

Please answer the following questions with a word or phrase. (2 points each)

1. What do acid-base reactions always form?

they form water

2. What do precipitation reactions always form?

they form a solid

3. What type of reaction transfers electrons?

oxidation reduction reactions

4. What is a spectator ion?

an ion that does not participate in the reaction
it remains aqueous

Explain the five reaction types: COMBUSTION, DECOMPOSITION, DOUBLE

DISPLACEMENT, SINGLE DISPLACEMENT, SYNTHESIS, with regard to what happens in the reaction

5. Combustion: hydrocarbon combines with oxygen to produce carbon dioxide and water

6. Decomposition: one reactant breaks into multiple products

7. Double Displacement: elements in 2 compounds switch partners
 $AB + CD \rightarrow AD + CB$

8. Single Displacement: $A + BC \rightarrow B + AC$

one element displaces another in a compound creating a

9. Synthesis: new compound and a new single element

two elements combine to form one product

10. What is transferred in an oxidation reduction reaction?

electrons are transferred

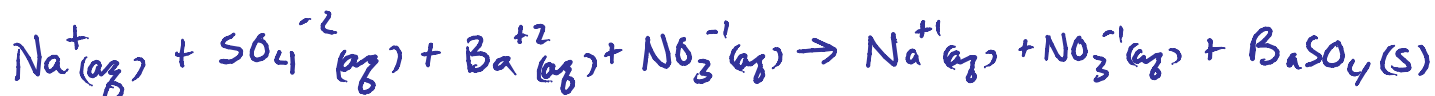
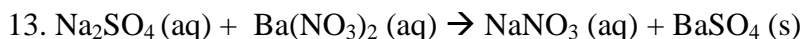
11. The formation of a gas is accompanied at least one of which two other driving forces?

formation of water, transfer of electrons

12. What two processes occur simultaneously to transfer electrons?

oxidation and reduction

For the following equation, write the COMPLETE IONIC equation from the given molecular equation. (4 points)



14. When a precipitation reaction occurs, What happens to the ions that do NOT form the precipitate?

they remain dissolved in solution (aqueous)

15. An aqueous solution of barium nitrate is reacted with an aqueous solution of sodium sulfate, which of the following substances would be the solid formed by the reaction.

barium sulfate

16. Which man developed the basic definitions of an acid and of a base?

Arrhenius

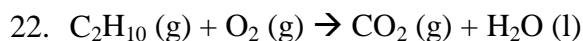
17. A substance that, when dissolved in water, completely dissociates (comes apart) into its component ions is known as a _____.

Strong electrolyte

Please indicate the **DRIVING FORCE** for each of the following unbalanced reactions. (3 points each) Use **each driving force only ONCE!!!!**

Reaction	Driving Force
18. $\text{HCl (aq)} + \text{Mg (s)} \rightarrow \text{MgCl}_2 \text{ (aq)} + \text{H}_2 \text{ (g)}$	<u>formation of a gas</u>
19. $\text{H}_2\text{SO}_4 \text{ (aq)} + \text{NaOH (aq)} \rightarrow \text{Na}_2\text{SO}_4 \text{ (aq)} + \text{H}_2\text{O (l)}$	<u>formation of water</u>
20. $\text{Ag}(\text{NO}_3)_2 \text{ (aq)} + \text{KCl (aq)} \rightarrow \text{KNO}_3 \text{ (aq)} + \text{AgCl (s)}$	<u>formation of a solid</u>
21. $\text{Zn (s)} + \text{CuSO}_4 \text{ (s)} \rightarrow \text{ZnSO}_4 \text{ (s)} + \text{Cu (s)}$	<u>transfer of electrons</u>

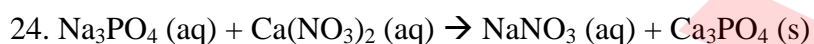
Please indicate the type of reaction exemplified by the following equations by choosing a type from the following: COMBUSTION, DECOMPOSITION, DOUBLE DISPLACEMENT, SINGLE DISPLACEMENT, SYNTHESIS. Each choice is used only once! (3 points each)



