

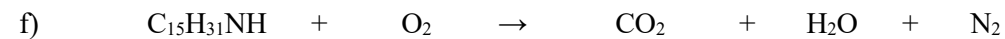
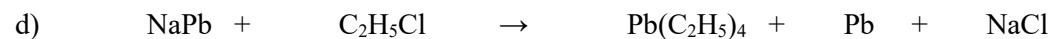
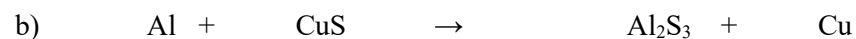
## Chemistry 11 Chemical Reactions Review Assignment

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Block: \_\_\_\_\_

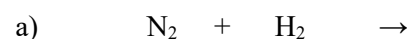
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*If you want to earn full marks on each question, then you must show all of your mental steps wherever possible.*

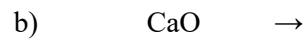
1. Balance the following reaction equations, taking care to show your balancing steps.



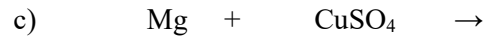
2. Complete, balance and classify the following chemical reaction equations:



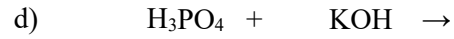
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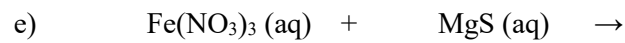
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3. Sodium sulfide and zinc nitrate solutions react when mixed. The product containing the sulfide group forms a precipitate. Write the balanced reaction equation and include the phases.

4. Carefully define the following terms:

a) *Acid* \_\_\_\_\_

b) *Base* \_\_\_\_\_

c) *Salt* \_\_\_\_\_

d) *Activation Energy* \_\_\_\_\_

e) *Enthalpy* \_\_\_\_\_

f) *Exothermic Reaction* \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

5. Consider the reaction:  $2 \text{Al(s)} + \text{Fe}_2\text{O}_3\text{(s)} \rightarrow 2 \text{Fe(s)} + \text{Al}_2\text{O}_3\text{(s)}$ ;  $\Delta H = -848 \text{ kJ/mol}$ .

a) Rewrite the reaction with the energy term as a reactant or product (whichever is appropriate).

b) Complete and fully label the following *enthalpy* versus *reaction progress* diagram.



6. What does the change in enthalpy,  $\Delta H$ , represent? Explain.

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7. Clearly explain why an endothermic reaction absorbs energy from the surroundings (describe the energy changes in your answer).

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8. Why is the enthalpy change for an exothermic reaction always negative? You may refer to the potential energy (enthalpy) graph but be sure to answer using words.

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9. The combustion of organic molecules that contain sulfur produces this gas: \_\_\_\_\_  
What problem in the environment does this gas create? \_\_\_\_\_

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Just for fun! Complete the crossword puzzle to review vocabulary.

**Across**

- 1 HOFBrINCl reminds us that these elements are \_\_\_\_\_ molecules. (8)
- 7 Speeds up a chemical reaction without being consumed. (8)
- 8 The part of the universe immediately outside of a system. (12)
- 9 Sulfur is an \_\_\_\_\_ molecule. (9)
- 10 The chemicals whose bonds must be broken for a reaction to occur. (9)
- 11 A part of the universe being studied where something can enter or leave. (10)

**Down**

- 2 An experimentally observed law that states what is unchanged in a special set of circumstances. (15)
- 3 The chemicals whose bonds form as a chemical reaction occurs. (8)
- 4 Phosphorus is a \_\_\_\_\_ molecule. (10)
- 5 A part of the universe being studied where nothing can enter or leave. (12)
- 6 Dissolved in water (7)

