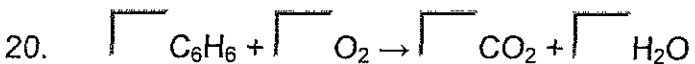
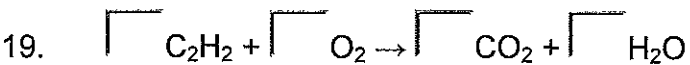
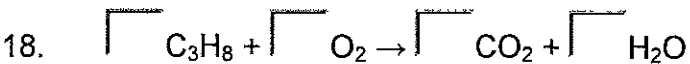
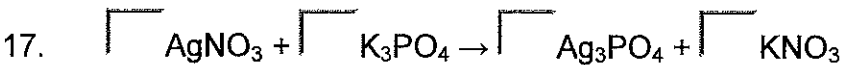
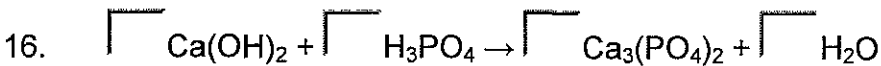
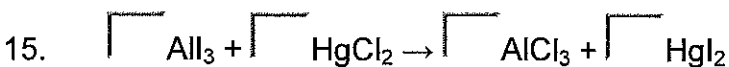
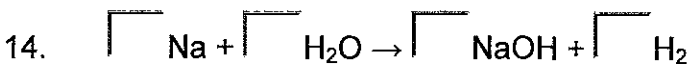
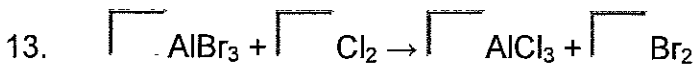
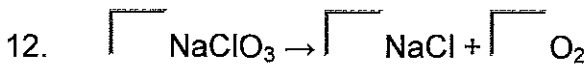
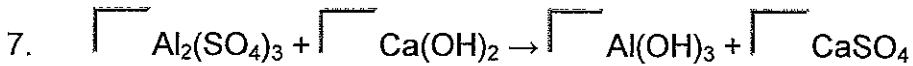
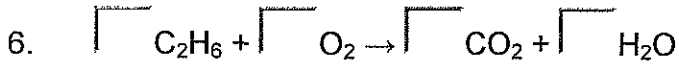
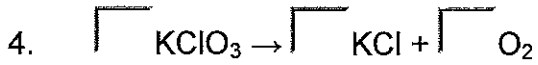
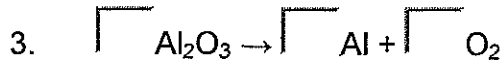
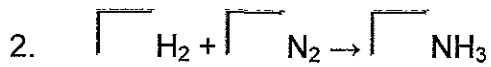
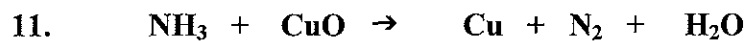
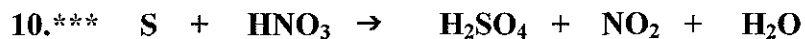
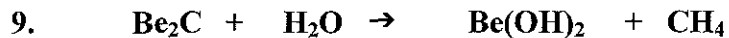
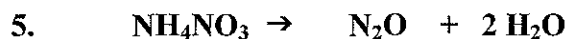
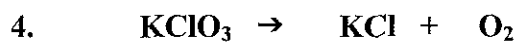
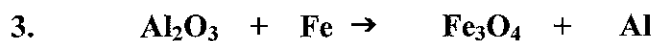
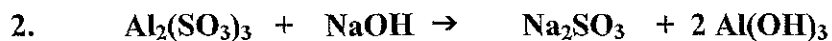
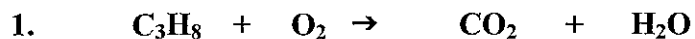


MORE
#1



MORE
#2

Problems with *** are the most difficult. If you can balance these, you can balance any equation given in class.



Balancing Equations Worksheet

More
#3

- 1) ____ Na_3PO_4 + ____ KOH \rightarrow ____ NaOH + ____ K_3PO_4
- 2) ____ MgF_2 + ____ Li_2CO_3 \rightarrow ____ MgCO_3 + ____ LiF
- 3) ____ P_4 + ____ O_2 \rightarrow ____ P_2O_3
- 4) ____ RbNO_3 + ____ BeF_2 \rightarrow ____ $\text{Be}(\text{NO}_3)_2$ + ____ RbF
- 5) ____ AgNO_3 + ____ Cu \rightarrow ____ $\text{Cu}(\text{NO}_3)_2$ + ____ Ag
- 6) ____ CF_4 + ____ Br_2 \rightarrow ____ CBr_4 + ____ F_2
- 7) ____ HCN + ____ CuSO_4 \rightarrow ____ H_2SO_4 + ____ $\text{Cu}(\text{CN})_2$
- 8) ____ GaF_3 + ____ Cs \rightarrow ____ CsF + ____ Ga
- 9) ____ BaS + ____ PtF_2 \rightarrow ____ BaF_2 + ____ PtS
- 10) ____ N_2 + ____ H_2 \rightarrow ____ NH_3
- 11) ____ NaF + ____ Br_2 \rightarrow ____ NaBr + ____ F_2
- 12) ____ $\text{Pb}(\text{OH})_2$ + ____ HCl \rightarrow ____ H_2O + ____ PbCl_2
- 13) ____ AlBr_3 + ____ K_2SO_4 \rightarrow ____ KBr + ____ $\text{Al}_2(\text{SO}_4)_3$
- 14) ____ CH_4 + ____ O_2 \rightarrow ____ CO_2 + ____ H_2O
- 15) ____ Na_3PO_4 + ____ CaCl_2 \rightarrow ____ NaCl + ____ $\text{Ca}_3(\text{PO}_4)_2$
- 16) ____ K + ____ Cl_2 \rightarrow ____ KCl
- 17) ____ Al + ____ HCl \rightarrow ____ H_2 + ____ AlCl_3
- 18) ____ N_2 + ____ F_2 \rightarrow ____ NF_3
- 19) ____ SO_2 + ____ Li_2Se \rightarrow ____ SSe_2 + ____ Li_2O
- 20) ____ NH_3 + ____ H_2SO_4 \rightarrow ____ $(\text{NH}_4)_2\text{SO}_4$

Worksheet: Writing and Balancing Chemical Reactions

1. Balance the following equations and indicate the type of reaction as formation, decomposition, single replacement, double replacement, hydrocarbon combustion, or other.

