iPad Pilot

Monday 1/30 to Friday 3/10

Takeaways

(1) Helped raise the bar of average work

(2) Positive impact on experiments and lab reports

(3) Effective use of feedback

(4) Increased ability of students to see iterations of their own work getting better and more accurate

Helped raise the bar of average work

Example 1

Step 1: Use the pattern to determine the type of reaction.

Step 2: Write the symbols for each substance. (**TIP**: Subscripts are only present when an atom is diatomic, a polyatomic ion, or crisscrossed charges in a compound.)

Step 3: Determine if the reaction is balanced by counting the total number of atoms on both sides of the equation. (**TIP**: Make a table if necessary to help visualize the number of atoms, like the simulation.)

Step 4: If the equation is unbalanced work out how many more atoms are needed. (**TIP**: Never balance by adding subscripts, balance by adding coefficients. Remember multiply coefficients by subscripts to determine the total number of atoms.)

Step 5: Write the balanced chemical equation.

Need to have
- Capital/lowercase
- no charge
- Subscipes are write corectly
- → not =

Type Synthesis Reaction

A + B → AB

Hydrogen + chlorine → hydrogen chloride

Cris Cross $H^{+1}Cl^{-1}$

$H_2 + Cl_2 \rightarrow 2HCl$

2H 2Cl

1H 1 Cl

2x1=2 2x1=2

Final $H_2 + Cl_2 \rightarrow 2HCl$

Example 1

Step 1: Use the pattern to determine the type of reaction.

Step 2: Write the symbols for each substance. (**TIP**: Subscripts are only present when an atom is diatomic, a polyatomic ion, or crisscrossed charges in a compound.)

Step 3: Determine if the reaction is balanced by counting the total number of atoms on both sides of the equation. (**TIP**: Make a table if necessary to help visualize the number of atoms, like the simulation.)

Step 4: If the equation is unbalanced work out how many more atoms are needed. (**TIP**: Never balance by adding subscripts, balance by adding coefficients. Remember multiply coefficients by subscripts to determine the total number of atoms.)

Step 5: Write the balanced chemical equation.

- Subscripts must be right
- NO charges in final answer

A + B → AB

Hydrogen + chlorine → hydrogen chloride

H^{+1} Cl^{-1}

$H_2 + Cl_2 \rightarrow 2HCl$

2H 2Cl

1 H/Cl

2x1=2 2x1=2

arrows not = signs

Example 1

Step 1: Use the pattern to determine the type of reaction.

Step 2: Write the symbols for each substance. (**TIP**: Subscripts are only present when an atom is diatomic, a polyatomic ion, or crisscrossed charges in a compound.)

Step 3: Determine if the reaction is balanced by counting the total number of atoms on both sides of the equation. (**TIP**: Make a table if necessary to help visualize the number of atoms, like the simulation.)

Step 4: If the equation is unbalanced work out how many more atoms are needed. (**TIP**: Never balance by adding subscripts, balance by adding coefficients. Remember multiply coefficients by subscripts to determine the total number of atoms.)

