WORKSHEET ON SINGLE & DOUBLE REPLACEMENT REACTIONS

Predict the products. Write formulas & balance each reaction. If there is no reaction, then just put NO RXN.

Single Replacement:  \( A + BC \rightarrow B + AC \) or \( A + BC \rightarrow C + BA \) (when A and C are negative ions)

1. Zinc + Hydrogen chloride
2. Magnesium + Hydrogen Sulfate
3. Copper (II) chloride + Flourine
4. Silver + Sodium Hydroxide
5. Potassium iodide + Bromine
6. Calcium + Hydrogen hydroxide
7. Iron IV oxide + Hydrogen

Double Replacement:  \( AB + CD \rightarrow AD + CB \)

1. Barium chloride + Aluminum sulfate
2. Calcium nitride + water
3. Calcium hydroxide + Hydrogen phosphate
4. Hydrogen sulfate + Sodium hydrogen carbonate
5. Calcium hydroxide + Ammonium chloride
6. Potassium iodide + Lead II Nitrate
7. Sodium acetate + Calcium sulfide

Complete each word equation, write formulas and balance the reaction equation. Then identify and place the type of reaction (single replacement or double replacement) in the blank provided.

1. Zinc + Silver nitrate
2. Aluminum + Hydrogen chloride
3. Magnesium oxalate + Ammonium carbonate
4. Calcium + Aluminum nitrate
5. Potassium flouride + Lead (II) Nitrate
6. Calcium bromide + Silver nitrate
7. Ammonium phosphate + Barium acetate
8. Sodium chloride + Potassium
9. Magnesium nitrate + ammonium chloride
10. Iron (III) chlorate + calcium
11. Chlorine + Sodium bromide
12. Potassium chloride + Silver nitrate
13. Calcium hydroxide + Hydrogen nitrate
14. Lead II nitrate + Potassium chloride
15. Strontium carbonate + Hydrogen nitrate
16. Gold + Potassium nitrate
17. Zinc + Silver nitrate
18. Aluminum + Copper II sulfate
Double Replacement Reactions / Double Displacement Reactions

- Switch partners so that the metals are now partnered with the opposite nonmetal.
- Each time you write formulas, be sure to criss-cross the charges involved. Do not pay attention to the subscripts from the reactants as they do not necessarily apply to the products.
- These reactions normally occur when they produce a covalent compound as a product, like water or when they produce a gas like CO2 or an insoluble solid that settles out of the solution. We will look into solubility in the spring. For now, assume the reactions I give you will actually occur.

Practice problems on the back.
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Predict the products. Write formulas. If there is no reaction, then just put NO RXN.

Single Replacement:  A + BC → B + AC or A + BC → C + BA (when A and C are negative ions)
1. Zinc + Hydrogen chloride → H₂ + ZnCl₂
2. Magnesium + Hydrogen Sulfate → MgSO₄ + H₂
3. Copper (II) chloride + Fluorine → CuF₂ + Cl₂
4. Silver + Sodium Hydroxide → Na₂Cl + H₂O
5. Potassium iodide + Bromine → KBr + I₂
6. Calcium + Hydrogen hydroxide → Ca(OH)₂ + H₂
7. Iron IV oxide + Hydrogen → Fe + H₂O

Double Replacement: AB + CD → AD + CB
1. Barium chloride + Aluminum sulfate → BaSO₄ + AlCl₃
2. Calcium nitride + water → Ca(N₂H₃)₂ + HNO₃
3. Calcium hydroxide + Hydrogen phosphate → Ca₃(PO₄)₂ + H₂O
4. Hydrogen sulfate + Sodium hydrogen carbonate → H₂SO₃ + Na₂SO₄
5. Calcium hydroxide + Ammonium chloride → CaCl₂ + NH₄OH
6. Potassium iodide + Lead II Nitrate → KN₃ + PbI₂
7. Sodium acetate + Calcium sulfide → Na₂S + Ca(C₂H₃O₂)₂

Complete each word equation, write formulas (single replacement or double replacement) in the blank provided. Then identify and place the type of reaction (single replacement or double replacement) in the blank provided. Be sure to check if a Single Replacement reaction will occur.

SR 1. Zinc + Silver nitrate → Zn(NO₃)₂ + Ag
SR 2. Aluminum + Hydrogen chloride → AlCl₃ + H₂
SR 3. Magnesium oxide + Ammonium carbonate → MgO + (NH₄)₂CO₃
SR 4. Calcium + Aluminum nitrate → Ca(NO₃)₂ + Al
SR 5. Potassium fluoride + Lead (II) Nitrate → KNO₃ + PbF₂
SR 6. Calcium bromide + Silver nitrate → Ca(NO₃)₂ + AgBr
SR 7. Ammonium phosphate + Barium acetate → NH₄Cl + Ba₃(PO₄)₂
SR 8. Sodium chloride + Potassium → NaCl + KCl
SR 9. Magnesium nitrate + ammonium chloride → MgCl₂ + NH₄NO₃
SR 10. Iron (III) chloride + calcium → CaCl₂ + Fe
SR 11. Chlorine + Sodium bromide → NaCl + Br₂
DE 12. Potassium chloride + Silver nitrate → KNO₃ + AgCl
DE 13. Calcium hydroxide + Hydrogen nitrate → Ca(NO₃)₂ + H₂O
DE 14. Lead II nitrate + Potassium chloride → PbCl₂ + KNO₃
DE 15. Strontium carbonate + Hydrogen nitrate → Sr(NO₃)₂ + H₂O
DR 16. Gold + Potassium nitrate → KNO₃ Reaction
SR 17. Zinc + Silver nitrate → Zn(NO₃)₂ + Ag
SR 18. Aluminum + Copper II sulfate → Al₂(SO₄)₃ + Cu