Name:	 Date:	

Balancing Chemical Equations

Part A. Fill in the blanks with the most appropriate terms.

1) A balanced	tells the story of a chemical reac	tion.		
are starting substances i	n the reaction, while	are new substances		
that form. The numbers in front of some of the formulas are called				
These numbers are used to the equation because chemical reaction				
must obey the law of	of matter. The numb	of matter. The number of atoms of each		
element on both sides of the equation must be equal because matter cannot be				
nor	. When balancing equation	ons, the only numbers		
that can be changed are	the . Remember tha	t		
mustnever be changed i	n order to balance an equation.			

Part B. Balance the following chemical equations.

i. _____
$$H_3PO_4 +$$
____ $Ca(OH)_2 \rightarrow$ ____ $Ca_3(PO_4)_2 +$ ____ H_2O

ii. _____
$$NH_3$$
 + ____ HCl \rightarrow ____ NH_4Cl

iii. ____ Li + ___
$$H_2O \rightarrow$$
 ___ LiOH + ___ H_2

iv. ____
$$Ca_3(PO_4)_2 +$$
____ $SiO_2 +$ ___ $C \rightarrow$ ___ $CaSiO_3 +$ ___ $CO +$ ___ P

v. _____
$$NH_3 +$$
_____ $O_2 \rightarrow$ _____ $N_2 +$ _____ H_2O

vi. ____
$$FeS_2$$
 + ____ O_2 \rightarrow ____ Fe_2O_3 + ____ SO_2

vii. ____ C + ___ SO
$$_2$$
 \rightarrow ___ CS $_2$ + ___ CO

viii. _____ Al + ____
$$O_2 \rightarrow$$
 _____ Al $_2O_3$

Balancing Chemical Equations

Answers

1) A balanced <u>equation</u> tells the story of a chemical reaction. <u>Reactants</u> are starting substances in the reaction, while <u>products</u> are new substances that form. The numbers in front of some of the formulas are called <u>coefficients</u>. These numbers are used to <u>balance</u> the equation because chemical reactions must obey the law of <u>conservation</u> of matter. The number of atoms of each element on both sides of the equation must be equal because matter cannot be <u>created</u> nor <u>destroyed</u>. When balancing equations, the only numbers that can be changed are the <u>coefficients</u>. Remember that <u>formulas</u> mustnever be changed in order to balance an equation.

i.
$$2 H_3PO_4 + 3 Ca(OH)_2 \rightarrow 1 Ca_3(PO_4)_2 + 6 H_2O$$

ii.
$$\underline{1}$$
 NH₃ + $\underline{1}$ HCl \rightarrow $\underline{1}$ NH₄Cl

iii. 2 Li + 2
$$H_2O \rightarrow$$
 2 LiOH + 1 H_2

iv.
$$\underline{1}$$
 $Ca_3(PO_4)_2 + \underline{3}$ $SiO_2 + \underline{5}$ $C \rightarrow \underline{2}$ $CaSiO_3 + \underline{5}$ $CO + \underline{2}$ P

v.
$$4 \text{ NH}_3 + 3 \text{ O}_2 \rightarrow 2 \text{ N}_2 + 6 \text{ H}_2\text{O}$$

vi.
$$\underline{4}$$
 FeS₂ + $\underline{11}$ O₂ \rightarrow $\underline{2}$ Fe₂O₃ + $\underline{8}$ SO₂

vii.
$$\underline{}$$
 C + $\underline{}$ SO₂ \rightarrow $\underline{}$ CS₂ + $\underline{}$ CO

viii.
$$\underline{}$$
 Al + $\underline{}$ O₂ \rightarrow $\underline{}$ Al₂O₃