**Unit 7 - Chemical Reactions Homework**

**Part 1:** Answer each question completely.

1. What is a chemical reaction? How do you know a reaction has taken place?
2. Describe EACH of the 5 main types of reactions.
3. Explain how the law of conservation of mass applies to chemical reactions.

**Part 2:** Balance each of the following reactions.

1. \_\_\_\_\_ H2 + \_\_\_\_\_ O2 → \_\_\_\_\_ H2O

2. \_\_\_\_\_ N2 +\_\_\_\_\_ H2 →\_\_\_\_\_ NH3

3. \_\_\_\_\_ S8 + \_\_\_\_\_ O2 → \_\_\_\_\_ SO3

4. \_\_\_\_\_ N2 + \_\_\_\_\_ O2 → \_\_\_\_\_ N2O

5. \_\_\_\_\_ HgO → \_\_\_\_\_ Hg + \_\_\_\_\_ O2

6. \_\_\_\_\_ CO2 + \_\_\_\_\_ H2O → \_\_\_\_\_ C6H12O6 + \_\_\_\_\_ O2

7. \_\_\_\_\_ Zn + \_\_\_\_\_ HCl → \_\_\_\_\_ ZnCl2 + \_\_\_\_\_ H2

8. \_\_\_\_\_ SiCl4 + \_\_\_\_\_ H2O → \_\_\_\_\_ H4SiO4 + \_\_\_\_\_ HCl

9. \_\_\_\_\_ Na + \_\_\_\_\_ H2O → \_\_\_\_\_ NaOH + \_\_\_\_\_ H2

10. \_\_\_\_\_ H3PO4 → \_\_\_\_\_ H4P2O7 + \_\_\_\_\_ H2O

11. \_\_\_\_\_ C10H16 + \_\_\_\_\_ Cl2 → \_\_\_\_\_ C + \_\_\_\_\_ HCl

12. \_\_\_\_\_ CO2 + \_\_\_\_\_ NH3 → \_\_\_\_\_ OC(NH2)2 + \_\_\_\_\_ H2O

13. \_\_\_\_\_ Si2H3 + \_\_\_\_\_ O2 → \_\_\_\_\_ SiO2 + \_\_\_\_\_ H2O3

14. \_\_\_\_\_ Al(OH)3 + \_\_\_\_\_ H2SO4 → \_\_\_\_\_ Al2(SO4)3 + \_\_\_\_\_ H2O

15. \_\_\_\_\_ Fe + \_\_\_\_\_ O2 → \_\_\_\_\_ Fe2O3

16. \_\_\_\_\_ Fe2(SO4)3 + \_\_\_\_\_ KOH → \_\_\_\_\_ K2SO4 + \_\_\_\_\_ Fe(OH)3

17. \_\_\_\_\_ C7H6O2 + \_\_\_\_\_ O2 → \_\_\_\_\_ CO2 + \_\_\_\_\_ H2O

18. \_\_\_\_\_ H2SO4 + \_\_\_\_\_ HI → \_\_\_\_\_ H2S + \_\_\_\_\_ I2 + \_\_\_\_\_ H2O

19. \_\_\_\_\_ FeS2 + \_\_\_\_\_ O2 → \_\_\_\_\_ Fe2O3 + \_\_\_\_\_ SO2

20. \_\_\_\_\_ Al + \_\_\_\_\_ FeO → \_\_\_\_\_ Al2O3 + \_\_\_\_\_ Fe

21. \_\_\_\_\_ Fe2O3 + \_\_\_\_\_ H2 → \_\_\_\_\_ Fe + \_\_\_\_\_ H2O

22. \_\_\_\_\_ Na2CO3 + \_\_\_\_\_ HCl → \_\_\_\_\_ NaCl + \_\_\_\_\_ H2O + \_\_\_\_\_ CO2

23. \_\_\_\_\_ K + \_\_\_\_\_ Br2 → \_\_\_\_\_ KBr

24. \_\_\_\_\_ C7H16 + \_\_\_\_\_ O2 → \_\_\_\_\_ CO2 + \_\_\_\_\_ H2O

25. \_\_\_\_\_ P4 + \_\_\_\_\_ O2 → \_\_\_\_\_ P2O5

**Part 3:** Write the skeleton equation for each reaction AND balance it.

26. Dicarbon dihydride + Oxygen → Carbon dioxide + Water

27. Potassium oxide + Water → Potassium hydroxide

28. Hydrogen peroxide → Water + Oxygen

29. Aluminum + Oxygen → Aluminum oxide

30. Sodium peroxide + Water → Sodium hydroxide + oxygen

31. Silicon dioxide + Hydrogen fluoride → Silicon tetrafluoride + Water

32. Carbon + water → Carbon monoxide + Hydrogen

33. Potassium chlorate → Potassium chloride + Oxygen

34. Potassium chlorate → Potassium perchlorate + Potassium chloride

35. Aluminum sulfate + Calcium hydroxide → Aluminum hydroxide + Calcium sulfate

36. Tetraphosphorus decoxide + Water → Hydrogen phosphate

37. Iron III chloride + Ammonium hydroxide → Iron III hydroxide + Ammonium chloride

38. Antimony + Oxygen → Tetrantimony Hexoxide

39. Tricarbon octahydride + Oxygen → Carbon dioxide + water

40. Dinitrogen pentoxide + Water → Hydrogen nitrate

41. Nitrogen trihydride + Nitrogen monoxide → Nitrogen + Water

42. Aluminum + Hydrogen chloride → Aluminum chloride + Hydrogen

43. Phosphorus pentachloride + water → Hydrogen chloride + Hydrogen phosphate

44. Magnesium + Nitrogen → Magnesium nitride

45. Iron + Water → Iron III oxide + Hydrogen

46. Sodium hydroxide + Chlorine → Sodium chloride + Sodium hypochlorite + water

47. Lithium oxide + Water → Lithium hydroxide

48. Ammonium nitrate → Dinitrogen monoxide + water

49. Lead II nitrate → Lead II oxide + Nitrogen dioxide + Oxygen

50. Calcium chlorate → Calcium chloride + Oxygen

**Part 4:** For each reaction in Parts 2 AND 3, go back and state which type of reaction it is. If it does not fit any of our 5 types, write NONE.