

## Experiment 22, Predicting Reactions

Name \_\_\_\_\_ Per \_\_\_\_\_

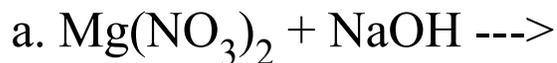
**You will need to print out and bring to class:** [Appendix 8](#), and [Appendix 10](#)

**Purpose:** To predict reactions and then test our predictions.

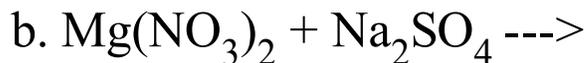
**Predictions:** Reactions will occur if they *remove ions* from solutions. Ions are removed by *precipitation, formation of water*, and the *formation of gases*. For **REDOX** reactions, the reaction will go if the *voltage is positive*.

*Before you do the lab, Boom must sign off your predictions.*

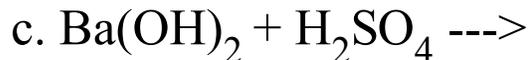
**Solubility Predictions:** Write the following *double displacement reactions* (switch the partners), *balance the equations*, and check the two products with [Appendix 10](#) to see if either or both of them are precipitates. If there is a ppt, then predict that the reaction will happen. If water forms, predict that the reaction will happen.



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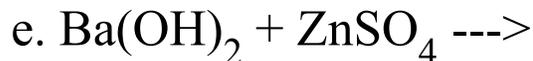
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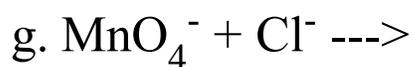
**REDOX Predictions:** Using [Appendix 8](#) (remember that one half-reaction always gets turned around and has its voltage reversed. For every LEO, there must be a GER), write the *two half-reactions* for the following: *Balance the equations to find the total reaction*, and find the *E in volts*. If the voltage is **positive**, predict that the **reaction will occur**.



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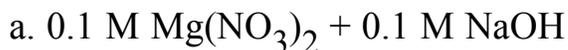
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**Part I Testing Predictions. GOGS ON! WARNING! NEVER carry a bottle by its stopper, cap, or dropper.**

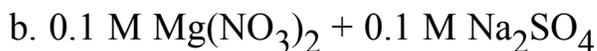
**Procedure:** *After Boom hath signed off your predictions, then test your predictions as follows:*

For each trial, measure 3.0 ml portions of each solution and mix in a 13 X 150 mm test tube. *Allow time for the reaction (patience)*, List your observations. If there is a reaction, tell how it compares with your predictions above:

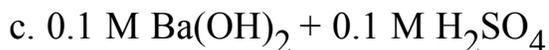
*Shake sideways to mix well.*



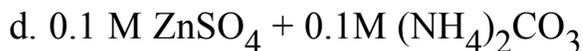
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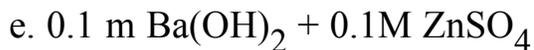
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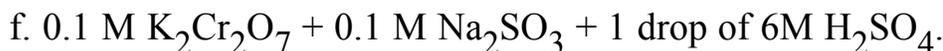
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**Try not to get  $\text{KMnO}_4$  on your hands. If you do, wash well.** The stains will wear off in a few weeks.



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h. 0.1 M KI + 0.1 M FeCl<sub>3</sub> + 0.5 ml (10 drops) of CCl<sub>4</sub>. Shake sideways to mix well.

i. 0.1 M KBr + 0.1 M FeCl<sub>3</sub> + 0.5 ml (10 drops) of CCl<sub>4</sub>. Shake sideways to mix well.

j. 0.1 M FeSO<sub>4</sub> + 0.1 M KMnO<sub>4</sub> + 3 drops of 6M H<sub>2</sub>SO<sub>4</sub>.

## Part II: More reactions for observations only.

**Procedure:** Measure 3.0 ml portions of each solution and mix in a test tube. *Allow time for the reaction*, if there is one (patience), then list your observations: *Shake sideways to mix well.*

k. 0.1 M Cr<sub>2</sub>(SO<sub>4</sub>)<sub>3</sub> + 3 drops of 6M H<sub>2</sub>SO<sub>4</sub> + 5 drops of Hydrogen Peroxide, H<sub>2</sub>O<sub>2</sub>.

l. 0.1 M K<sub>2</sub>Cr<sub>2</sub>O<sub>7</sub> + 3 drops of 6M H<sub>2</sub>SO<sub>4</sub> + 5 drops of H<sub>2</sub>O<sub>2</sub>.

0.1 M Pb(NO<sub>3</sub>)<sub>2</sub> + 1.0 M NaCl.

## CRITIQUE: