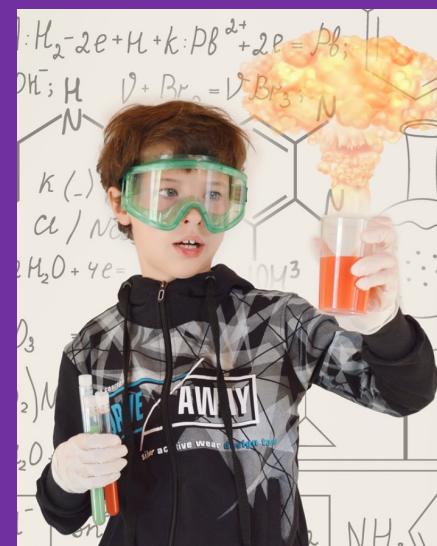
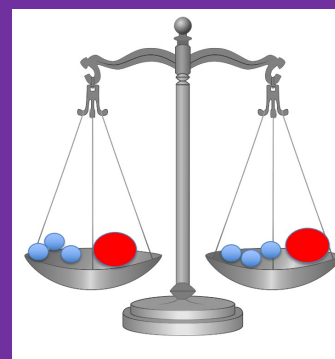


Chemical Reactions and Balancing

- Chemical Reactions
- Energy in Reactions
- Chemical Change Clues
- Writing Chemical Formulas
- Law of Conservation of Mass
- Balancing Chemical Reactions
- Practice



Preview File

Please enjoy this preview of your Student Version of the presentation. Please note within this sample file:

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- Student versions have portions of the text removed which is given in the teacher version and appear as _____ which the students are to fill in
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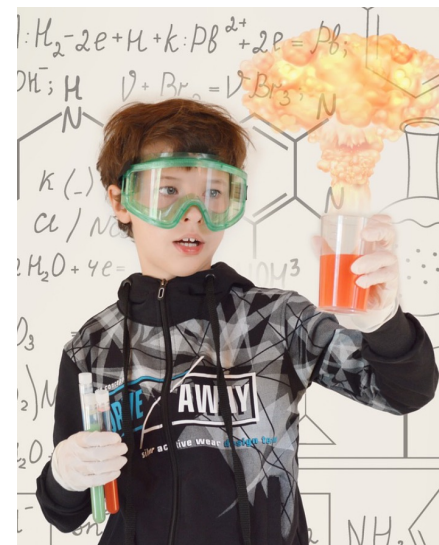


Chemical Reactions

- For a chemical reaction to have taken place, a chemical change must occur
- _____
- All chemical reactions are accompanied by a change in energy:

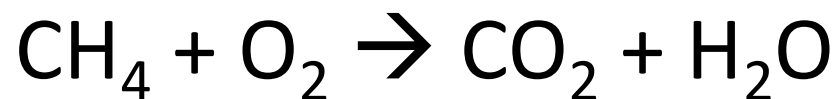
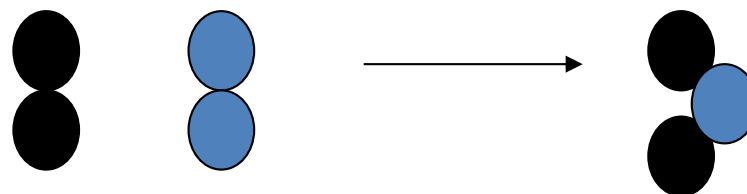
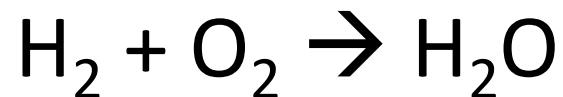
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Chemical Reactions

