Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Hour: \_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_

**Chemistry: *Balancing Chemical Equations***

*Directions: First, balance each of the chemical equations below. Then, classify each reaction as* ***synthesis****,* ***decomposition****,* ***single-replacement****, or* ***double-replacement****. To earn full credit, write the words out when classifying.*

**Balance the equation… …and classify it.**

1. \_\_\_\_ Sb + \_\_\_\_ Cl2 🡪 \_\_\_\_SbCl3 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. \_\_\_\_ Mg + \_\_\_\_O2 🡪 \_\_\_\_MgO \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. \_\_\_\_ CaCl2 🡪 \_\_\_\_ Ca + \_\_\_\_ Cl2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4. \_\_\_\_ NaClO3 🡪 \_\_\_\_ NaCl + \_\_\_\_ O2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

5. \_\_\_\_ Fe + \_\_\_\_ HCl 🡪 \_\_\_\_ FeCl2 + \_\_\_\_ H2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

6. \_\_\_\_ CuO + \_\_\_\_ H2 🡪 \_\_\_\_ Cu + \_\_\_\_ H2O \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

7. \_\_\_\_ Al + \_\_\_\_ H2SO4 🡪 \_\_\_\_ Al2(SO4)3 + \_\_\_\_ H2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

8. \_\_\_\_ MgBr2 + \_\_\_\_ Cl2 🡪 \_\_\_\_ MgCl2 + \_\_\_\_ Br2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

9. \_\_\_\_ SnO2 + \_\_\_\_ C 🡪 \_\_\_\_ Sn + \_\_\_\_ CO \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

10. \_\_\_\_ Pb(NO3)2 + \_\_\_\_ H2S 🡪 \_\_\_\_ PbS + \_\_\_\_ HNO3 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

11. \_\_\_\_ HgO 🡪 \_\_\_\_ Hg + \_\_\_\_ O2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

12. \_\_\_\_ KClO3 🡪 \_\_\_\_ KCl + \_\_\_\_ O2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

13. \_\_\_\_ N2 + \_\_\_\_ H2 🡪 \_\_\_\_ NH3 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

14. \_\_\_\_ NaBr + \_\_\_\_ Cl2 🡪 \_\_\_\_ NaCl + \_\_\_\_ Br2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

15. \_\_\_\_ Zn + \_\_\_\_ AgNO3 🡪 \_\_\_\_ Zn(NO3)2 + \_\_\_\_ Ag \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

16. \_\_\_\_ Sn + \_\_\_\_ Cl2 🡪 \_\_\_\_ SnCl4 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

17. \_\_\_\_ Ba(OH)2 🡪 \_\_\_\_ BaO + \_\_\_\_ H2O \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Balance the equation… …and classify it.**

18. \_\_\_\_ Mg(OH)2 + \_\_\_\_ HCl 🡪 \_\_\_\_ MgCl2 + \_\_\_\_ H2O \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

19. \_\_\_\_ Na2CO3 + \_\_\_\_ HCl 🡪 \_\_\_\_ NaCl + \_\_\_\_ H2CO3 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

20. \_\_\_\_ NH4NO2 🡪 \_\_\_\_ N2 + \_\_\_\_ H2O \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

21. \_\_\_\_ N2 + \_\_\_\_ O2 🡪 \_\_\_\_ N2O5 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

22. \_\_\_\_ MgCO3 🡪 \_\_\_\_ MgO + \_\_\_\_ CO2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

23. \_\_\_\_ KBr + \_\_\_\_ Cl2 🡪 \_\_\_\_ KCl + \_\_\_\_ Br2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

24. \_\_\_\_ Zn + \_\_\_\_ CuSO4 🡪 \_\_\_\_ Cu + \_\_\_\_ ZnSO4 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

25. \_\_\_\_ P + \_\_\_\_ O2 🡪 \_\_\_\_ P4O6 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