MORE
#4

- a. $\underline{\hspace{1cm}} \text{Cu}_{(s)} + \underline{\hspace{1cm}} \text{O}_{2(g)} \rightarrow \underline{\hspace{1cm}} \text{CuO}_{(s)}$
- b. $\underline{\hspace{1cm}} \text{H}_2\text{O}_{(l)} \rightarrow \underline{\hspace{1cm}} \text{H}_{2(g)} + \underline{\hspace{1cm}} \text{O}_{2(g)}$
- c. $\underline{\hspace{1cm}} \text{Fe}_{(s)} + \underline{\hspace{1cm}} \text{H}_2\text{O}_{(g)} \rightarrow \underline{\hspace{1cm}} \text{H}_{2(g)} + \underline{\hspace{1cm}} \text{Fe}_3\text{O}_{4(s)}$
- d. $\underline{\hspace{1cm}} \text{AsCl}_3_{(aq)} + \underline{\hspace{1cm}} \text{H}_2\text{S}_{(aq)} \rightarrow \underline{\hspace{1cm}} \text{As}_2\text{S}_3_{(s)} + \underline{\hspace{1cm}} \text{HCl}_{(aq)}$
- e. $\underline{\hspace{1cm}} \text{CuSO}_4 \cdot 5 \text{H}_2\text{O}_{(s)} \rightarrow \underline{\hspace{1cm}} \text{CuSO}_4_{(s)} + \underline{\hspace{1cm}} \text{H}_2\text{O}_{(g)}$
- f. $\underline{\hspace{1cm}} \text{Fe}_2\text{O}_3_{(s)} + \underline{\hspace{1cm}} \text{H}_2_{(g)} \rightarrow \underline{\hspace{1cm}} \text{Fe}_{(s)} + \underline{\hspace{1cm}} \text{H}_2\text{O}_{(l)}$
- g. $\underline{\hspace{1cm}} \text{CaCO}_3_{(s)} \rightarrow \underline{\hspace{1cm}} \text{CaO}_{(s)} + \underline{\hspace{1cm}} \text{CO}_2_{(g)}$
- h. $\underline{\hspace{1cm}} \text{Fe}_{(s)} + \underline{\hspace{1cm}} \text{S}_8_{(s)} \rightarrow \underline{\hspace{1cm}} \text{FeS}_{(s)}$
- i. $\underline{\hspace{1cm}} \text{H}_2\text{S}_{(aq)} + \underline{\hspace{1cm}} \text{KOH}_{(aq)} \rightarrow \underline{\hspace{1cm}} \text{H}_2\text{O}_{(l)} + \underline{\hspace{1cm}} \text{K}_2\text{S}_{(aq)}$
- j. $\underline{\hspace{1cm}} \text{NaCl}_{(l)} \rightarrow \underline{\hspace{1cm}} \text{Na}_{(l)} + \underline{\hspace{1cm}} \text{Cl}_2_{(g)}$
- k. $\underline{\hspace{1cm}} \text{Al}_{(s)} + \underline{\hspace{1cm}} \text{H}_2\text{SO}_4_{(aq)} \rightarrow \underline{\hspace{1cm}} \text{H}_2_{(g)} + \underline{\hspace{1cm}} \text{Al}_2(\text{SO}_4)_3_{(aq)}$
- l. $\underline{\hspace{1cm}} \text{H}_3\text{PO}_4_{(aq)} + \underline{\hspace{1cm}} \text{NH}_4\text{OH}_{(aq)} \rightarrow \underline{\hspace{1cm}} \text{H}_2\text{O}_{(l)} + \underline{\hspace{1cm}} (\text{NH}_4)_3\text{PO}_4_{(aq)}$
- m. $\underline{\hspace{1cm}} \text{C}_3\text{H}_8_{(g)} + \underline{\hspace{1cm}} \text{O}_2_{(g)} \rightarrow \underline{\hspace{1cm}} \text{CO}_2_{(g)} + \underline{\hspace{1cm}} \text{H}_2\text{O}_{(l)}$
