**BALANCING CHEMICAL EQUATIONS WORKSHEET**

First, begin by telling which type of reaction is taking place. Then go back and balance the following equations:

To practice balancing, you may use the Phet Lab online. When finished, check your answers.

1. \_\_\_\_\_\_\_\_ NaBr + \_\_\_\_\_\_\_\_ H3PO4 🡪 \_\_\_\_\_\_\_\_ Na3PO4 + \_\_\_\_\_\_\_\_ HBr

**Type of reaction:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

**Type of reaction:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. \_\_\_\_\_\_\_\_ Mg + \_\_\_\_\_\_\_\_ Fe2O3 🡪 \_\_\_\_\_\_\_\_ Fe + \_\_\_\_\_\_\_\_ MgO

**Type of reaction:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. \_\_\_\_\_\_\_\_ C2H4 + \_\_\_\_\_\_\_\_ O2 🡪 \_\_\_\_\_\_\_\_ CO2 + \_\_\_\_\_\_\_\_ H2O

**Type of reaction**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. \_\_\_\_\_\_\_\_ PbSO4 🡪 \_\_\_\_\_\_\_\_ PbSO3 + \_\_\_\_\_\_\_\_ O2

**Type of reaction:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. \_\_\_\_\_\_\_\_ NH3 + \_\_\_\_\_\_\_\_ I2 🡪 \_\_\_\_\_\_\_\_ N2I6 + \_\_\_\_\_\_\_\_ H2

**Type of reaction:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. \_\_\_\_\_\_\_\_ H2O+ \_\_\_\_\_\_\_\_ SO3 🡪 \_\_\_\_\_\_\_\_ H2SO4

**Type of reaction:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. \_\_\_\_\_\_\_\_ H2SO4 + \_\_\_\_\_\_\_\_ NH4OH 🡪 \_\_\_\_\_\_\_\_ H2O + \_\_\_\_\_\_\_\_ (NH4)2SO4

**Type of reaction:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Balancing Equations Practice Worksheet**

Balance the following equations*:*

1. \_\_\_\_\_\_\_ NaNO3 + \_\_\_\_\_\_\_ PbO 🡪 \_\_\_\_\_\_\_ Pb (NO3)2 +\_\_\_\_\_\_\_ Na2O
2. \_\_\_\_\_\_\_ AgI +\_\_\_\_\_\_\_ Fe2 (CO3)3 🡪 \_\_\_\_\_\_\_ FeI3 +\_\_\_\_\_\_\_ Ag2CO­3
3. \_\_\_\_\_\_\_ C2H4O2 + \_\_\_\_\_\_\_ O2 🡪 \_\_\_\_\_\_\_ CO2 + \_\_\_\_\_\_\_ H2O
4. \_\_\_\_\_\_\_ ZnSO4 + \_\_\_\_\_\_\_ Li2CO3 🡪 \_\_\_\_\_\_\_ ZnCO3 + \_\_\_\_\_\_\_ Li2SO4
5. \_\_\_\_\_\_\_ V2O5 + \_\_\_\_\_\_\_ CaS 🡪\_\_\_\_\_\_\_ CaO + \_\_\_\_\_\_\_ V2S5
6. \_\_\_\_\_\_\_ Mn (NO2)2 + \_\_\_\_\_\_\_ BeCl2 🡪 \_\_\_\_\_\_\_ Be (NO2)2 + \_\_\_\_\_\_\_ MnCl2
7. \_\_\_\_\_\_\_ AgBr + \_\_\_\_\_\_\_ GaPO4 🡪\_\_\_\_\_\_\_ Ag3PO4 + \_\_\_\_\_\_\_ GaBr3
8. \_\_\_\_\_\_\_ H2SO4 + \_\_\_\_\_\_\_ B (OH) 3 🡪 \_\_\_\_\_\_\_ B2 (SO4)3 + \_\_\_\_\_\_\_ H2O
9. \_\_\_\_\_\_\_ S8­ + \_\_\_\_\_\_\_ O2 🡪 \_\_\_\_\_\_\_ SO2
10. \_\_\_\_\_\_\_ Fe + \_\_\_\_\_\_\_ AgNO3 🡪\_\_\_\_\_\_\_ Fe (NO3)2 + \_\_\_\_\_\_\_ Ag

**Another Balancing Equations Sheet**

Balance these equations!

