Chemistry Web Quest: Six Major Types of Chemical Reactions

Introduction: Chemical changes are a result of chemical reactions. Chemical reactions involve the movement of electrons, leading to the formation and breaking of chemical bonds. Neither matter nor energy is created or destroyed in a chemical reaction---only changed. There are so many chemical reactions that it is helpful to classify them into general types: synthesis, decomposition, single displacement, double displacement, and combustion reactions.

Chemical reactions also involve a change in energy: energy is absorbed or released in reactions. In addition to classifying reactions according to the general type, chemical reactions can be described as either endothermic or exothermic reactions. Reactions in which energy is absorbed are **endothermic**; energy is required for the reaction to occur. Reactions in which energy is released are **exothermic**.

** By the end of this activity you need to be able to ***RECOGNIZE AND IDENTIFY ALL THE DIFFERENT TYPES OF CHEMICAL REACTIONS***
Your tasks:

A. **Types of Reactions Chart**. You will use the websites provided to research all the different types of chemical reactions: synthesis, decomposition, single displacement, double displacement, combustion (complete and incomplete), and neutralization reactions. You will fill in the chart provided for each type of reaction. (See Chart below)

B. Real world examples of chemical reactions.
After you have completed the table identifying types of chemical reactions you will also do the following, identify the type of chemical reaction taking place in the following real world examples.

1. Rusting of iron- what type of reaction, how do you know? Write the chemical equation for the reaction.
2. Soap scum formation- this is pretty complex, but you can describe the reaction
3. Burning of Ethanol in an alcohol burner, write the chemical reaction here.
4. The production of quicklime
5. Removal of tarnish from silver using aluminum
6. Cleaning of scale in a coffee maker using vinegar

C. Chemistry and Baking.
Then you should go to the site: Joy of Baking and describe how Chemically Baking powder and Baking soda differ, and how they make cookies and cakes rise. Write a paragraph describing the reactions and the difference between them.

D. **Reflection** How might you use some of this knowledge in your life either right now, or in adulthood?

Websites to use:
(You may use another site if necessary, but you should provide me with the link in your webquest.)

Part A:
http://www2.ucdsb.on.ca/tiss/stretton/CHEM1/stoich2.html
http://misterguch.brinkster.net/6typesofchemicalrxn.html
http://sciencestage.com/v/624/watch-several-types-of-chemical-reactions-including-single-and-double-replacement-combustion-and-dec.html
http://www.chemistryland.com/CHM130W/08-Equations/TypesReactions/TypesReactions.htm

Part B:
The chemistry of Baking
http://www.joyofbaking.com/bakingsoda.html

Part C:
Real World Chemistry
http://www.scienceclarified.com/everyday/Real-Life-Chemistry-Vol-2/Chemical-Reactions-Real-life-applications.html
http://scifun.chem.wisc.edu/homeexpts/tarnish.html
http://www.theguardian.com/lifeandstyle/2009/aug/23/how-to-remove-limescale

A) Synthesis Reactions:	B) Decomposition Reactions:
General equation:	General equation:
Word equation:	Word equation:
Chemical equation:	Chemical equation:
How to recognize reaction:	How to recognize reaction:
C) Single Displacement Reactions:	**D) Double Displacement Reactions:**
General equation:	General equation:
Word equation:	Word equation:
Chemical equation:	Chemical equation:
How to recognize reaction:	How to recognize reaction:

E) Combustion Reactions:

i) Complete Combustion of Hydrocarbons:	ii) Incomplete Combustion of Hydrocarbons:
Word equation:	Word equation:
Chemical equation:	Chemical equation:
Reactants ALWAYS include: Products ALWAYS include:	Reactants ALWAYS include: Products ALWAYS include:

F) Neutralization (Acid-Base) Reactions (a special type of double displacement):

General equation: Word Equation:

Chemical Equation: How to recognize reaction: