CHEMISTRY REPLACEMENT REACTION WORKSHEET

DISCRIPTION

During double replacement, the cations and anions of two different compounds switch places.

AB + CD -----> AD + CB

REACTION GUIDELINE

1. It is important that the formulas of the products be written correctly. If they are correct, balancing the equation is a simple task; if not, the equation will probably never balance.
2. In these reactions, there is never a change in oxidation state (in other words, the charges stay the same).

EXAMPLES

AgNO3 + NaCl ---> AgCl + NaNO3
Silver nitrate + sodium chloride → silver chloride + sodium nitrate

Pb(NO3)2 + CuSO4 ---> PbSO4 + Cu(NO3)2
Lead (II) nitrate + copper (II) sulfate → lead (II) sulfate + copper (II) nitrate

DOUBLE REPLACEMENT PRACTICE REACTIONS

For each reaction predict the products and balance the equation. State the reaction in chemical formulas and in symbols. For example:

$AgNO_3$ + NaCl --->

Silver nitrate + sodium chloride → silver chloride + sodium nitrate

$AgNO_3$ + NaCl ---> AgCl + $NaNO_3$

1) $Ca(OH)_2 + H_3PO_4$ --->

2) $K_2CO_3 + BaCl_2$ --->

3) $Cd_3(PO4)_2 + (NH_4)_2S$ --->

4) $Co(OH)_3 + HNO_3$ --->

5) $AgNO3 + KCl \rightarrow$

6) $Na_2CO3 + H_2SO_4 \rightarrow$

7) $Al(OH)_3 + HC_2H_3O_2 \rightarrow$

8) $Al_2(SO_4)_3 + Ca_3(PO_4)_2 \rightarrow$

9) $Cr_2(SO_3)_3 + H_2SO_4 \rightarrow$

10) $AgC_2H_3O_2 + K_2CrO_4 \rightarrow$

11) $FeBr_2 + K_2CO_3 \rightarrow$

12) $Ag_2S + CuCl_2$ --->

13) $Pb(NO_3)_2 + HI$ --->

14) $Ba(ClO_3)_2 + H_2SO_4$ --->

15) $CuS + KCl$ --->

SINGLE REPLACEMENT

REACTION DESCRIPTION
In these reactions, a free element reacts with a compound to form another compound and release one of the elements of the original compound in the elemental state. There are two different possibilities:

1. One cation (+ ion) replaces another.
2. One anion (- ion) replaces another.

REACTION FORMAT

1. AX+ B ----> BX + A
2. Y + AX ----> AY + X

REACTION GUIDELINES

1. In a single replacement reaction atoms of one element replace the atoms of a second element in a compound.

A metal will replace another metal from a compound
A nonmetal will replace another nonmetal from a compound

2. Watch out for diatomic molecules. These elements only exist in compounds or as diatomic molecules.

H_2, N_2, O_2, F_2, Cl_2, Br_2, I_2

EXAMPLES

1. Mg + Zn(NO3)2 ----> Mg(NO3)2 + Zn

Mg replaces Zn;

Mg + 2 AgNO3 -----> Mg(NO3)2 + 2 Ag

Mg replaces Ag;

2. Cl2+ 2NaBr ---> 2NaCl + Br2

Cl replaces Br. Note that chlorine and bromine are diatomic molecules

For each reaction predict the products and balance the equation. State the reaction in chemical formulas and in symbols. For example:

Mg + 2 AgNO3 ----->

Magnesium + silver nitrate → magnesium nitrate + silver

Mg + 2 $AgNO_3$ -----> $Mg(NO_3)_2$ + 2 Ag

1. Ag + KNO_3 ----->

2. Zn + $AgNO_3$ ----->

3. Al + H_2SO_4 ----->

4. Cl_2 + KI ----->

5. Li + H_2O ----->

6. Cu + $FeSO_4$ ----->

7. $Na + H_2O$ ----->

8. $Fe + Pb(NO_3)_2$ ----->

9. $Cu + H_2O$ ----->

10. $Cu + Al_2(SO_4)_3$ ---->

11. $Al + Pb(NO_3)_2$ ---->

12. $Cl_2 + NaI$ --->

13. $Fe + AgC_2H_3O_2$ --->

14. $Al + CuCl_2$ --->

15. $Br_2 + CaI_2$ --->