1. \_\_\_\_\_\_\_\_ AlBr3 + \_\_\_\_\_\_\_\_ K 🡪 \_\_\_\_\_\_\_\_ KBr + \_\_\_\_\_\_\_\_ Al
2. \_\_\_\_\_\_\_\_ FeO + \_\_\_\_\_\_\_\_ PdF2 🡪 \_\_\_\_\_\_\_\_ FeF2 + \_\_\_\_\_\_\_\_ PdO
3. \_\_\_\_\_\_\_\_ P4 + \_\_\_\_\_\_\_\_ Br2 🡪 \_\_\_\_\_\_\_\_ PBr3
4. \_\_\_\_\_\_\_\_ LiCl + \_\_\_\_\_\_\_\_ Br2 🡪 \_\_\_\_\_\_\_\_ LiBr + \_\_\_\_\_\_\_\_ Cl2
5. \_\_\_\_\_\_\_\_ PbBr2 + \_\_\_\_\_\_\_\_ HCl 🡪 \_\_\_\_\_\_\_\_ HBr + \_\_\_\_\_\_\_\_ PbCl2
6. \_\_\_\_\_\_\_\_ CoBr3 + \_\_\_\_\_\_\_\_ CaSO4 🡪 \_\_\_\_\_\_\_\_ CaBr2 + \_\_\_\_\_\_\_\_ Co2 (SO4)3
7. \_\_\_\_\_\_\_\_ Na3P + \_\_\_\_\_\_\_\_ CaF2 🡪 \_\_\_\_\_\_\_\_ NaF + \_\_\_\_\_\_\_\_ Ca3P2
8. \_\_\_\_\_\_\_\_ Mn + \_\_\_\_\_\_\_\_ HI 🡪 \_\_\_\_\_\_\_\_ H2 + \_\_\_\_\_\_\_\_ MnI3
9. \_\_\_\_\_\_\_\_ Li3PO4 + \_\_\_\_\_\_\_\_ NaBr 🡪 \_\_\_\_\_\_\_\_ Na3PO4 + \_\_\_\_\_\_\_\_ LiBr
10. \_\_\_\_\_\_\_\_ CaF2 + \_\_\_\_\_\_\_\_ Li2SO4 🡪 \_\_\_\_\_\_\_\_ CaSO4 + \_\_\_\_\_\_\_\_ LiF
11. \_\_\_\_\_\_\_\_ HBr + \_\_\_\_\_\_\_\_ Mg (OH) 2 🡪 \_\_\_\_\_\_\_\_ MgBr2 + \_\_\_\_\_\_\_\_ H2O
12. \_\_\_\_\_\_\_\_ LiNO3 + \_\_\_\_\_\_\_\_ CaBr2 🡪 \_\_\_\_\_\_\_\_ Ca (NO3)2 + \_\_\_\_\_\_\_\_ LiBr
13. \_\_\_\_\_\_\_\_ AgNO3 + \_\_\_\_\_\_\_\_ Li 🡪 \_\_\_\_\_\_\_\_ LiNO3 + \_\_\_\_\_\_\_\_ Ag
14. \_\_\_\_\_\_\_\_ Si (OH) 4 + \_\_\_\_\_\_\_\_ NaBr 🡪 \_\_\_\_\_\_\_\_ SiBr4 + \_\_\_\_\_\_\_\_ NaOH
15. \_\_\_\_\_\_\_\_ NaCN + \_\_\_\_\_\_\_\_ CuCO3 🡪 \_\_\_\_\_\_\_\_ Na2CO3 + \_\_\_\_\_\_\_\_ Cu (CN) 2

**Word Equations Worksheet**

Write and balance the following chemical equations.

1. When dissolved beryllium chloride reacts with dissolved silver nitrate in water, aqueous beryllium nitrate and silver chloride powder are made.
2. When isopropanol (C3H8O) burns in oxygen, carbon dioxide, water, and heat are produced.
3. When dissolved sodium hydroxide reacts with sulfuric acid (H2SO­4), aqueous sodium sulfate, water, and heat are formed.
4. When fluorine gas is put into contact with calcium metal at high temperatures, calcium fluoride powder is created in an exothermic reaction.
5. When sodium metal reacts with iron (II) chloride, iron metal and sodium chloride are formed.

