Name: Answer Key Period: _____ Date: _____ Chem A *odds for HW and evens for extra practice*

WS 1.7: Harder Balancing Problems

Directions: *Balance the following chemical equations. Descriptions of the equation, physical states, and atoms that are ions (have a positive or negative charge) have absolutely* ***no effect*** *on balancing. The problems at the very end with a "**" are extremely difficult. They are far more difficult thaN the problems that will appear on your test of final exam. Give them a try if you like a challenge or have extra time in class*

1) **2** $C_2H_6(g)$ + **7** $O_2(g)$ → **4** $CO_2(g)$ + **6** $H_2O(g)$

2) **2** $NaN_3(s)$ → **2** $Na(s)$ + **3** $N_2(g)$

3) **6** Na + Fe_2O_3 → **3** Na_2O + **2** Fe

4) **3** $Mg(s)$ + $N_2(g)$ → $Mg_3N_2(s)$

5) **2** Na + **2** NH_3 → **2** $NaNH_2$ + H_2

6) Na_2O + **2** CO_2 + H_2O → **2** $NaHCO_3$

7) $P_4S_3(s)$ + **6** $O_2(g)$ → $P_4O_6(g)$ + **3** $SO_2(g)$

8) **2** Na_3PO_4 + **3** $CaCl_2$ → $Ca_3(PO_4)_2$ + **6** $NaCl$

9) **2** $C_8H_{18}(l)$ + **25** $O_2(g)$ → **16** $CO_2(g)$ + **18** $H_2O(g)$

10) $C_2H_6O(l)$ + **3** $O_2(g)$ → **2** $CO_2(g)$ + **3** $H_2O(g)$

11) $Pb(NO_3)_2$ + **2** KI → PbI_2 + **2** KNO_3

12) **2** N_2O_5 → **4** NO_2 + O_2

13) **2** $KClO_3(s)$ → **2** $KCl(s)$ + **3** $O_2(g)$

14) **2** $CO(g)$ + $O_2(g)$ → **2** $CO_2(g)$

15) **2** $C_{57}H_{110}O_6(s)$ + **163** $O_2(g)$ → **114** $CO_2(g)$ + **110** $H_2O(l)$

16) **6** Na + **2** O_2 → **2** Na_2O + Na_2O_2

17) $2\ Al + 3\ H_2SO_4 \rightarrow Al_2(SO_4)_3 + 3\ H_2$

18) $2\ C_7H_{10}N + 21\ O_2 \rightarrow 14\ CO_2 + 10\ H_2O + 2\ NO_2$

19) $2\ Al(OH)_3 + 3\ H_2SO_4 \rightarrow Al_2(SO_4)_3 + 6\ H_2O$

20) $3\ BaO + 14\ Al \rightarrow 3\ BaAl_4 + Al_2O_3$

21) $2\ AgN_3(s) \rightarrow 3\ N_2(g) + 2\ Ag(s)$

22) $Pt + 4\ HNO_3 + 6\ HCl \rightarrow H_2PtCl_6 + 4\ NO_2 + 4\ H_2O$

23) $2\ LuCl_3 + 3\ Ca \rightarrow 2\ Lu + 3\ CaCl_2$

24) $XeF_6 + 3\ H_2O \rightarrow XeO_3 + 6\ HF$

25) $Ba_2XeO_6 + 2\ H_2SO_4 \rightarrow 2\ BaSO_4 + 2\ H_2O + XeO_4$

26) $P_4O_6 + 6\ H_2O \rightarrow 4\ H_3PO_3$

27) $2\ C_6H_{14}(l) + 19\ O_2(g) \rightarrow 12\ CO_2(g) + 14\ H_2O(g)$

28) $2\ MoS_2 + 7\ O_2 \rightarrow 2\ MoO_3 + 4\ SO_2$

**22) $2\ K_2MnF_6 + 4\ SbF_5 \rightarrow 4\ KSbF_6 + 2\ MnF_3 + F_2$

**23) $S + 6\ HNO_3 \rightarrow H_2SO_4 + 6\ NO_2 + H_2O$

**24) $3\ Cu + 8\ HNO_3 \rightarrow 3\ Cu(NO_3)_2 + 2\ NO + 4\ H_2O$

**25) $CuS + 8\ HNO_3 \rightarrow CuSO_4 + 8\ NO_2 + 4\ H_2O$

**26) $Cu_2S + 12\ HNO_3 \rightarrow Cu(NO_3)_2 + CuSO_4 + 10\ NO_2 + 6\ H_2O$

**27) $5\ NaBr + NaBrO_3 + 3\ H_2SO_4 \rightarrow 3\ Br_2 + 3\ Na_2SO_4 + 3\ H_2O$

**28) $48\ KNO_3 + 5\ C_{12}H_{22}O_{11} \rightarrow 24\ N_2 + 36\ CO_2 + 55\ H_2O + 24\ K_2CO_3$