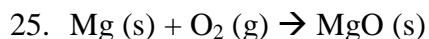
Combustion



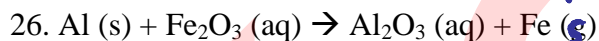
decomposition



double displacement

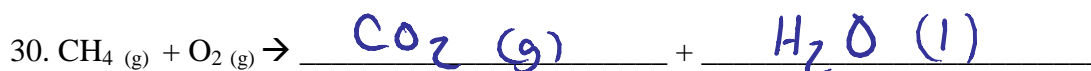
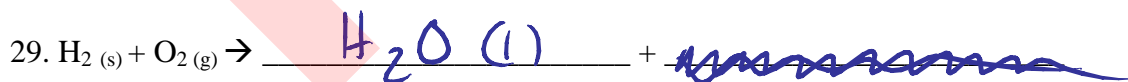
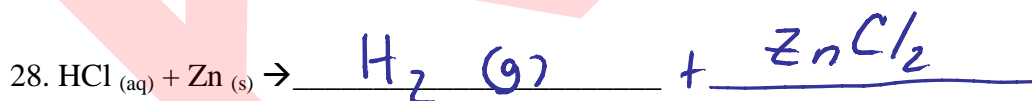
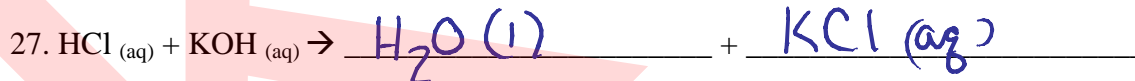


Synthesis



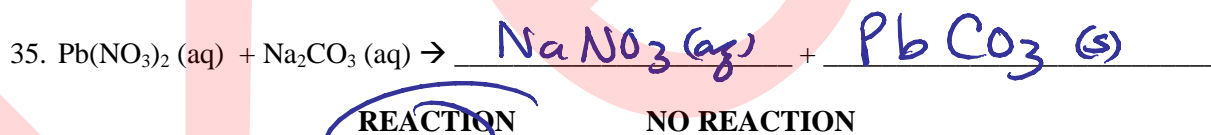
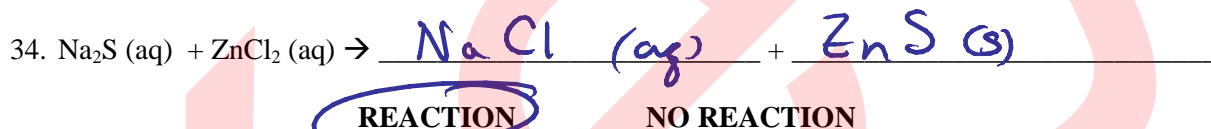
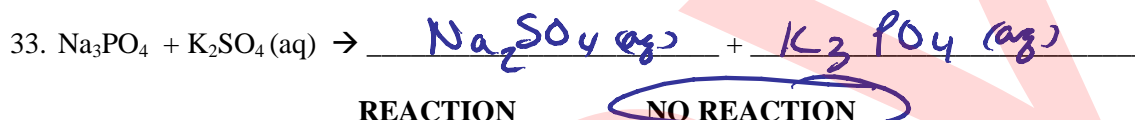
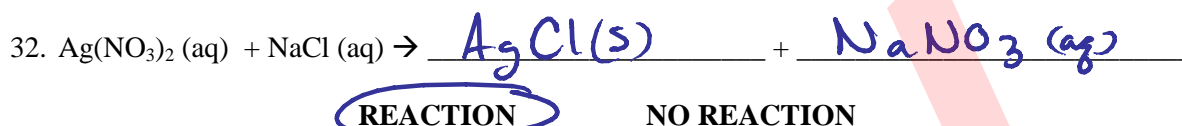
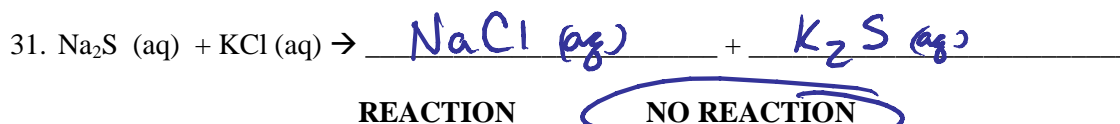
Single displacement

Predict the products of the following reactions. (3 points each)



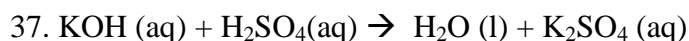
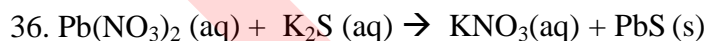
Name: Key

Complete following equations by predicting the products, **include the states of matter**. Circle **Reaction or No Reaction** to indicate if the reaction actually occurs. 4 points each



For the following equations, write the NET IONIC equation from the given molecular equation.

(3 points each)



Please answer the following thought provoking question. Please ask if you do not understand the question. (6 points)

38. You need to create a working “volcano” for science class. The chemicals you have available are: Na_2CO_3 (s), NaOH (s) and HCl (aq). In order to produce the desired volcano effect you will need to produce a gas. Which two chemicals will produce a gas when mixed? Using your knowledge of chemical reactions, explain, USING CHEMISTRY TERMS AND EQUATIONS, which chemicals to mix AND WHY. Hints: React each of the solids with the HCl . Remember H_2CO_3 splits into H_2O and CO_2 .

Na_2CO_3 Reaction:



NaOH Reaction:



Which chemicals should you use and Why:

$\text{Na}_2\text{CO}_3 + \text{HCl}$ will yield the gas CO_2
which will cause the desired volcano effects.