Net Ionic Equation Worksheet

**Directions:** Write balanced molecular, ionic, and net ionic equations for each of the following reactions. Assume all reactions occur in aqueous solution. Include states of matter in your balanced equation.

1. Sodium chloride and lead(II) nitrate

**Molecular Equation:**

**Overall Ionic Equation:**

**Net Ionic Equation:**

1. Sodium carbonate and iron(II) chloride

**Molecular Equation:**

**Overall Ionic Equation:**

**Net Ionic Equation:**

1. Calcium hydroxide and hydrochloric acid

**Molecular Equation:**

**Overall Ionic Equation:**

**Net Ionic Equation:**

1. Potassium sulfide and calcium chloride

**Molecular Equation:**

**Overall Ionic Equation:**

**Net Ionic Equation:**

1. Ammonium phosphate and zinc nitrate

**Molecular Equation:**

**Overall Ionic Equation:**

**Net Ionic Equation:**

1. Lithium hydroxide and barium chloride

**Molecular Equation:**

**Overall Ionic Equation:**

**Net Ionic Equation:**

1. Magnesium nitrate and sodium sulfite

**Molecular Equation:**

**Overall Ionic Equation:**

**Net Ionic Equation:**

1. Barium bromide and sodium sulfate

**Molecular Equation:**

**Overall Ionic Equation:**

**Net Ionic Equation:**

1. Silver nitrate and magnesium iodide

**Molecular Equation:**

**Overall Ionic Equation:**

**Net Ionic Equation:**

1. Ammonium sulfide and aluminum perchlorate

**Molecular Equation:**

**Overall Ionic Equation:**

**Net Ionic Equation:**

1. Nickel nitrate and sodium hydroxide

**Molecular Equation:**

**Overall Ionic Equation:**

**Net Ionic Equation:**

1. Hydrobromic acid and lead(II) perchlorate

**Molecular Equation:**

**Overall Ionic Equation:**

**Net Ionic Equation:**

1. Potassium fluoride and magnesium nitrate

**Molecular Equation:**

**Overall Ionic Equation:**

**Net Ionic Equation:**

1. Sodium phosphate and nickel(II) chlorate

**Molecular Equation:**

**Overall Ionic Equation:**

**Net Ionic Equation:**

1. Copper(II) chloride and silver acetate

**Molecular Equation:**

**Overall Ionic Equation:**

**Net Ionic Equation:**

Net Ionic Equation Worksheet - answers

* 1. **Molecular Equation:** 2NaCl(aq) + Pb(NO3)2(aq) → PbCl2(s) + 2NaNO3(aq)

**Ionic Equation:** 2Na+(aq) + 2Cl-(aq) + Pb2+(aq) + 2NO3-(aq) → PbCl2(s) + 2Na+(aq) + 2NO3-(aq)

**NIE:** 2Cl-(aq) + Pb2+(aq) → PbCl2(s)

* 1. **Molecular Equation:** Na2CO3(aq) + FeCl2(aq) → FeCO3(s) + 2NaCl(aq)

**Ionic Equation:** 2Na+(aq) + CO32-(aq) + Fe2+(aq) + 2Cl-(aq) → FeCO3(s) + 2Na+(aq) + 2 Cl-(aq)

**NIE:** CO32-(aq) + Fe2+(aq) → FeCO3(s)

* 1. **Molecular Equation:** Ca(OH)2(aq) + 2HCl(aq) → CaCl2(aq) + 2 H2O(l)

**Ionic Equation:** Ca2+(aq) + 2 OH-(aq) + 2 H+(aq) + 2 Cl-(aq) → Ca2+(aq) + 2 Cl-(aq) + 2 H2O(l)

**NIE:** 2 OH-(aq) + 2 H+(aq) → 2 H2O(l) **(your final answer would be: OH-(aq) + H+(aq) → H2O(l)**

* 1. **Molecular Equation:** K2S (aq) + CaCl2 (aq) → 2 KCl(aq) + CaS (aq)

**Ionic Equation:** 2 K+(aq) + S2-(aq) + Ca2+(aq) + 2Cl-(aq) → 2 K+(aq) + 2 Cl-(aq) + Ca2+ (aq)+ S2-(aq)

**NIE:** N/A, all spectator ions

* 1. **Molecular Equation:** 2 (NH4)3PO4(aq) + 3 Zn(NO3)2(aq) → 6 NH4NO3(aq) + Zn3(PO4)2(s)

**Ionic Equation**: 6 NH4+(aq) + 2 PO43-(aq) + 3 Zn2+(aq) + 6 NO3-(aq) → 6 NH4+(aq) + 6NO3-(aq) + Zn3(PO4)2(s)

**NIE:** 2 PO43-(aq) + 3 Zn2+(aq) → Zn3(PO4)2(s)

* 1. **Molecular Equation:** 2 LiOH(aq) + BaCl2(aq) → 2 LiCl(aq) + Ba(OH)2(aq)

