Chemical Equations Name _____

Balancing Equations Challenge

Part A: Parts & Pieces

(1) Circle each subscript in each chemical formula.
(2) Draw a square around each coefficient.
(3) Answer the questions related to each chemical formula.

O_2

What element does the O represent?
_____

CO_2

How many atoms of each element are in the formula shown?
C = _____ O = _____

$5H_2$

How many atoms of Hydrogen are in this formula as shown?
_____

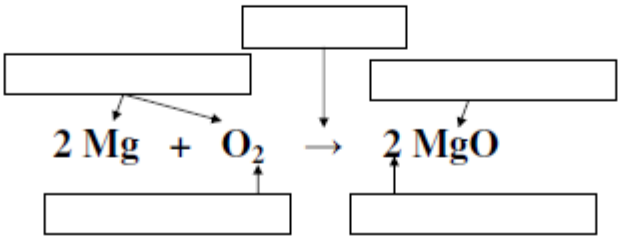
$2C_2H_6$

How many atoms each element are in the formula shown?
C = _____ H = _____

$2Na_2SO_4$

How many atoms each element are in the formula shown?
Na = _____ S = _____ O = _____

Part B: Label the chemical equation using PRODUCT, REACTANTS, SUBSCRIPT, COEFFICIENT, and YIELDS.



T. Trimpe 2006 http://sciencespot.net/

Part C: Balance each of the following equations. **Remember → List the atoms, count, and solve!**

$H_2 + O_2 \rightarrow H_2O$

$H_2O_2 \rightarrow H_2O + O_2$

$Na + O_2 \rightarrow Na_2O$

$N_2 + H_2 \rightarrow NH_3$

$P_4 + O_2 \rightarrow P_4O_6$

$C + H_2 \rightarrow CH_4$

$Al_2O_3 \rightarrow Al + O_2$

$Fe + H_2O \rightarrow Fe_3O_4 + H_2$

$C_2H_6 + O_2 \rightarrow CO_2 + H_2O$

$Na_2SO_4 + CaCl_2 \rightarrow CaSO_4 + NaCl$

How many total **molecules** are there?

___ $4H_2O$ ____ $3Be_2Br$ ____$5CO_2$

___ 8NaCl ____ $2O_2$ ____ MgS

How many total **atoms** are there?

___ $4H_2O$ ____ $3Be_2Br$ ____$5CO_2$

___ 8NaCl ____ $2O_2$ ____ MgS

$Li_2O + MgCl_2 \rightarrow 2LiCl + MgO$

Circle the second reactant *Underline* the first product

How many **Lithium atoms** on the product side? _____

How many **Chlorine atoms** on the reactant side? _____

$2K_3N + 3CaCrO_4 \rightarrow Ca_3N_2 + 3K_2CrO_4$

Circle the second product. *Underline* the first reactant.

How many **potassium atoms** on the reactant side? _____

How many **oxygen atoms** on the product side? _____

$2AlCl_3 + 3Na_2CO_3 \rightarrow Al_2(CO_3)_3 + 6NaCl$

Circle the first reactant *Underline* the second product

How many **Sodium(Na) atoms** on the reactant side? _____

How many table salt (NaCl) **molecules** on the product side? _____

$Fe_2O_3 + 3C \rightarrow 2Fe + 3CO$

Circle the second reactant *Underline* the first product

How many totals **atoms** on the reactant side? _____

How many total **molecules** on the product side? _____

Expand out these compounds

$3MgCl_2$ = $MgCl_2 + MgCl_2 + MgCl_2$ *(example)*

$4H_2$ = _____

$2Al_2O_3$ = _____

BeO = _____

$5Li_2O$ = _____

Is this an open or closed reaction?

Will you be able to observe the Law of Conservation of Mass with this set up?

Why or Why Not?

Why do we balance chemical reactions?

Angel balanced the following reaction: **$Be + O_2 \rightarrow BeO$,** when she was finished, the equation looked like this: **$Be + O \rightarrow BeO$** Did she balance it correctly? Why or why not

Identify the following reactions as Balanced (B) or Unbalanced (U)

$P_4 + 3O_2 \rightarrow P_4O_{10}$ _____

$2C_6H_6 + 15O_2 \rightarrow 12CO_2 + 6H_2O$ _____

$Al + HCl \rightarrow AlCl_3 + H_2$ _____

Balance the following chemical reactions.

____ZnS + ____ $O_2 \rightarrow$ ____ZnO + ____ SO_2

____ Be + ____ O_2 + $\rightarrow$ ____ BeO

____ Li + ____ $N_2 \rightarrow$ ____ Li_3N

____ NH_3 + ____$O_2 \rightarrow$____ NO + ____ H_2O

Solve the following:

$4Li + O_2 \rightarrow Li_2O$
10 g + 12g ?g

If 10g of Lithium reacts with 12g of Oxygen, how much Lithium Oxide is produced?

$Mg + Cl_2 \rightarrow MgCl_2$
9g + ? g 35g

If 9g of Magnesium reacts with Chlorine to produce 35g of Magnesium Chloride, how much Chlorine was used in the reaction?

$2NaF + K_2O \rightarrow Na_2O + 2KF$
8 g + 9g ?g + 11g

Using the numbers given, find how much Na_2O was produced in the reaction.