

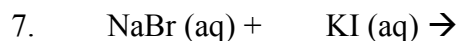
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**Chapter 4 Practice Worksheet:  
Reactions in Aqueous Solutions**

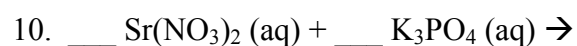
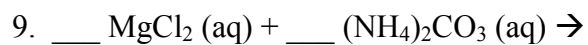
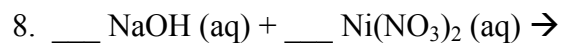
1. List the three general classes of chemical reactions: \_\_\_\_\_
2. How can you identify each of the three reaction types above (e.g., what characteristic defines each one)?
3. List one strong electrolyte from Table 4.1 and describe/draw how it reacts when placed in water.
4. List one weak electrolyte from Table 4.1 and describe/draw how it reacts when placed in water.
5. List one nonelectrolyte from Table 4.1 and describe/draw how it reacts when placed in water.
6. Determine if the following compounds will be soluble or insoluble in water:  
CrPO<sub>4</sub>  
Na<sub>2</sub>S  
PbBr<sub>2</sub>  
Ag<sub>2</sub>SO<sub>4</sub>  
Ca(ClO<sub>3</sub>)<sub>2</sub>  
K<sub>3</sub>PO<sub>4</sub>

For the following double-displacement reactions, complete the equation and determine if there are any insoluble products (precipitates). If there is a precipitate, write the balanced ionic and net ionic equations. If there is no precipitate, write the balanced molecular and ionic equations.



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11. Give Arrhenius' definitions of an acid and a base. Give an example of each in a reaction.

12. Identify each of the following substances as acids or bases (or both):

HCl

KOH

NaOH

HNO<sub>3</sub>

HF

H<sub>2</sub>O

Ca(OH)<sub>2</sub>

13. Identify the oxidation numbers of **each element** in the following compounds or ions:

H<sub>3</sub>PO<sub>4</sub>

Zn (s)

K<sub>2</sub>O<sub>2</sub>

SrSO<sub>4</sub>

O<sub>2</sub> (g)

NiCO<sub>3</sub>

CoCl<sub>2</sub>

OH<sup>-</sup>

FeBO<sub>3</sub>

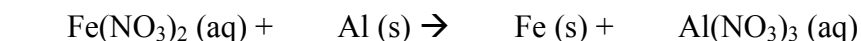
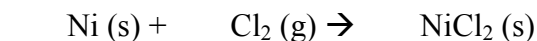
Mg(NO<sub>3</sub>)<sub>2</sub>

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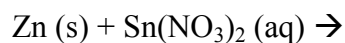
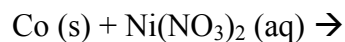
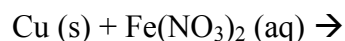
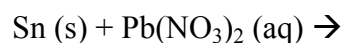
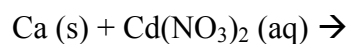
14. List the three types of redox reactions and describe how you can identify them:

15. For the following redox reactions, identify the species being oxidized, the species being reduced, the oxidizing agent, and the reducing agent:



16. Describe when to use the Solubility Rules and when to use the Activity Series of Metals.

17. For the following reactions, use the Activity Series of Metals to determine if a reaction will occur and if so, what the products will be. If no reaction will occur, write NR for the product.



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Complete, balance, and identify the reaction type for each of the following equations:

**Type**

