Name_____

Physical and Chemical Changes CRCD Project

Collect & Relate

Learners research the factual building blocks of the project & collaborate and communicate what has been learned.

I. Physical and Chemical Properties and Changes

_____A. **Physical and Chemical Changes vodcast**
_____B. **Flame Test Demos: Identify the Unknowns** *Did this already*
_____C. **Chemical Reactions/Elements, Compounds, Mixtures labs**
_____D. **Chemical or Physical Change online practice**
_____E. **"Physical and Chemical Changes" Ediscio Flash Cards**
_____F. **Physical and Chemical Properties Standard Check** Percent Score _____

II. Chemical Bonding

_____A. **Chemical Bonding vodcast**
_____B. **Ionic and Covalent Bonding Worksheet**
_____C. **Chemical Bonding practice presentation**
_____D. **"Chemical Bonding" Ediscio Flash Cards**
_____E. **Chemical Bonding Standard Check** Percent Score _____

III. Stoichiometry

_____A. **Stoichiometry vodcast**
_____B. **"Balancing Chemical Reactions" BrainPOP Video/Quiz**
_____C. **Balancing Chemical Equations Practice**
_____D. **Balancing Chemical Equations Websites**

Create

Learners tangibly demonstrate their understanding.

_____Cr-1. **Hydrogen Prep Lab**

Donate

Learners find a forum to share their work with others.

_____D-1. **Portfolio Entry**
_____D-2. **Chemistry Ediscio review**
_____D-3. **Chemistry Jeopardy Review Game**
_____D-4. **Chemistry Post-Test** Percent Score _____

Collect & Relate

I.-A. Physical and Chemical Changes vodcast

Properties

Physical Properties	Chemical Properties
description:	description:
examples:	examples:

CHANGES

Physical CHANGES	Chemical CHANGES
description:	description: signs of chemical change:
examples:	examples:

I.-B. Flame Test Demos: Identify the Unknowns

Flame Tests Theory

When elements are heated to high temperatures, they may enter an excited state. In an excited state, electrons move to higher energy levels. The changes in energy that occur when the electrons return to their ground state cause the substance to emit light. The observed colors, or spectrum, are caused by the set of wavelengths emitted by the element. Since each set of elements emit a unique set of wavelengths, or emission spectra, analyzing the colors emitted can uniquely identify them. One such test is the flame test, in which a small amount of material is heated and the flame color observed.

Part One – Identifying Flames

Procedure:

1. Using a watch glass place about a ½ of spoon of crystals in a watch glass.
2. Add some distilled water to make a solution.
3. Place tip of nichrome wire in hydrochloric acid.
4. Place tip of nichrome wire in flame until there is a constant orange/yellow color.
5. Dip the tip of the nichrome wire into a metal ion solution to be tested and stir.
6. Place the tip of the nichrome wire in the flame.
7. Observe the color of the salt as it burns. Record in Table below
8. Clean the watch glass with distilled water and repeat 1-8 with the next sample.

Sample	Metal Ion	Flame Color
1	Ba^{+2}	

2	Ca^{+2}	
3	Li^{+}	
4	K^{+}	
5	Na^{+}	
6	Sr^{+2}	
7	Cu^{+2}	

Part Two – Identifying Metal Ions in Unknown Samples

Perform a flame test on each of the Unknown Samples provided and identify the probable metal Ion.

Unknown	Flame Color	Metal
1		
2		
3		
4		

I.-C. Chemical Reactions/Elements, Compounds, Mixtures labs

Find someone else who is also ready to complete this lab. *Together, read the questions carefully to complete the 2 lab activities and compare physical vs. chemical changes.*

Elements, Compounds, Mixtures Lab

Concepts: Elements, Compounds, Mixtures, chemical change

Materials: beaker, (cupric) copper sulfate, sodium chloride, aluminum, tap water, wood stir stick

(Don't mix anything together until the directions tell you to do so.)

1. Add (two spoonfuls) copper sulfate crystals to the tap water, stir and observe. Describe what happened.

2. Predict what would remain in the beaker if the water is evaporated.

3. Roll the aluminum into a loose cylinder and put it into the beaker. Record your observations.

4. ***Remove*** **the aluminum, add the (two spoonfuls) sodium chloride to the cup, and stir thoroughly. Put the aluminum back into the beaker and record your results.**

5. What are the indications of a chemical reaction?

6. Feel the beaker and foil. Was there an (heat) exothermic or (cold) endothermic reaction? How do you know?

Clean-up:

1. **Throw away the remaining silver aluminum foil and the stir stick.**
2. **Pour the remaining liquid into a bucket (it is labeled).**
3. **Rinse out the beaker and put supplies back where you found them.**

(I.-C. continued) Chemical Reactions Lab

Materials:

Calcium Chloride(CaCl2)

Baking Soda(NaHCO3)

Bromothymol Blue Solution

bottle lid

zip lock bag

What To Do:

1. Put 1/2 teaspoon of baking soda (NaHCO3) into a zip lock bag.
2. Put 1/2 teaspoon of Calcium Chloride (CaCl2) into the same bag.