26. \_\_\_\_ SrBr2 + \_\_\_\_ (NH4)2CO3 🡪 \_\_\_\_ SrCO3 + \_\_\_\_ NH4Br \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

27. \_\_\_\_ AgNO3 + \_\_\_\_ (NH4)2CrO4 🡪 \_\_\_\_ Ag2CrO4 + \_\_\_\_ NH4NO3 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

28. \_\_\_\_ K + \_\_\_\_ H2O 🡪 \_\_\_\_ KOH + \_\_\_\_ H2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

29. \_\_\_\_ Al + \_\_\_\_ Pb(NO3)2 🡪 \_\_\_\_ Al(NO3)3 + \_\_\_\_ Pb \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

30. \_\_\_\_ Fe + \_\_\_\_ O2 🡪 \_\_\_\_ Fe3O4 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

31. \_\_\_\_ Li + \_\_\_\_ O2 🡪 \_\_\_\_ Li2O \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

32. \_\_\_\_ ZnCl2 + \_\_\_\_ KOH 🡪 \_\_\_\_ Zn(OH)2 + \_\_\_\_ KCl \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

33. \_\_\_\_ Fe3O4 + \_\_\_\_ H2 🡪 \_\_\_\_ Fe + \_\_\_\_ H2O \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

34. \_\_\_\_ Pb(NO3)2 🡪 \_\_\_\_ Pb + \_\_\_\_ NO2 + \_\_\_\_ O2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

35. \_\_\_\_ H2O 🡪 \_\_\_\_ H2 + \_\_\_\_ O2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

36. \_\_\_\_ Mg + \_\_\_\_ N2 🡪 \_\_\_\_ Mg3N2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**KEY**

**Chemistry: *Balancing Chemical Equations***

*Directions: First, balance each of the chemical equations below. Then, classify each reaction as* ***synthesis****,* ***decomposition****,* ***single-replacement****, or* ***double-replacement****. To earn full credit, write the words out when classifying.*

**Balance the equation… …and classify it.**

1. \_\_**2**\_ Sb + \_\_**3**\_ Cl2 🡪 \_\_**2**\_SbCl3 **synthesis**

2. \_\_**2**\_ Mg + \_\_\_\_O2 🡪 \_\_**2**\_MgO **synthesis**

3. \_\_\_\_ CaCl2 🡪 \_\_\_\_ Ca + \_\_\_\_ Cl2 **decomposition**

4. \_\_**2**\_ NaClO3 🡪 \_\_**2**\_ NaCl + \_\_**3**\_ O2 **decomposition**

5. \_\_\_\_ Fe + \_\_**2**\_ HCl 🡪 \_\_\_\_ FeCl2 + \_\_\_\_ H2 **single replacement**

6. \_\_\_\_ CuO + \_\_\_\_ H2 🡪 \_\_\_\_ Cu + \_\_\_\_ H2O **single replacement**

7. \_\_**2**\_ Al + \_\_**3**\_ H2SO4 🡪 \_\_\_\_ Al2(SO4)3 + \_\_**3**\_ H2 **single replacement**

8. \_\_\_\_ MgBr2 + \_\_\_\_ Cl2 🡪 \_\_\_\_ MgCl2 + \_\_\_\_ Br2 **single replacement**

9. \_\_\_\_ SnO2 + \_\_**2**\_ C 🡪 \_\_\_\_ Sn + \_\_**2**\_ CO **single replacement**

10. \_\_\_\_ Pb(NO3)2 + \_\_\_\_ H2S 🡪 \_\_\_\_ PbS + \_\_**2**\_ HNO3 **double replacement**

11. \_\_**2**\_ HgO 🡪 \_\_**2**\_ Hg + \_\_\_\_ O2 **decomposition**

12. \_\_**2**\_ KClO3 🡪 \_\_**2**\_ KCl + \_\_**3**\_ O2 **decompostion**

13. \_\_\_\_ N2 + \_\_**3**\_ H2 🡪 \_\_**2**\_ NH3 **synthesis**

14. \_\_**2**\_ NaBr + \_\_\_\_ Cl2 🡪 \_\_**2**\_ NaCl + \_\_\_\_ Br2 **single replacement**