Step 5: Write the balanced chemical equation. → no charges in final equation

A + B → AB

Hydrogen + chlorine → Hydrogen Chloride

$H_2 + Cl_2 \rightarrow 2HCl$

Balence by adding in coeficients

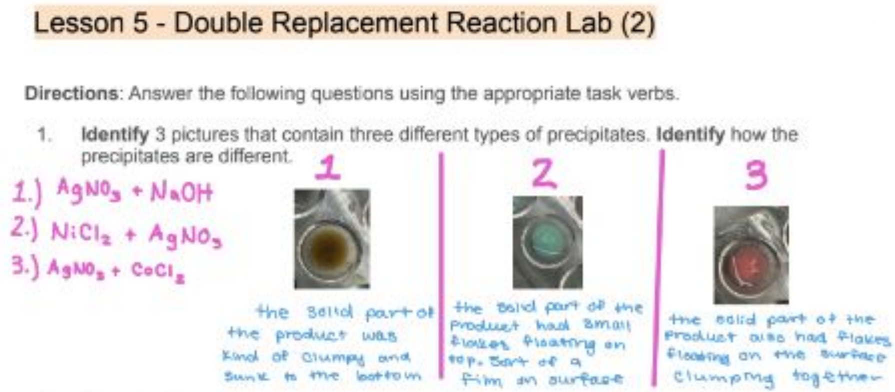
2H 2Cl

2x 1=2H

2x HCl

Positive impact on experiments and lab reports

Solution	NaCl	$K_2(HPO_4)$	KI	NaOH	$CoCl_2$	$AgNO_3$	$NiCl_2$	$CuSO_4$
NaCl								
$K_2(HPO_4)$								
KI								
NaOH								
$CoCl_2$								
$AgNO_3$								
$NiCl_2$								
$CuSO_4$								


Lesson 5 - Double Replacement Reaction Lab (2)

Directions: Answer the following questions using the appropriate task verbs.

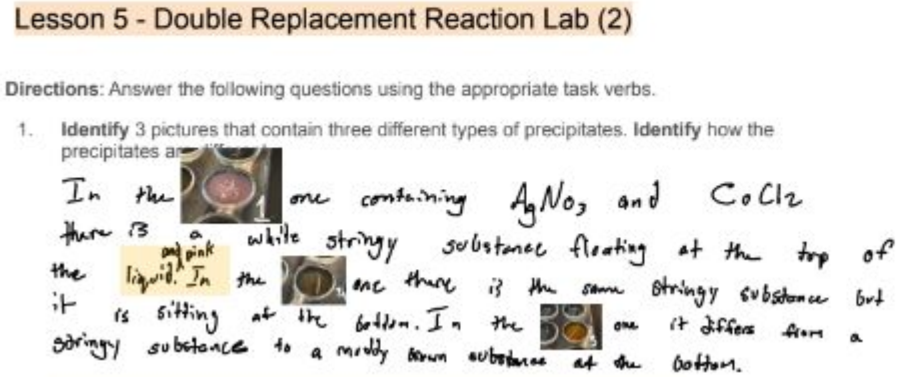
1. **Identify** 3 pictures that contain three different types of precipitates. **Identify** how the precipitates are different.

1.) $AgNO_3 + NaOH$
2.) $NiCl_2 + AgNO_3$
3.) $AgNO_3 + CoCl_2$

1
the solid part of the product was kind of clumpy and sunk to the bottom

2
the solid part of the product had small flakes floating on top. Sort of a film on surface

3
the solid part of the product also had flakes floating on the surface clumping together


Lesson 5 - Double Replacement Reaction Lab (2)

Directions: Answer the following questions using the appropriate task verbs.

1. **Identify** 3 pictures that contain three different types of precipitates. **Identify** how the precipitates are different.

In the 1 one containing $AgNo_3$ and $CoCl_2$ there is a white stringy substance floating at the top of the and pink liquid. In the one there is the same stringy substance but it is sitting at the bottom. In the one it differs from a stringy substance to a muddy brown substance at the bottom.

Effective use of feedback

Lesson 2 - Balancing Reactions Simulation

5. **Identify** if the total number of atoms on the left side of a balanced equation will always equal the number of total atoms on the right side of the equation?

Yes because if the number of atoms are equal on both sides it will balance. According to the chart in problem 4 the atoms are equal on left and right side.

6. Play level 1 of the balancing equation game. **Identify** 3 strategies used to balance chemical equations?

- Count # of atoms in reaction
- Are the number of atoms on the reactant + product side equal.
- If they aren't equal change the coefficients - multiply coefficients by subscript.

7. Play level 2 of the balancing equation game. Balance the equations in the sim using from Level 1, and adding new strategies as needed. ...

Each group member ...

Lesson 2 - Balancing Reactions Simulation (2)

5. **Identify** if the total number of atoms on the left side of a balanced equation will always equal the number of total atoms on the right side of the equation?

Yes the total number of atoms will always be equal because the products must equal the mass of the reactants according to the Law of Conservation of Mass.

according to the table in #4

6. Play level 1 of the balancing equation game. **Identify** 3 strategies used to balance chemical equations?

1. Count atoms and make sure its same amount on each side
2. ~~Trial and error~~ Are the number of atoms on reactant + product side equal?
3. ~~Making the colors match~~ If not equal... change coefficients - multiply coefficients by subscripts

Lesson 3 - Synthesis, Decomposition, and Combustion Practice (1)

4 point ① Patter ① Word ① Chemical equ ① Balnce

Directions: Complete the following word equations. Then write and balance the chemical equation.

