Worksheet #4: Single-Replacement Reactions

Step 1 - Write the formulas of the reactants on the left of the yield sign
Step 2 - Look at the Activity Series on page 333 to determine if the replacement can happen
Step 3 - If the replacement can occur, complete the reaction and balance it. If the reaction cannot happen, write N.R. (no rxn) on the product side.

1. lead + zinc acetate →

2. iron + aluminum oxide →

3. silver nitrate + nickel →

4. sodium bromide + iodine →

5. aluminum bromide + chlorine →

6. sodium iodide + bromine →

7. calcium + hydrochloric acid →

8. magnesium + nitric acid →

9. silver + sulfuric acid →

10. potassium + water →

11. sodium + water →

Table 11.2

Activity Series of Metals

	Name	Symbol
Decreasing reactivity ↓	Lithium	Li
	Potassium	K
	Calcium	Ca
	Sodium	Na
	Magnesium	Mg
	Aluminum	Al
	Zinc	Zn
	Iron	Fe
	Lead	Pb
	(Hydrogen)	(H)*
	Copper	Cu
	Mercury	Hg
	Silver	Ag

*Metals from Li to Na will replace H from acids and water; from Mg to Pb they will replace H from acids only.

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1. lead + zinc acetate →

   Pb + $Zn(C_2H_3O_2)_2$ → N.R.

2. iron + aluminum oxide →

   Fe + Al_2O_3 → N.R.

3. silver nitrate + nickel → nickel(II) nitrate + silver

   $2AgNO_3$ + Ni → $Ni(NO_3)_2$ + 2Ag

4. sodium bromide + iodine →

   NaBr + I_2 → N.R.

5. aluminum bromide + chlorine → aluminum chloride + bromine

   $2AlBr_3$ + $3Cl_2$ → $2AlCl_3$ + $3Br_2$

6. sodium iodide + bromine → sodium bromide + iodine

   2NaI + Br_2 → 2NaBr + I_2

7. calcium + hydrochloric acid → calcium chloride + hydrogen

   Ca + 2HCl → $CaCl_2$ + H_2

8. magnesium + nitric acid → magnesium nitrate + hydrogen

   Mg + $2HNO_3$ → $Mg(NO_3)_2$ + H_2

9. silver + sulfuric acid →

   Ag + H_2SO_4 → N.R.

10. potassium + water → potassium hydroxide + hydrogen

    2K + $2H_2O$ → 2KOH + H_2

11. sodium + water → sodium hydroxide + hydrogen

    2Na + $2H_2O$ → 2NaOH + H_2