15. \_\_\_\_ Zn + \_\_**2**\_ AgNO3 🡪 \_\_\_\_ Zn(NO3)2 + \_\_**2**\_ Ag **single replacement**

16. \_\_\_\_ Sn + \_\_**2**\_ Cl2 🡪 \_\_\_\_ SnCl4 **synthesis**

17. \_\_\_\_ Ba(OH)2 🡪 \_\_\_\_ BaO + \_\_\_\_ H2O **decomposition**

**Balance the equation… …and classify it.**

18. \_\_\_\_ Mg(OH)2 + \_\_**2**\_ HCl 🡪 \_\_\_\_ MgCl2 + \_\_**2**\_ H2O **double replacement**

19. \_\_\_\_ Na2CO3 + \_\_**2**\_ HCl 🡪 \_\_**2**\_ NaCl + \_\_\_\_ H2CO3 **double replacement**

20. \_\_\_\_ NH4NO2 🡪 \_\_\_\_ N2 + \_\_**2**\_ H2O **decompostion**

21. \_\_**2**\_ N2 + \_\_**5**\_ O2 🡪 \_\_**2**\_ N2O5 **synthesis**

22. \_\_\_\_ MgCO3 🡪 \_\_\_\_ MgO + \_\_\_\_ CO2 **decomposition**

23. \_\_**2**\_ KBr + \_\_\_\_ Cl2 🡪 \_\_**2**\_ KCl + \_\_\_\_ Br2 **single replacement**

24. \_\_\_\_ Zn + \_\_\_\_ CuSO4 🡪 \_\_\_\_ Cu + \_\_\_\_ ZnSO4 **single replacement**

25. \_\_**4**\_ P + \_\_**3**\_ O2 🡪 \_\_\_\_ P4O6 **synthesis**

26. \_\_\_\_ SrBr2 + \_\_\_\_ (NH4)2CO3 🡪 \_\_\_\_ SrCO3 + \_\_**2**\_ NH4Br **double replacement**

27. \_\_**2**\_ AgNO3 + \_\_\_\_ (NH4)2CrO4 🡪 \_\_\_\_ Ag2CrO4 + \_\_**2**\_ NH4NO3 **double replacement**

28. \_\_**2**\_ K + \_\_**2**\_ H2O 🡪 \_\_**2**\_ KOH + \_\_\_\_ H2 **single replacement**

29. \_\_**2**\_ Al + \_\_**3**\_ Pb(NO3)2 🡪 \_\_**2**\_ Al(NO3)3 + \_\_**3**\_ Pb **single replacement**

30. \_\_**3**\_ Fe + \_\_**2**\_ O2 🡪 \_\_\_\_ Fe3O4 **synthesis**

31. \_\_**4**\_ Li + \_\_\_\_ O2 🡪 \_\_**2**\_ Li2O **synthesis**

32. \_\_\_\_ ZnCl2 + \_\_**2**\_ KOH 🡪 \_\_\_\_ Zn(OH)2 + \_\_**2**\_ KCl **double replacement**

33. \_\_\_\_ Fe3O4 + \_\_**4**\_ H2 🡪 \_\_**3**\_ Fe + \_\_**4**\_ H2O **single replacement**

34. \_\_\_\_ Pb(NO3)2 🡪 \_\_\_\_ Pb + \_\_**2**\_ NO2 + \_\_\_\_ O2 **decomposition**

35. \_\_**2**\_ H2O 🡪 \_\_**2**\_ H2 + \_\_\_\_ O2 **decomposition**

36. \_\_**3**\_ Mg + \_\_\_\_ N2 🡪 \_\_\_\_ Mg3N2 **synthesis**