1. Copper (II) + sulfur → Copper(II) sulfide — Synthesis — $Cu_2 + S \rightarrow AB$ — $Cu + S \rightarrow CuS$ — Cross $Cu^{+2} + S^{-2}$, CuS — 4/4

2. Silver (I) + bromine → Silver (I) bromide — Synthesis — $2Ag + Br_2 \rightarrow 2AgBr$ — $Ag^{+1} + Br^{-1}$ — forgot to erease charge — 3/4

3. Chromium (II) + nitrate → Chromium (II) nitrate — Synthesis — $Cr + 2(NO_3) \rightarrow Cr(NO_3)_2$ — Cross $Cr^{+2}(NO_3)^{-1}$ — forgot to earse charge — 3/4

4. Aluminum + bromine → Aluminum bromide — Synthesis — $2Al + 3Br_2 \rightarrow 2AlBr_3$ — Cross $Al^{+3} + Br^{-1}$ — forgot to rewrite the compound name — 3/4

5. Hydrogen + oxygen → Hydrogen oxyide — Synthesis — $2H_2 + O_2 \rightarrow 2H_2O$ — $H^{-1} + O^{-2}$ — 4/4

Lesson 5 - Double Replacement Reaction Lab (4)

Directions: For each of the reactions below (1) predict the products, (2) determine the precipitate, (3) determine the spectator ions, (4) balance the reaction. Use your periodic table, polyatomic ion list, and solubility rules.

1. $3Ca(OH)_{2\,(aq)} + 2H_3PO_{4\,(aq)} \rightarrow$ $3Ca(OH)_2(aq) + 2H_3PO_4(aq) \rightarrow Ca_3(PO_4)_2(s) + 6HOH(l)$ — 4/4

2. $K_2CO_{3\,(aq)} + BaBr_{2\,(aq)} \rightarrow$ $K_2CO_3(aq) + BaBr_2(aq) \rightarrow 2KBr(aq) + BaCO_3(s)$ — 2/4

3. $Cs_3(PO_4)_{(aq)} + (NH_4)_2S_{(aq)} \rightarrow$ they are both (aq) so there is no reaction — no reaction

4. $AgNO_{3\,(aq)} + RbCl_{(aq)} \rightarrow$ $AgNO_3(aq) + RbCl(aq) \rightarrow AgCl(s) + RbNO_3(aq)$ — 4/4

5. $Al_2(SO_4)_{3\,(aq)} + Li_3PO_{4\,(aq)} \rightarrow$ $Al_2(SO_4)_3(aq) + 2Li_3PO_4(aq) \rightarrow 2AlPO_4(s) + 3Li_2SO_4(aq)$ — 4/4

Increased ability of students to see iterations of their own work getting better and more accurate

Lesson 6 - Video Assessment SRR and DRR Reactions (2)

GOAL: To create two videos explaining and showing how to:

(1) Solve and balance a **single replacement reaction**

Include the following:

_____ Definition

_____ Pattern

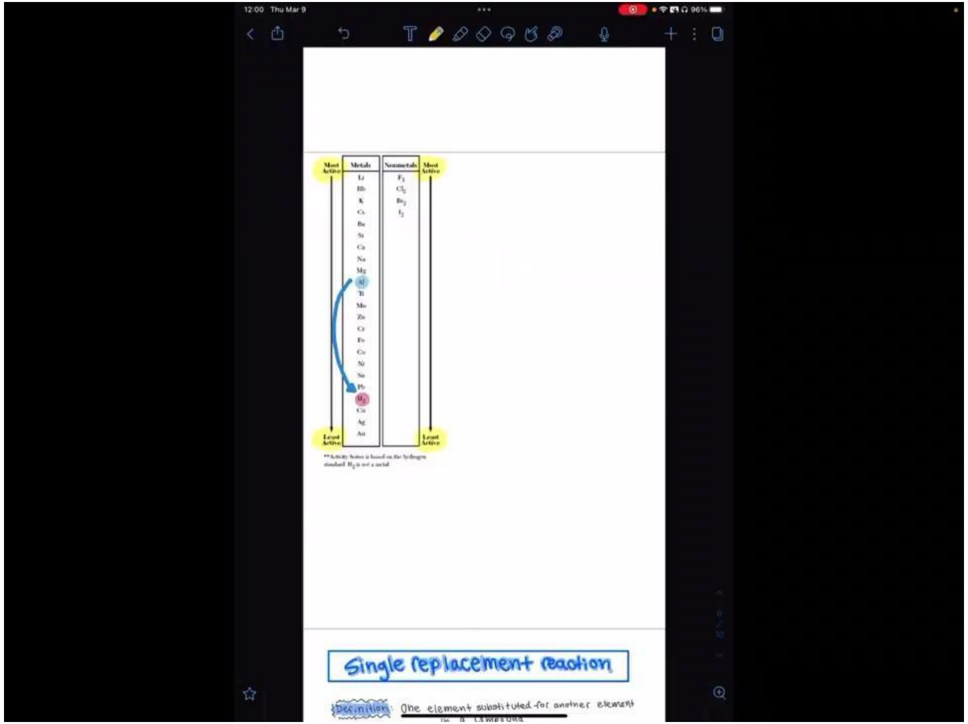
_____ Reactivity Series and how to use it

_____ Show and explain how you determined the products

_____ Show and explain how you balanced the chemical equation

_____ Use the following vocabulary words:

Chemical reaction, chemical equation, reactants, products, subscripts, coefficients, Law of Conservation of Matter/Mass, Single Replacement Reaction, Reactivity Series



Increased ability of students to see iterations of their own work getting better and more accurate

Lesson 6 - Video Assessment SRR and DRR Reactions (2)

GOAL: To create two videos explaining and showing how to:

(1) Solve and balance a **single replacement reaction**

Include the following:

_____ Definition

_____ Pattern

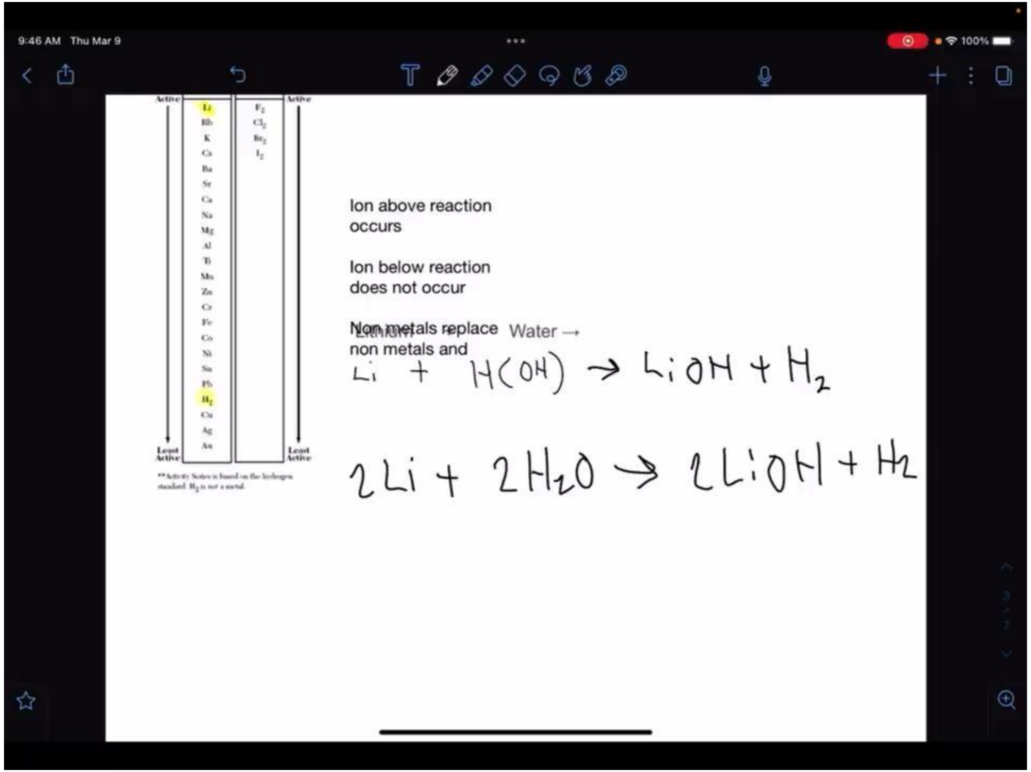
_____ Reactivity Series and how to use it

