

**Single Replacement Reactions: Using the Activity Series**

Tell whether the reaction will occur or not (yes or no), and why. Write the balanced equation for those reactions that do take place, and write the symbols and formulas of the reactants for those equations that will not take place with a NR (no reaction) after the yield sign.

- |  | <u>Coefficients</u> |
|--|---------------------|
| 1) <u>2</u> Al + <u>6</u> HCl $\longrightarrow$ <u>2</u> AlCl <sub>3</sub> + <u>3</u> H <sub>2</sub>                 | <u>2,6,2,3</u>      |
| Occur or not? <u>yes</u> Why or Why not? <u>Al reacts with acids replacing hydrogen.</u>                             |                     |
| 2) ___ I <sub>2</sub> + ___ NH <sub>4</sub> F $\longrightarrow$ NR   | _____               |
| Occur or not? <u>no</u> Why or Why not? <u>iodine can't replace fluorine because it's below it on the series.</u>    |                     |
| 3) ___ Zn + ___ H <sub>2</sub> O $\xrightarrow{25^\circ\text{C}}$ NR   | _____               |
| Occur or not? <u>no</u> Why or Why not? <u>Zn reacts with water if it is steam. 25°C is not boiling for water.</u>   |                     |
| 4) ___ Cl <sub>2</sub> + <u>2</u> LiBr $\longrightarrow$ <u>2</u> LiCl + ___ Br <sub>2</sub>                         | <u>1,2,2,1</u>      |
| Occur or not? <u>yes</u> Why or Why not? <u>Cl replaces Br because Cl is above Br on the series.</u>                 |                     |
| 5) ___ Mg + ___ Zn(NO <sub>3</sub> ) <sub>2</sub> $\longrightarrow$ ___ Mg(NO <sub>3</sub> ) <sub>2</sub> + ___ Zn   | <u>1,1,1,1</u>      |
| Occur or not? <u>yes</u> Why or Why not? <u>Mg is above Zn on the activity series.</u>                               |                     |
| 6) ___ Cd + <u>2</u> H <sub>2</sub> O $\xrightarrow{105^\circ\text{C}}$ ___ Cd(OH) <sub>2</sub> + ___ H <sub>2</sub> | <u>1,2,1,1</u>      |
| Occur or not? <u>yes</u> Why or Why not? <u>Cd reacts with steam replacing hydrogen. 105°C is above boiling.</u>     |                     |
| 7) ___ Pb + ___ KClO <sub>3</sub> $\longrightarrow$ NR   | _____               |
| Occur or not? <u>no</u> Why or Why not? <u>Pb can't replace K because it is lower on the activity series.</u>        |                     |

**Double Replacement Reactions: Using the Solubility Chart**

Write the products and balance the equation for the following double replacement reactions. Then, using your solubility chart and the correct symbols, identify the aqueous product and the precipitate.

- |   | <u>Coefficients</u>       |
|---|---------------------------|
| 8) ___ MgSO <sub>4</sub> (aq) + ___ BaCl <sub>2</sub> (aq) $\longrightarrow$ ___ MgCl <sub>2</sub> (aq) + ___ BaSO <sub>4</sub> ↓   | <u>1,1,1,1</u>            |
| 9) <u>2</u> AgNO <sub>3</sub> (aq) + ___ MgCl <sub>2</sub> (aq) $\longrightarrow$ <u>2</u> AgCl ↓ + ___ Mg(NO <sub>3</sub> ) <sub>2</sub> (aq)  | <u>2,1,2,1</u>            |
| 10) ___ (NH <sub>4</sub> ) <sub>3</sub> PO <sub>4</sub> (aq) + ___ KCl(aq) $\longrightarrow$ ___ NH <sub>4</sub> Cl(aq) + ___ K <sub>3</sub> PO <sub>4</sub> (aq)   | <u>NR (2 aq products)</u> |
| 11) ___ Ba(NO <sub>3</sub> ) <sub>2</sub> (aq) + ___ Na <sub>2</sub> CrO <sub>4</sub> (aq) $\longrightarrow$ ___ BaCrO <sub>4</sub> ↓ + <u>2</u> NaNO <sub>3</sub> (aq)                                     | <u>1,1,1,2</u>            |
| 12) <u>2</u> Na <sub>3</sub> PO <sub>4</sub> (aq) + ___ Al <sub>2</sub> (SO <sub>4</sub> ) <sub>3</sub> (aq) $\longrightarrow$ <u>3</u> Na <sub>2</sub> SO <sub>4</sub> (aq) + <u>2</u> AlPO <sub>4</sub> ↓ | <u>2,1,3,2</u>            |
| 13) ___ FeCl <sub>3</sub> (aq) + <u>3</u> NaOH(aq) $\longrightarrow$ ___ Fe(OH) <sub>3</sub> ↓ + <u>3</u> NaCl(aq)  | <u>1,3,1,3</u>            |
| 14) <u>2</u> AlBr <sub>3</sub> (aq) + <u>3</u> K <sub>2</sub> CO <sub>3</sub> $\longrightarrow$ ___ Al <sub>2</sub> (CO <sub>3</sub> ) <sub>3</sub> ↓ + <u>6</u> KBr(aq)                                    | <u>2,3,1,6</u>            |
| 15) ___ Pb(ClO <sub>3</sub> ) <sub>2</sub> (aq) + ___ Na <sub>2</sub> S(aq) $\longrightarrow$ ___ PbS ↓ + <u>2</u> NaClO <sub>3</sub> (aq)  | <u>1,1,1,2</u>            |