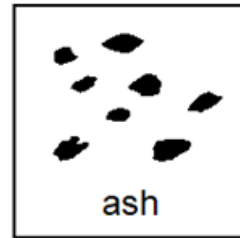
products



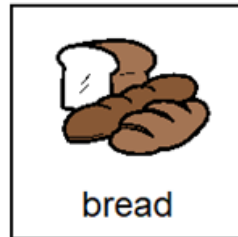
wood



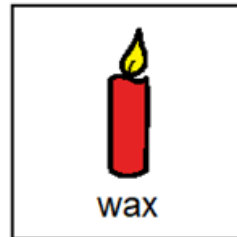
yeast



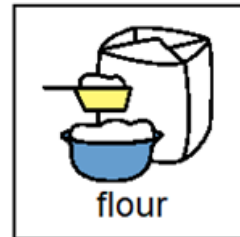
ash



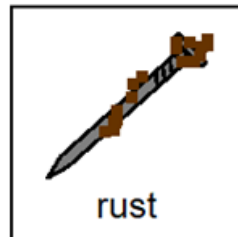
bread



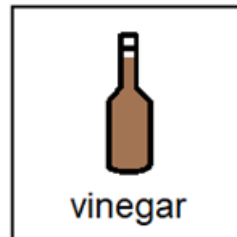
wax



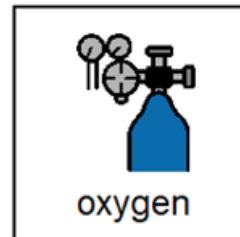
flour



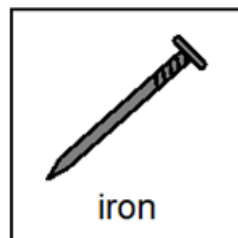
rust



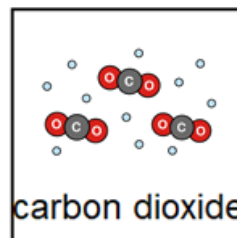
vinegar



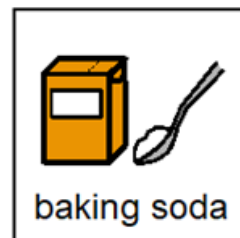
oxygen



iron



carbon dioxide

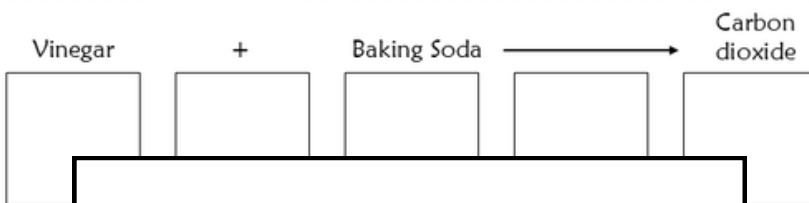
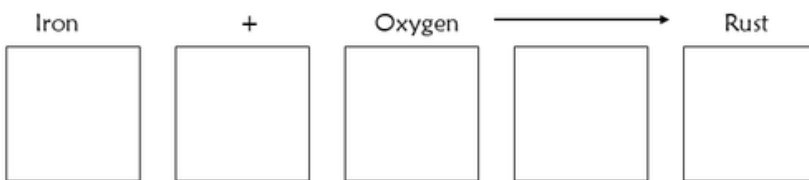
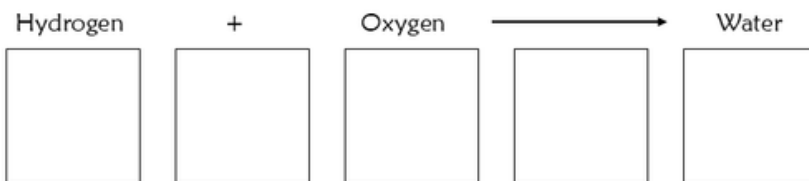


baking soda

Students will sort common reactants and products.

Suggestions for differentiation and an answer key are included.

Label the parts of the chemical equation.



Use to label the parts of the chemical equations.

 reactant	 reactant	 reactant	 reactant	 reactant
 reactant	 reactant	 reactant	 reactant	 reactant
and	and	and	and	and
makes	makes	makes	makes	makes
 product	 product	 product	 product	 product

For each equation:

1. Circle all of the subscripts.
2. Put a box around all of the coefficients.
3. Answer the questions.



How many hydrogen atoms are in the reactants?