A-1. What are your observations? Is there a chemical reaction taking place? Why or why not?

3. Measure 5 ml (one cap full 20 oz Aquafina) of Bromothymol Blue solution, and pour into a cap.
4. Put the cap of Bromothymol Blue into the bag **(standing upright)** and make sure the bag is well sealed.
5. Tip the cap of Bromothymol Blue solution.

Results:

A-2 Is there a chemical reaction taking place? _____

A-3 Why or why not?

A-4 List your observations of what took place.

A-5 Feel the bag. Was there an (cold) endothermic or (heat) exothermic reaction? Why or why not?

CLEAN-UP: Now clean up your area by cleaning out the bag with water.
Save the20 oz pop lid (top) and throw the bag away.

A-6 What happened when you added water to the bag?

I.-D. Chemical or Physical Change online practice

Go to http://www.quia.com/quiz/303980.html and try the quiz to practice identifying physical and

chemical changes.

I.-E. "Physical and Chemical Changes" Ediscio Flash Cards

Statistics:

# of flashcards known: _____ # of flashcards unknown: _____

I.-F. Physical and Chemical Properties Standard Check

What was your score on this standard check? _____

Which questions did you answer incorrectly? _____

Will you be retaking this standard check? _____

How did/can you master the concepts in this standard check? _____

_____

II.-A. Chemical Bonding vodcast

The notes for this are in the paper portion of this packet.

II.-B. Ionic and Covalent Bonding Worksheet

This is found in the paper portion, too. You probably saw it, didn't you.

II.-C. Chemical Bonding online presentation practice

Open this document and follow the directions given to practice the concepts that go along with chemical bonding. You can use scratch paper to jot down answers as you go through the powerpoint. When you finish, respond to the questions below.

1. Were you able to identify examples of ionic and covalent bonding correctly?

2. If you have questions about ionic and covalent bonding, what resources will you use to answer your questions?

II.-D. "Chemical Bonding" Ediscio Flash Cards

Statistics:

# of flashcards known: _____ # of flashcards unknown: _____

II.-E. Chemical Bonding Standard Check

What was your score on this standard check? _____

Which questions did you answer incorrectly? _____

Will you be retaking this standard check? _____

How did/can you master the concepts in this standard check? _____

_____

III.-A. Stoichiometry vodcast

Notes:

_____

_____

_____

_____

_____

Questions you will ask your teacher about for clarification:

_____

_____

III.-B. "Balancing Chemical Reactions" BrainPOP Video/Quiz

Go to BrainPOP and log in. Username is memmiddle and password is brainpop. Find the video called "Balancing Chemical Reactions", then watch it and learn. When finished, take the review quiz. Record the score you got on this practice quiz right here:_____

III.-C. Balancing Chemical Equations Practice

This is found on the paper portion of the CRCD. Some of these can be tough. Continue to work through it, and you'll be able to balance the reactants and products. It takes a lot of trial-and-error.

III.-D. Balancing Chemical Equations Websites

If you'd like to try some more stoichiometry, have at it. There are a few activities here.

http://funbasedlearning.com/chemistry/chemBalancer/default.htm
http://funbasedlearning.com/chemistry/chemBalancer2/ques1.htm
http://education.jlab.org/elementbalancing/index.html -- start with easy

Create

Cr-1. Hydrogen Prep Lab

For this "Create" portion of the CRCD, you will "create" some Hydrogen gas. You will then test for the presence of this gas by testing one of its chemical properties: ***flammability***. The write-up for this lab will be done on the paper portion of this CRCD.

Donate

D-1. Portfolio Entry

Your portfolio entry for this "Physical and Chemical Changes" CRCD will be focused on the Hydrogen Prep lab. You will have a great portfolio entry if you can answer some of these questions that follow:

1. What was the purpose of this lab? What did you do?
2. What were some of the properties (physical and chemical) of the reactants in this lab? What about the products?
3. What were some of the signs that a chemical reaction took place?
4. What was the Chemical Equation for this reaction? (You might want to display the reactants and products in the equation.)
5. Explain where the hydrogen gas went after it was produced, and how the flame and sound was produced.
6. Support your explanations with pictures taken during the lab, or with visuals that you might find on the internet.

D-2. Chemistry Ediscio review

Go back to the cardboxes that you have already studied once. Try each cardbox again to refresh your memory of the topics we've studied on chemistry. This will help you prepare for the Chemistry Post-Test.

Cardbox:	Periodic Table	Atoms	Isotopes & Ions	Elem, Comp, Mixt	Phys & Chem Changes	Chemical Bonding
Score:						

D-3. Chemistry Jeopardy Review Game

Open this document and start the slide show (click "Start presentation" at the top right). Play the Jeopardy Review Game with a partner to help you prepare for the unit posttest.

Your score: _____ *Partner's score:* _____

D-4. Chemistry Post-Test

What was your score on this test? _____

Which questions did you answer incorrectly? _____

Will you be retaking this test? _____

How did/can you master the concepts in this test? _____