- n. $\underline{\hspace{1cm}} \text{Al}_{(s)} + \underline{\hspace{1cm}} \text{O}_2_{(g)} \rightarrow \underline{\hspace{1cm}} \text{Al}_2\text{O}_3_{(s)}$
- o. $\underline{\hspace{1cm}} \text{CH}_4_{(g)} + \underline{\hspace{1cm}} \text{O}_2_{(g)} \rightarrow \underline{\hspace{1cm}} \text{CO}_2_{(g)} + \underline{\hspace{1cm}} \text{H}_2\text{O}_{(l)}$
- p. $\underline{\hspace{1cm}} \text{K}_2\text{SO}_4_{(aq)} + \underline{\hspace{1cm}} \text{BaCl}_2_{(aq)} \rightarrow \underline{\hspace{1cm}} \text{KCl}_{(aq)} + \underline{\hspace{1cm}} \text{BaSO}_4_{(s)}$
- q. $\underline{\hspace{1cm}} \text{C}_5\text{H}_{12(l)} + \underline{\hspace{1cm}} \text{O}_2_{(g)} \rightarrow \underline{\hspace{1cm}} \text{CO}_2_{(g)} + \underline{\hspace{1cm}} \text{H}_2\text{O}_{(g)}$
- r. $\underline{\hspace{1cm}} \text{Ca}(\text{OH})_2_{(aq)} + \underline{\hspace{1cm}} \text{NH}_4\text{Cl}_{(aq)} \rightarrow \underline{\hspace{1cm}} \text{NH}_4\text{OH}_{(aq)} + \underline{\hspace{1cm}} \text{CaCl}_2_{(aq)}$
- s. $\underline{\hspace{1cm}} \text{V}_2\text{O}_5_{(s)} + \underline{\hspace{1cm}} \text{Ca}_{(s)} \rightarrow \underline{\hspace{1cm}} \text{CaO}_{(s)} + \underline{\hspace{1cm}} \text{V}_{(s)}$
- t. $\underline{\hspace{1cm}} \text{Na}_{(s)} + \underline{\hspace{1cm}} \text{ZnI}_2_{(aq)} \rightarrow \underline{\hspace{1cm}} \text{NaI}_{(aq)} + \underline{\hspace{1cm}} \text{Zn}_{(s)}$
- u. $\underline{\hspace{1cm}} \text{C}_7\text{H}_6\text{O}_3_{(l)} + \underline{\hspace{1cm}} \text{O}_2_{(g)} \rightarrow \underline{\hspace{1cm}} \text{CO}_2_{(g)} + \underline{\hspace{1cm}} \text{H}_2\text{O}_{(l)}$
- v. $\underline{\hspace{1cm}} \text{Ca}_{(s)} + \underline{\hspace{1cm}} \text{N}_2_{(g)} \rightarrow \underline{\hspace{1cm}} \text{Ca}_3\text{N}_2_{(s)}$
- w. $\underline{\hspace{1cm}} \text{Fe}_2\text{O}_3_{(s)} + \underline{\hspace{1cm}} \text{H}_2_{(g)} \rightarrow \underline{\hspace{1cm}} \text{Fe}_{(s)} + \underline{\hspace{1cm}} \text{H}_2\text{O}_{(l)}$
- x. $\underline{\hspace{1cm}} \text{C}_{15}\text{H}_{30(l)} + \underline{\hspace{1cm}} \text{O}_2_{(g)} \rightarrow \underline{\hspace{1cm}} \text{CO}_2_{(g)} + \underline{\hspace{1cm}} \text{H}_2\text{O}_{(g)}$
- y. $\underline{\hspace{1cm}} \text{BN}_{(s)} + \underline{\hspace{1cm}} \text{F}_2_{(g)} \rightarrow \underline{\hspace{1cm}} \text{BF}_3_{(s)} + \underline{\hspace{1cm}} \text{N}_2_{(g)}$
- z. $\underline{\hspace{1cm}} \text{C}_{12}\text{H}_{26(l)} + \underline{\hspace{1cm}} \text{O}_2_{(g)} \rightarrow \underline{\hspace{1cm}} \text{CO}_2_{(g)} + \underline{\hspace{1cm}} \text{H}_2\text{O}_{(g)}$