How many hydrogen molecules are in the reactants?

How many oxygen atoms are in the reactants?

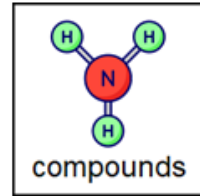
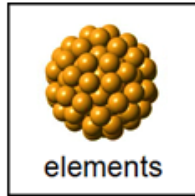
How many oxygen molecules are in the reactants?

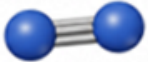
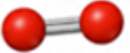
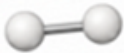
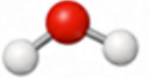
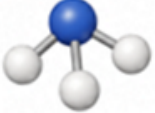
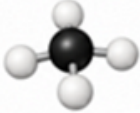
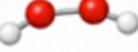
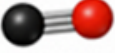
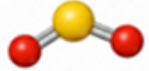
How many water molecules are in the products?

Coefficient = number of molecules
Subscript = number of atoms in one molecule

There are several activities where students practice labeling and reading chemical equations.

Suggestions for differentiation and an answer key are included.



 Helium (He)	 Oxygen (O ₂)	 Nitrogen (N ₂)	 Copper (Cu)
 Iron (Fe)	 Gold (Au)	 Hydrogen (H ₂)	 Neon (Ne)
 Water (H ₂ O)	 Carbon Dioxide (CO ₂)	 Ammonia (NH ₃)	 Hydrogen chloride (HCl)
 Methane (CH ₄)	 Hydrogen peroxide (H ₂ O ₂)	 Carbon Monoxide (CO)	 Sulfur Dioxide (SO ₂)

Using ball-and-stick models, students will sort elements and compounds.

Suggestions for differentiation and an answer key are included.

Chemical Reactions
Making Bubbles

My hypothesis

I think when

vinegar

and

baking soda

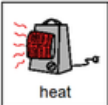
are

mixed together,

will form.

nothing

bubbles

heat

light

a new smell

Chemical Reactions
Making Bubbles

The Experiment:

1. In the plastic cup, pour ½ cup of vinegar.

1/2 cup

vinegar

2. Record your observations in the chart.

3. Add 1 tablespoon of baking soda to the cup. Stir with a plastic spoon. Wait one minute.

1 tablespoon

baking soda

4. Record your observations in the chart.

Chemical Reactions
Making Bubbles

Observations

	Color	Smell	Bubbles?	Temperature
 vinegar alone	Color in this square the color you observe			
 vinegar + baking soda	Color in this square the color you observe			

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Chemical Reactions
Making Bubbles

What I learned

When

vinegar

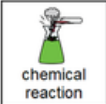
and

baking soda

are mixed together, a

occurs. I know this because

formed.

chemical reaction

bubbles

heat

light

a new smell

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This unit includes 2 experiments. It guides students through the process of creating and testing a hypothesis.

1. Making Bubbles

2. Making Rust

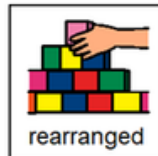
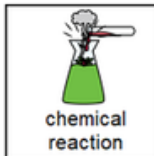
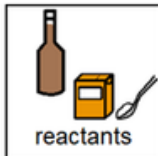
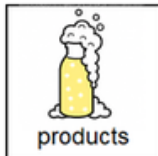
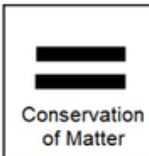
1. A is a process that changes one substance into a new one.

2. The substances you start with in a chemical reaction are .

3. The new substance created is the .

4. During a reaction, atoms are not created or destroyed.

5. means nothing is created or destroyed.



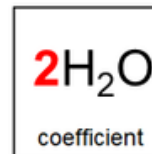
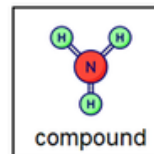
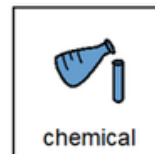
6. A equation uses symbols and formulas to show

7. The tells how many molecules are in

8. The tells how many atoms are in one

9. , color change and new smell are signs of a chemical reaction.

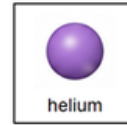
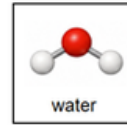
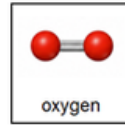
10. When two or more different elements bond together, they form a .