**Types of Reactions Worksheet Solutions**

Balance the following equations and indicate the type of reaction taking place:

1. **3** NaBr + **1** H3PO4 🡪 **1** Na3PO4 + **3** HBr

Type of reaction: **double displacement**

1. **3** Ca (OH) 2 + **1** Al2 (SO4)3 🡪 **3** CaSO4 + **2** Al (OH) 3

Type of reaction: **double displacement**

1. **3** Mg + **1** Fe2O3 🡪 **2** Fe + **3** MgO

Type of reaction: **single displacement**

1. **1** C2H4 + **3** O2 🡪 **2** CO2 + **2** H2O

Type of reaction: **combustion**

1. **2** PbSO4 🡪 **2** PbSO3 + **1** O2

Type of reaction: **decomposition**

1. **2** NH3 + **3** I2 🡪 **1** N2I6 + **3** H2

Type of reaction: **double displacement**

1. **1** H2O+ **1** SO3 🡪 **1** H2SO4

Type of reaction: **decomposition**

1. **1** H2SO4 + **2** NH4OH 🡪 **2** H2O + **1** (NH4)2SO4

Type of reaction: **acid-base**

**Solutions for the Balancing Equations Practice Worksheet**

1. **2** NaNO3 + PbO 🡪 Pb (NO3)2 + Na2O
2. **6** AgI + Fe2 (CO3)3 🡪 **2** FeI3 + **3** Ag2CO­3
3. C2H4O2 + **2** O2 🡪 **2** CO2 + **2** H2O
4. ZnSO4 + Li2CO3 🡪 ZnCO3 + Li2SO4
5. V2O5 + **5** CaS 🡪 **5** CaO + V2S5
6. Mn (NO2)2 + BeCl2 🡪 Be (NO2)2 + MnCl2
7. **3** AgBr + GaPO4 🡪 Ag3PO4 + GaBr3
8. **3** H2SO4 + **2** B (OH) 3 🡪 B2 (SO4)3 + **6** H2O
9. S8­ + **8** O2 🡪 **8** SO2
10. Fe + **2** AgNO3 🡪 Fe (NO3)2 + **2** Ag

**Another Balancing Equations Sheet Answers**

Balance these equations!

Note to students: Whenever balancing an equation, it is acceptable to leave spaces blank instead of writing “1’ – in chemistry, they mean the same thing.

1. **1** AlBr3 + **3** K 🡪 **3** KBr + **1** Al
2. **1** FeO + **1** PdF2 🡪 **1** FeF2 + **1** PdO
3. **1** P4 + **6** Br2 🡪 **4** PBr3
4. **2** LiCl + **1** Br2 🡪 **2** LiBr + **1** Cl2
5. **1** PbBr2 + **2** HCl 🡪 **2** HBr + **1** PbCl2
6. **2** CoBr3 + **3** CaSO4 🡪 **3** CaBr2 + **1** Co2 (SO4)3
7. **2** Na3P + **3** CaF2 🡪 **6** NaF + **1** Ca3P2
8. **2** Mn + **6** HI 🡪 **3** H2 + **2** MnI3
9. **1** Li3PO4 + **3** NaBr 🡪 **1** Na3PO4 + **3** LiBr
10. **1** CaF2 + **1** Li2SO4 🡪 **1** CaSO4 + **2** LiF
11. **2** HBr + **1** Mg (OH) 2 🡪 **1** MgBr2 + **2** H2O
12. **2** LiNO3 + **1** CaBr2 🡪 **1** Ca (NO3)2 + **2** LiBr
13. **1** AgNO3 + **1** Li 🡪 **1** LiNO3 + **1** Ag
14. **1** Si (OH) 4 + **4** NaBr 🡪 **1** SiBr4 + **4** NaOH
15. **2** NaCN + **1** CuCO3 🡪 **1** Na2CO3 + **1** Cu (CN) 2

**Word Equations Worksheet - Solutions**

Write the word equations for each of the following chemical reactions:

1. BeCl2 (aq) + 2 AgNO3 (aq) 🡪 Be (NO3)2(aq) + 2 AgCl(s)
2. 2 C3H8O (l) + 9 O2 (g) 🡪 6 CO2 (g) + 8 H2O (g) ­
3. 2 NaOH (aq) + H2SO­4 (l) 🡪 Na2SO4 + 2 H2O (l)
4. F2 (g) + Ca(s) 🡪 CaF2(s)
5. 2 Na(s) + FeCl2(s) 🡪 2 NaCl(s) + Fe(s)