_____ Show and explain how you determined the products

_____ Show and explain how you balanced the chemical equation

_____ Use the following vocabulary words:

Chemical reaction, chemical equation, reactants, products, subscripts, coefficients, Law of Conservation of Matter/Mass, Single Replacement Reaction, Reactivity Series



Increased ability of students to see iterations of their own work getting better and more accurate

Lesson 6 - Video Assessment SRR and DRR Reactions (2)

GOAL: To create two videos explaining and showing how to:

(1) Solve and balance a **single replacement reaction**

Include the following:

_____ Definition

_____ Pattern

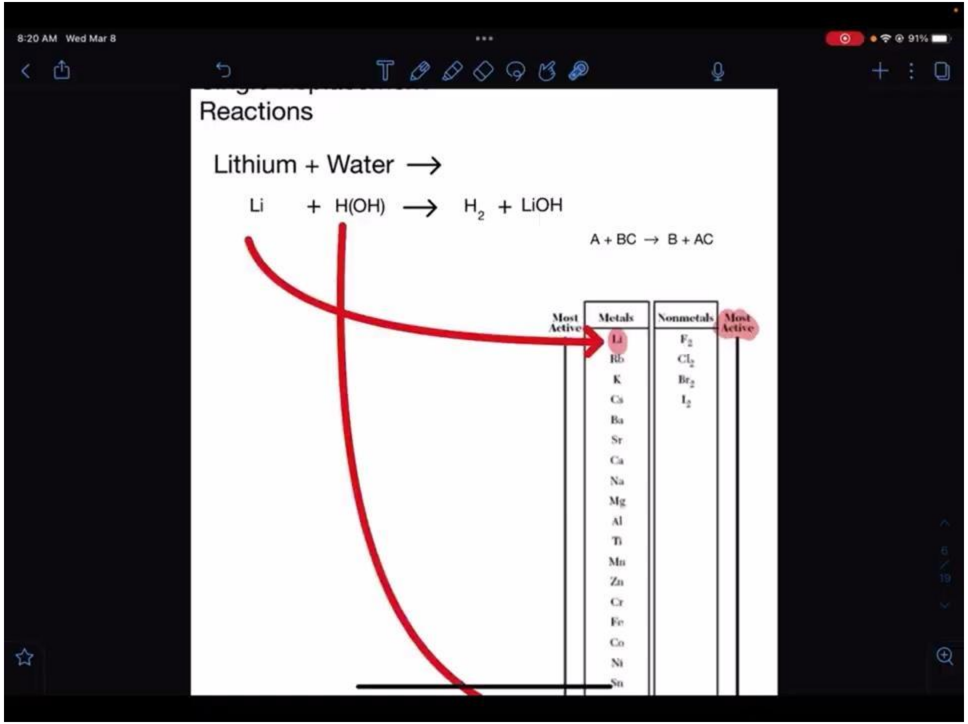
_____ Reactivity Series and how to use it

_____ Show and explain how you determined the products

_____ Show and explain how you balanced the chemical equation

_____ Use the following vocabulary words:

Chemical reaction, chemical equation, reactants, products, subscripts, coefficients, Law of Conservation of Matter/Mass, Single Replacement Reaction, Reactivity Series



Increased ability of students to see iterations of their own work getting better and more accurate

Lesson 6 - Video Assessment SRR and DRR Reactions (2)

GOAL: To create two videos explaining and showing how to:

(1) Solve and balance a **single replacement reaction**

Include the following:

_____ Definition

_____ Pattern

_____ Reactivity Series and how to use it

_____ Show and explain how you determined the products

_____ Show and explain how you balanced the chemical equation

_____ Use the following vocabulary words:

Chemical reaction, chemical equation, reactants, products, subscripts, coefficients, Law of Conservation of Matter/Mass, Single Replacement Reaction, Reactivity Series