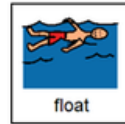
Close worksheets are a great informal assessment. This unit has 10 questions on chemical reactions.

Answer key included.

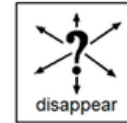
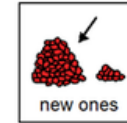
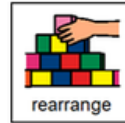
1. Circle the one that is a compound.



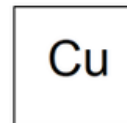
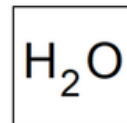
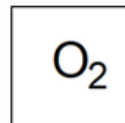
2. Circle something that might happen when there is a chemical reaction.



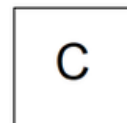
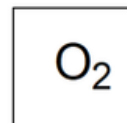
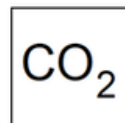
3. What happens to atoms during a chemical reaction?



4. What is a reactant in this equation: $2\text{H}_2 + \text{O}_2 \rightarrow 2\text{H}_2\text{O}$



5. What is the product in this equation: $\text{C} + \text{O}_2 \rightarrow \text{CO}_2$



Christa Joy, SNSK

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FINALLY the assessment!!

There are 3 versions.

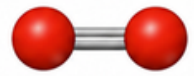
- 10 questions with 3 picture choices for each question
- cut out the answer choices and glue them on index cards
- traditional multiple choice

Answer key included.

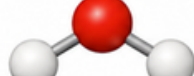
Print onto cardstock or mount on index cards. Cut pictures apart and show student answer choices for each question.

Version 1

Q 1



oxygen



water



helium

Q 2



float

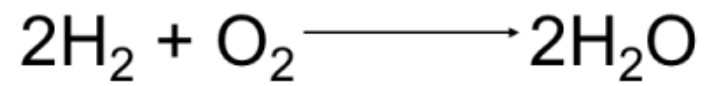


new smell



change shape

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How many hydrogen atoms are in the reactants?

How many hydrogen molecules are in the reactants?

How many oxygen atoms are in the reactants?

How many oxygen molecules are in the reactants?

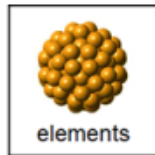
How many water molecules are in the products?

For each equation:

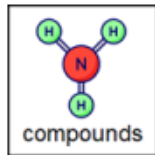
1. Circle all of the subscripts. 
2. Put a box around all of the coefficients. 
3. Answer the questions.

Type the answers in the blue boxes.

Coef
Subsc

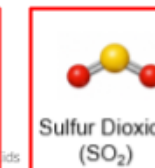
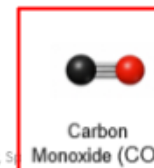
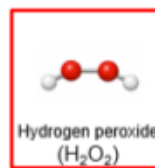
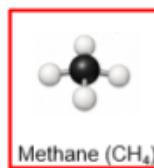
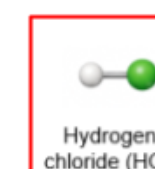
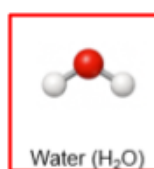
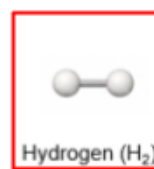
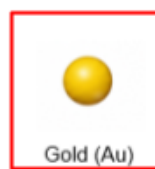
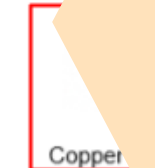
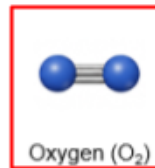
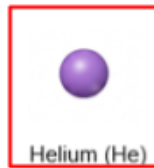


elements



compounds

Sort the following into the correct column depending on whether it is an element or a compound. If you are unsure, place it on the middle line.



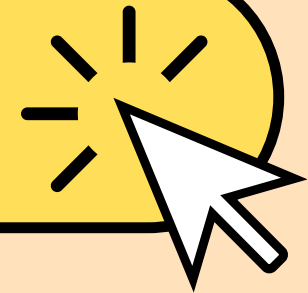
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The digital activities have students click and drag their answers.

Includes a differentiated set of slides.

**SAVE MONEY AND GET THIS AS PART OF
THE CHEMISTRY CURRICULUM.**

CLICK HERE



Christa Joy, M.Ed., DVM