**THE BALANCING ACT**

**LEVEL 1: “ALKALI METALS”**

**Balance the following equations:**

|  |  |  |
| --- | --- | --- |
| 1. \_\_\_\_ SiC + \_\_\_\_ Cl2 🡪 \_\_\_\_ SiCl4 + \_\_\_\_ C | Reactants  Si  C  Cl | Products  Si  C  Cl |
| 2. \_\_\_\_ Zn + \_\_\_\_ HCl 🡪 \_\_\_\_ ZnCl2 + \_\_\_\_ H2 | Reactants | Products |
| 3. \_\_\_\_ Na + \_\_\_\_ Cl2 🡪 \_\_\_\_ NaCl | Reactants | Products |
| 4. \_\_\_\_ Ti + \_\_\_\_ N2 🡪 \_\_\_\_ Ti3N4 | Reactants | Products |
| 5. \_\_\_\_ Na + \_\_\_\_ AlCl3 🡪 \_\_\_\_ Al + \_\_\_\_ NaCl | Reactants | Products |
| 6. \_\_\_\_ K + \_\_\_\_ H2S 🡪 \_\_\_\_ K2S + \_\_\_\_ H2 | Reactants | Products |
| 7. \_\_\_\_ Au2O3 🡪 \_\_\_\_ Au + \_\_\_\_ O2 | Reactants | Products |
| 8. \_\_\_\_ Si + \_\_\_\_ S8 🡪 \_\_\_\_ Si2S4 | Reactants | Products |
| 9. \_\_\_\_ Ca + \_\_\_\_ AlCl3 🡪 \_\_\_\_ CaCl2 + \_\_\_\_ Al | Reactants | Products |
| 10. \_\_\_\_ H2S + \_\_\_\_ Cl2 🡪 \_\_\_\_ S8 + \_\_\_\_ HCl | Reactants | Products |

**THE BALANCING ACT**

**LEVEL 2: “ALKALINE EARTH METALS”**

**Balance the following equations:**

1. \_\_\_\_\_ CO2 + \_\_\_\_\_ NH3 🡪 \_\_\_\_\_ OC(NH2)2 + \_\_\_\_\_ H2O
2. \_\_\_\_\_ C7H6O2 + \_\_\_\_\_ O2 🡪 \_\_\_\_\_ CO2 + \_\_\_\_\_ H2O
3. \_\_\_\_\_ H2SO4 + \_\_\_\_\_ HI 🡪 \_\_\_\_\_ H2S + \_\_\_\_\_ I2 + \_\_\_\_\_ H2O
4. \_\_\_\_\_ FeS2 + \_\_\_\_\_ O2 🡪 \_\_\_\_\_ Fe2O3 + \_\_\_\_\_ SO2
5. \_\_\_\_\_ Al + \_\_\_\_\_ FeO 🡪 \_\_\_\_\_ Al2O3 + \_\_\_\_\_ Fe
6. \_\_\_\_\_ Fe2O3 + \_\_\_\_\_ H2 🡪 \_\_\_\_\_ Fe + \_\_\_\_\_ H2O
7. \_\_\_\_\_ Na2CO3 + \_\_\_\_\_ HCl 🡪 \_\_\_\_\_ NaCl + \_\_\_\_\_ H2O + \_\_\_\_\_ CO2
8. \_\_\_\_\_ K + \_\_\_\_\_ Br2 🡪 \_\_\_\_\_ KBr
9. \_\_\_\_\_ C7H16 + \_\_\_\_\_ O2 🡪 \_\_\_\_\_ CO2 + \_\_\_\_\_ H2O
10. \_\_\_\_\_ P4 + \_\_\_\_\_ O2 🡪 \_\_\_\_\_ P2O5

**THE BALANCING ACT**

**LEVEL 3: “TRANSITION METALS”**

**Balance the following equations:**

1. \_\_\_\_ Na3PO4 + \_\_\_\_ KOH 🡪 \_\_\_\_ NaOH + \_\_\_\_ K3PO4
2. \_\_\_\_ MgF2 + \_\_\_\_ Li2CO3 🡪 \_\_\_\_ MgCO3 + \_\_\_\_ LiF
3. \_\_\_\_ P4 + \_\_\_\_ O2 🡪 \_\_\_\_ P2O3
4. \_\_\_\_ RbNO3 + \_\_\_\_ BeF2 🡪 \_\_\_\_ Be(NO3)2 + \_\_\_\_ RbF
5. \_\_\_\_ AgNO3 + \_\_\_\_ Cu 🡪 \_\_\_\_ Cu(NO3)2 + \_\_\_\_ Ag
6. \_\_\_\_ CF4 + \_\_\_\_ Br2 🡪 \_\_\_\_ CBr4 + \_\_\_\_ F2
7. \_\_\_\_ HCN + \_\_\_\_ CuSO4 🡪 \_\_\_\_ H2SO4 + \_\_\_\_ Cu(CN)2
8. \_\_\_\_ GaF3 + \_\_\_\_ Cs 🡪 \_\_\_\_ CsF + \_\_\_\_ Ga
9. \_\_\_\_ BaS + \_\_\_\_ PtF2 🡪 \_\_\_\_ BaF2 + \_\_\_\_ PtS
10. \_\_\_\_ NH3 + \_\_\_\_ H2SO4 🡪 \_\_\_\_ (NH4)2SO4

**THE BALANCING ACT**

**LEVEL 4: “HALOGENS”**

**Balance the following equations.**

1. Na3PO4 + HOH 🡪 NaOH + H3PO4

2. Al2(SO4)3 + Ca(OH)2 🡪 Al(OH)3 + CaSO4

3. FeCl3 + NH4OH 🡪 Fe(OH)3 + NH4Cl

4. Al(OH)3 + H2(SO4) 🡪 Al2(SO4)3 + H2O

5. Fe2(SO4)3 + KOH 🡪 K2SO4 + Fe(OH)3

6. C7H16 + O2 🡪 CO2 + H2O

7. P4O10 + H2O 🡪 H3PO4

8. C3H8 + O2 🡪 CO2 + H2O

9. PCl5 + H2O 🡪 HCl + H3PO4

10. H3(AsO4) 🡪 As2O5 + H2O

**THE BALANCING ACT**

**LEVEL 5: “NOBLE GASES”**

**Balance the following equations:**

1. Dinitrogen pentoxide + Water 🡪 Hydrogen nitrate
2. Nitrogen trihydride + Nitrogen monoxide 🡪 Nitrogen + Water
3. Aluminum + Hydrogen chloride 🡪 Aluminum chloride + Hydrogen
4. Phosphorus pentachloride + water 🡪 Hydrogen chloride + Hydrogen phosphate
5. Magnesium + Nitrogen 🡪 Magnesium nitride
6. Iron + Water 🡪 Iron (III) oxide + Hydrogen
7. Calcium chlorate 🡪 Calcium chloride + Oxygen
8. Lithium oxide + Water 🡪 Lithium hydroxide
9. Ammonium nitrate 🡪 Dinitrogen monoxide + water
10. Lead (II) nitrate 🡪 Lead (II) oxide + Nitrogen dioxide + Oxygen