Examples

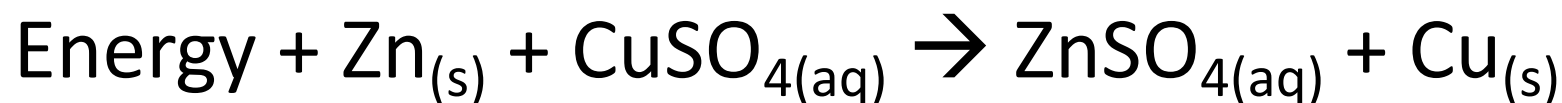


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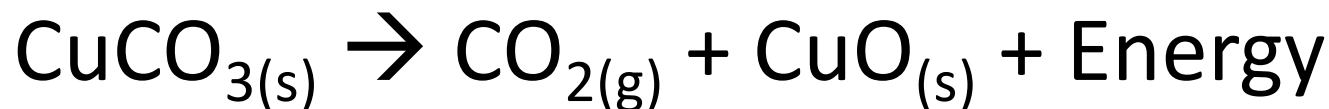
Energy

- A net (resulting) amount of energy can either be absorbed (used) or released (created)

- _____



- _____



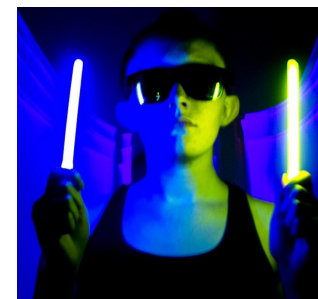
Energy

- _____

- For some reactions to take place you have to first input energy called activation energy

Ways to Tell a Chemical Reaction Has Occurred:

- _____
- Gas formation
- Precipitate (solid) formed
- Energy change (exothermic or endothermic)
- Irreversible – this isn't always the case



Glow sticks glow due to a chemical reaction.

These are usually good indicators - but sometimes they don't work. _____



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Writing Chemical Formulas

- _____
- This is required by the law of conservation of mass which states that atoms cannot be created nor destroyed in a chemical reaction

Law of Conservation of Mass

- If atoms can neither be created nor destroyed, the mass of the reactants and the mass of the products needs to be equal
- The atoms are all the same, they're just in a different arrangement

- _____

Conservation of Mass

- Due to the conservation of mass, the chemical equation must be balanced so that _____
- Symbols representing the state of each substance (*s* = solid, *g* = gas, *l* = liquid, *aq* = aqueous) are added as subscripts after each substance
- Finally

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Check Your Understanding

Answer the following questions:

1. Solid iron (III) sulfide reacts with gaseous hydrogen monochloride to form iron (III) chloride gas, dihydrogen monosulfide gas and energy
2. Using energy, aqueous sodium chloride forms aqueous sodium and chloride ions

Check Your Understanding

Write the word and skeletal equation for the following:

Combine dissolved lead (II) nitrate with aqueous potassium iodide to yield aqueous potassium nitrate and solid lead (II) iodide

Word:

Skeletal:

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Balancing Chemical Reactions

- We need the same number of atoms of each element on each side, but we cannot change the compound
- $\text{H}_{2(g)} + \text{O}_{2(g)} \rightarrow \text{H}_2\text{O}_{(l)}$ (not balanced)
- _____
 - You would have changed a chemical that we need to survive into a chemical that is poisonous

Balancing Chemical Reactions

- If we can't change the compound, we must have to change how many of each compound we have (the ratio in which they react)
- $\text{H}_{2(\text{g})} + \text{H}_{2(\text{g})} + \text{O}_{2(\text{g})} \rightarrow \text{H}_2\text{O}_{(\text{l})} + \text{H}_2\text{O}_{(\text{l})}$
- Can be written as
- $2\text{H}_{2(\text{g})} + \text{O}_{2(\text{g})} \rightarrow 2\text{H}_2\text{O}_{(\text{l})}$
- _____

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How to Balance

Examples:



Balanced:

How to Balance

Convert the following to a skeletal formula:

Iron reacts with oxygen to form iron (II) oxide

Step 1: Write the word equation.

Step 2: Write the skeletal equation.

Step 3: Balance all elements other than H and O.

Step 4: Finish balancing.

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Visual Example

Convert the following to a skeletal formula:

Iron reacts with oxygen to form iron (II) oxide



Balance the aluminum

Check Your Understanding