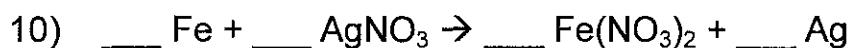
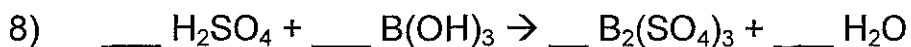
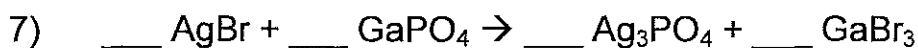
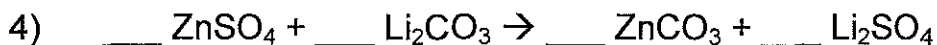
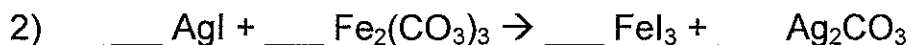
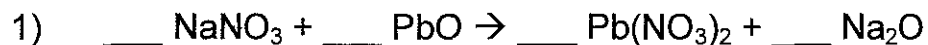
2. Predict the product(s) along with the states, indicate the type of reaction, and balance the following chemical reactions.

- a. A solution of lead (II) nitrate is mixed with a solution of sodium iodide.
- b. Solid zinc sulfide reacts with oxygen in the air.
- c. Liquid butane ($\text{C}_4\text{H}_{10(l)}$) is used as a fuel to ignite a lighter.
- d. Barium hydroxide solution is neutralized by adding hydrochloric acid ($\text{HCl}_{(aq)}$).
- e. Copper metal is placed in a solution of silver nitrate.
- f. Sulfur burns in oxygen to make sulfur dioxide gas.
- g. A solution of aluminum sulfate is mixed with a solution of calcium hydroxide.
- h. Zinc metal is placed in sulfuric acid ($\text{H}_2\text{SO}_4_{(aq)}$).
- i. Aluminum powder is placed in a container filled with chlorine gas.
- j. Sucrose undergoes cellular respiration.

Balancing Equations Practice Worksheet

MORE
#5

Balance the following equations:



Balancing Chemical Equations

MORE
#6

Balance the equations below:

- 1) $\text{N}_2 + \text{H}_2 \rightarrow \text{NH}_3$
- 2) $\text{KClO}_3 \rightarrow \text{KCl} + \text{O}_2$
- 3) $\text{NaCl} + \text{F}_2 \rightarrow \text{NaF} + \text{Cl}_2$
- 4) $\text{H}_2 + \text{O}_2 \rightarrow \text{H}_2\text{O}$
- 5) $\text{Pb(OH)}_2 + \text{HCl} \rightarrow \text{H}_2\text{O} + \text{PbCl}_2$
- 6) $\text{AlBr}_3 + \text{K}_2\text{SO}_4 \rightarrow \text{KBr} + \text{Al}_2(\text{SO}_4)_3$
- 7) $\text{CH}_4 + \text{O}_2 \rightarrow \text{CO}_2 + \text{H}_2\text{O}$
- 8) $\text{C}_3\text{H}_8 + \text{O}_2 \rightarrow \text{CO}_2 + \text{H}_2\text{O}$
- 9) $\text{C}_8\text{H}_{18} + \text{O}_2 \rightarrow \text{CO}_2 + \text{H}_2\text{O}$
- 10) $\text{FeCl}_3 + \text{NaOH} \rightarrow \text{Fe(OH)}_3 + \text{NaCl}$
- 11) $\text{P} + \text{O}_2 \rightarrow \text{P}_2\text{O}_5$
- 12) $\text{Na} + \text{H}_2\text{O} \rightarrow \text{NaOH} + \text{H}_2$
- 13) $\text{Ag}_2\text{O} \rightarrow \text{Ag} + \text{O}_2$
- 14) $\text{S}_8 + \text{O}_2 \rightarrow \text{SO}_3$
- 15) $\text{CO}_2 + \text{H}_2\text{O} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + \text{O}_2$
- 16) $\text{K} + \text{MgBr} \rightarrow \text{KBr} + \text{Mg}$
- 17) $\text{HCl} + \text{CaCO}_3 \rightarrow \text{CaCl}_2 + \text{H}_2\text{O} + \text{CO}_2$
- 18) $\text{HNO}_3 + \text{NaHCO}_3 \rightarrow \text{NaNO}_3 + \text{H}_2\text{O} + \text{CO}_2$
- 19) $\text{H}_2\text{O} + \text{O}_2 \rightarrow \text{H}_2\text{O}_2$
- 20) $\text{NaBr} + \text{CaF}_2 \rightarrow \text{NaF} + \text{CaBr}_2$
- 21) $\text{H}_2\text{SO}_4 + \text{NaNO}_2 \rightarrow \text{HNO}_2 + \text{Na}_2\text{SO}_4$