Worksheet #5: Double-Replacement Reactions

In these reactions, all you do is look at the names of the reactants, and "switch partners". Just be sure that the new pairs come out with the positive ion named first, and paired with a negative ion.

- 1. aluminum iodide + mercury(II) chloride →
- 2. silver nitrate + potassium phosphate →
- 3. copper(II) bromide + aluminum chloride →
- 4. calcium acetate + sodium carbonate →
- 5. ammonium chloride + mercury(I) acetate ->
- 6. calcium nitrate + hydrochloric acid →
- 7. iron(II) sulfide + hydrochloric acid \rightarrow
- 8. copper(II) hydroxide + acetic acid →
- 9. calcium hydroxide + phosphoric acid →
- 10. calcium bromide + potassium hydroxide →

Examine the products of the reactions on this page, and determine in each whether a gas, water, or a precipitate is formed. Use solubility Table B.9 on page R54 at the back of your textbook to determine the solubilities of the reaction products. If there is no gas, water, or precipitate produced, put an "X" through the yield sign, because no reaction occurs.

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1. aluminum iodide + mercury(II) chloride \rightarrow aluminum chloride + mercury(II) iodide 2AII₃ + 3HgCl₂ \rightarrow 2AICl₃ + 3HgI₂(ppt)

2. silver nitrate + potassium phosphate \rightarrow silver phosphate + potassium nitrate 3AgNO₃ + K₃PO₄ \rightarrow Ag₃PO₄(ppt) + 3KNO₃

copper(II) bromide + aluminum chloride → copper(II) chloride + aluminum bromide
3CuBr₂ + 2AlCl₃ ¥ 3CuCl₂ + 2AlBr₃

4. calcium acetate + sodium carbonate \rightarrow calcium carbonate + sodium acetate $Ca(C_2H_3O_2)_2 + Na_2CO_3 \rightarrow CaCO_3(ppt) + 2NaC_2H_3O_2$

5. ammonium chloride + mercury(I) acetate \rightarrow ammonium acetate + mercury(I) chloride $2NH_4CI + Hg_2(C_2H_3O_2)_2 \rightarrow 2NH_4 C_2H_3O_2 + Hg_2CI_2(ppt)$

6. calcium nitrate + hydrochloric acid \rightarrow calcium chloride + nitric acid $Ca(NO_3)_2 + 2HCI \times CaCl_2 + 2HNO_3$

7. iron(II) sulfide + hydrochloric acid \rightarrow iron(II) chloride + hydrogen sulfide (g) FeS + 2HCl \rightarrow FeCl₂ + H₂S

copper(II) hydroxide + acetic acid → copper(II) acetate + water
Cu(OH)₂ + 2HC₂H₃O₂ → Cu(C₂H₃O₂)₂ + 2H₂O

9. calcium hydroxide + phosphoric acid \rightarrow calcium phosphate + water $3Ca(OH)_2 + 2H_3PO_4 \rightarrow Ca_3(PO_4)_2 + 6H_2O$

10. calcium bromide + potassium hydroxide \rightarrow calcium hydroxide + potassium bromide CaBr₂ + 2KOH \nearrow Ca(OH)₂ + 2KBr

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