**Ionic Equation:** 2 Li+(aq) + 2 OH-(aq) + Ba2+(aq) + 2 Cl-(aq) → 2 Li+(aq) + 2 Cl-(aq) + Ba2+ + 2 OH-

**NIE:** N/A, all spectator ions

* 1. **Molecular Equation:** Mg(NO3)2(aq) + Na2SO3(aq) → 2NaNO3(aq) + MgSO3(s)

**Ionic Equation:** Mg2+(aq) + 2 NO3-(aq) + 2 Na+(aq) + SO32-(aq) → 2 Na+(aq) + 2 NO3-(aq) + MgSO3 (s)

**NIE:** Mg2+(aq) + SO32-(aq) → MgSO3 (s)

* 1. **Molecular Equation:** BaBr2(aq) + Na2SO4(aq) → BaSO4(s) + 2 NaBr(aq)

**Ionic Equation:** Ba2+(aq) + 2 Br-(aq) + 2 Na+(aq) + SO42-(aq) → BaSO4(s) + 2 Na+(aq) + 2 Br-(aq)

**NIE:** Ba2+(aq) + SO42-(aq) → BaSO4(s)

* 1. **Molecular Equation:** 2 AgNO3(aq) + MgI2(aq) → 2 AgI(s) + Mg(NO3)2(aq)

**Ionic Equation:** 2 Ag+(aq) + 2 NO3-(aq) + Mg2+(aq) + 2 I-(aq) → 2 AgI(s) + Mg2+(aq) + 2 NO3-(aq)

**NIE:** 2 Ag+(aq) + 2 I-(aq) → 2 AgI(s) **(your final answer would be:** **Ag+(aq) + I-(aq)** → **AgI(s)** )

* 1. **Molecular Equation:** 3 (NH4)2S(aq) + 2 Al(ClO4)3(aq) → Al2S3(s) + 6 NH4ClO4(aq)

**Ionic Equation:** 6 NH4+(aq) + 3 S2-(aq) + 2 Al3+(aq) + 6 ClO4-(aq) → 6 NH4+(aq) + 6 ClO4-(aq) + Al2S3(s)

**NIE:** 3 S2-(aq) + 2 Al3+(aq) → Al2S3(s)

* 1. **Molecular Equation:** Ni(NO3)2(aq) + 2 NaOH(aq) → Ni(OH)2(s) + 2 NaNO3(aq)

**Ionic Equation**: Ni2+(aq) + 2 NO3-(aq) + 2 Na+(aq) + 2 OH-(aq) → Ni(OH)2(s) + 2 Na+(aq) + NO3-(aq)

**NIE:** Ni2+(aq) + 2 OH-(aq) → Ni(OH)2(s)

* 1. **Molecular Equation:** 2 HBr(aq) + Pb(ClO4)2(aq) → 2 HClO4(aq) + PbBr2(s)

**Ionic Equation:** 2 H+(aq) + 2 Br-(aq) + Pb2+(aq) + 2ClO4-(aq) → 2H+(aq) + 2 ClO4-(aq) + PbBr2(s)

**NIE:** 2 Br-(aq) + Pb2+(aq) → PbBr2(s)

* 1. **Molecular Equation:** 2 KF(aq) + Mg(NO3)2(aq) → 2 KNO3(aq) + MgF2(s)

**Ionic Equation:** 2 K+(aq) + 2 F-(aq) + Mg2+(aq) + 2NO3-(aq) → 2 K+(aq) + 2 NO3-(aq) + MgF2(s)

**NIE:** 2 F-(aq) + Mg2+(aq) → MgF2(s)

* 1. **Molecular Equation:** 2 Na3PO4(aq) + 3 Ni(ClO3)2(aq) → 6 NaClO3(aq) + Ni3(PO4)2(s)

**Ionic Equation:** 6 Na+(aq) + 2 PO43-(aq) + 3 Ni2+(aq) + 6 ClO3-(aq) → 6 Na+(aq) + 6 ClO3-(aq) + Ni3(PO4)2(s)

**NIE**: 2 PO43-(aq) + 3 Ni2+(aq) → Ni3(PO4)2(s)

* 1. **Molecular Equation:** CuCl2(aq) + 2 AgC2H3O2(aq) → Cu(C2H3O2)2(aq) + 2 AgCl(s)

**Ionic Equation:** Cu2+(aq) + 2 Cl-(aq) + 2 Ag+(aq) + 2 C2H3O2-(aq) → Cu2+(aq) + 2 C2H3O2-(aq) + 2 AgCl(s)

**NIE:** Cl-(aq) + Ag+(aq) → AgCl(s)