Name _____ Date _____

Balancing Chemical Equations

In order to balance a chemical equation, one must follow certain rules:

1. Make sure the formulas are correct for all the products and reactants.
2. Make sure the reactants are on the left side of the arrow and that a plus sign separates indi reactants and products.
3. Count the number of atoms of each element on both sides of the equation. A polyatomic i is unchanged on both sides of the equation counts as a single unit, as if it were an element
4. Balance the elements one at a time using coefficients. Subscript numbers cannot be change
5. Make sure all the coefficients are in the lowest possible ratio.

Practice by writing the balanced equation for each skeleton equations.

Skeleton equations

1. $Na + Cl_2 \longrightarrow NaCl$
2. $Ag + S \longrightarrow Ag_2S$
3. $Mg + O_2 \longrightarrow MgO$
4. $Al_2O_3 \longrightarrow Al + O_2$
5. $H_2 + N_2 \longrightarrow NH_3$
6. $C + Fe_2O_3 \longrightarrow Fe + CO$
7. $KCl + F_2 \longrightarrow KF + Cl_2$
8. $NaBr + Ag_2SO_4 \longrightarrow Na_2SO_4 + AgBr$
9. $Fe_2O_3 + HCl \longrightarrow FeCl_3 + H_2O$
10. $Al + CuSO_4 \longrightarrow Al_2(SO_4)_3 + Cu$
11. $P + O_2 \longrightarrow P_2O_5$
12. $Al + H_2SO_4 \longrightarrow Al_2(SO_4)_3 + H_2$
13. $SrBr_2 + (NH_4)_2CO_3 \longrightarrow SrCO_3 + NH_4Br$
14. $C_2H_6 + O_2 \longrightarrow CO_2 + H_2O$
15. $Fe + O_2 \longrightarrow Fe_3O_4$

Balanced equations

1. $2Na + Cl_2 \rightarrow 2NaCl$
2. $2Ag + S \rightarrow Ag_2S$
3. $2Mg + O_2 \rightarrow 2MgO$
4. $2Al_2O_3 \rightarrow 4Al + 3O_2$
5. $3H_2 + N_2 \rightarrow 2NH_3$
6. $C + Fe_2O_3 \rightarrow 2Fe + CO$
7. $2KCl + F_2 \rightarrow 2KF + Cl_2$
8. $2NaBr + Ag_2SO_4 \rightarrow Na_2SO_4 + 2AgBr$
9. $Fe_2O_3 + 6HCl \rightarrow 2FeCl_3 + 3H_2O$
10. $2Al + 3CuSO_4 \rightarrow Al_2(SO_4)_3 + 3Cu$
11. $4P + 5O_2 \rightarrow 2P_2O_5$
12. $2Al + 3H_2SO_4 \rightarrow Al_2(SO_4)_3 + 3H_2$
13. $SrBr_2 + (NH_4)_2CO_3 \rightarrow SrCO_3 + 2NH_4Br$
14. $2C_2H_6 + 7O_2 \rightarrow 4CO_2 + 6H_2O$
15. $3Fe + 2O_2 \rightarrow Fe_3O_4$

CHEMISTRY FOR EVERYDAY

KEY

1.) $2Na + Cl_2 \longrightarrow 2NaCl$

Na = ≠2	Na = ≠2
Cl = 2	Cl = ≠2

2) $2Ag + S \rightarrow Ag_2S$

Ag = ≠2	Ag = 2
S = 1	S = 1

3.) $2Mg + O_2 \longrightarrow 2MgO$

Mg = ≠2	Mg = ≠2
O = 2	O = ≠2

4.) $2AL_2O_3 \longrightarrow 4AL + 3O_2$

Al = ≠4	AL = ≠4
O = ≠6	O = ≠6

5.) $3H_2 + N_2 \longrightarrow 2NH_3$

H = ≠6	H = ≠6
N = ≠2	N = ≠2

6.) $C + Fe_2O_3 \rightarrow 2Fe + CO$

C = 1	C = 1
Fe = 2	Fe = ≠ 2
O = 3	O = 1

7) $2KCl + F_2 \rightarrow 2KF + Cl_2$

K = ≠ 2	K = ≠ 2
Cl = ≠ 2	Cl = 2
F = 2	F = ≠ 2

8.) $2NaBr + Ag_2SO_4 \rightarrow Na_2SO_4 + 2AgBr$

Na = ≠ 2	Na = 2
Br = ≠ 2	Br = ≠ 2
Ag = 2	Ag = ≠ 2
S = 1	S = 1
O = 4	O = 4

9) $Fe_2O_3 + 6HCl \rightarrow 2FeCl_3 + 3H_2O$

Fe = 2	Fe = ≠ 2
O = 3	O = ≠ 3
H = ≠ 6	H = ≠ 6
Cl = ≠ 6	Cl = ≠ 6

10.) $2Al + 3CuSO_4 \rightarrow Al_2(SO_4)_3 + 3Cu$

$Al = \neq 2$	$Al = 2$
$Cu = \neq 3$	$Cu = \neq 3$
$S = \neq 3$	$S = 3$
$O = \neq 12$	$O = 12$

11.) $4P + 5O_2 \rightarrow 2P_2O_5$

$P = \neq 4$	$P = \not{2} 4$
$O = \not{2} 10$	$O = \not{5} 10$

12.) $2Al + 3H_2SO_4 \rightarrow Al_2(SO_4)_3 + 3H_2$

$Al = \neq 2$	$Al = 2$
$H = \not{2} 6$	$H = \not{2} 6$
$S = \neq 3$	$S = 3$
$O = \neq 12$	$O = 12$

13.) $SrBr_2 + (NH_4)_2CO_3 \rightarrow SrCO_3 + 2NH_4Br$

$Sr = 1$	$Sr = 1$
$Br = 2$	$Br = \neq 2$
$N = 2$	$N = \neq 2$
$H = 8$	$H = \neq 8$
$C = 1$	$C = 1$
$O = 3$	$O = 3$

14.) $C_2H_6 + O_2 \rightarrow CO_2 + H_2O$

$C = 2$	$C = 1$
$H = 6$	$H = 2$
$O = 2$	$O = 3$

15.) $3Fe + 2O_2 \rightarrow Fe_3O_4$

$Fe = 3$	$Fe = 3$
$O = 2$ ~~4~~	$O = 4$

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