Review

Counting atoms

H_2O

Type of atom	# of atoms
H	2
O	1
Total	3

Subscripts - affect only the element they are "attached to"

4 $MgBr_2$

Type of atom	# of atoms
Mg 1 x 4	4
Br 2 x 4	8
Total	12

Coefficients affect every element in the chemical formula. Multiply it by the subscript if the element has one.

Na_2CO_3

Type of atom	# of atoms
Na	2
C	1
O	3
Total	6

$Ca_3(PO_4)_2$

Type of atom	# of atoms
Ca 3	3
P 1 x 2	2
O 4 x 2	8
Total	13

Subscript by a bracket affects every element in the bracket. Multiply it by the subscript if an element in the brackets has one.

3 $Pb(NO_3)_2$

Type of atom	# of atoms
Pb 1 x 3	3
N 1 x 2 x 3	6
O 3 x 2 x 3	18
Total	27

Put it all together!

$Pb\,NO_3\,NO_3$

$3(Pb\,N_2O_6)$

$Pb\,N_2O_6$ $Pb\,N_2O_6$ $Pb\,N_2O_6$

3 Pb 18 O

6 N

Balancing Equations

1) __ C_6H_6 + __ O_2 → __ H_2O + __ CO_2

2) __ NaI + __ $Pb(SO_4)_2$ → __ PbI_4 + __ Na_2SO_4

3) __ NH_3 + __ O_2 →__ NO + __ H_2O

1. $2C_6H_6 + 15O_2 \rightarrow 6H_2O + 12CO_2$

C - 6 12 | C - 12 12
H - 6 12 | H - 12 12
O - 2 15 30 | O - 6 15 30

not happy

Double everything!

2. $2NaI + Pb(SO_4)_2 \rightarrow PbI_4 + 2Na_2SO_4$

Na - 1 2 4 | Na - 2 4
Pb - 1 | Pb - 1
I - 1 2 4 | I - 4
SO_4 - 2 | SO_4 - 2 2

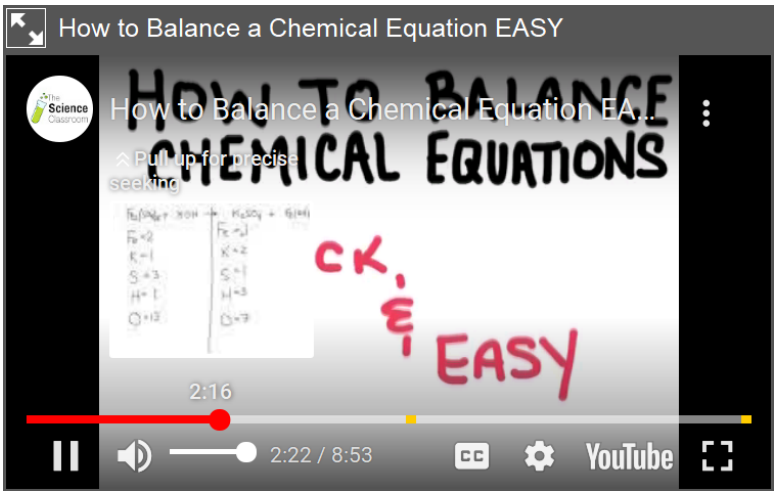
3. $4NH_3 + 5O_2 \rightarrow 4NO + 6H_2O$

N - 1 2 4 | N - 1 2 4
H - 3 6 12 | H - 2 6 12
O - 2 5 10 | O - 2 4 5 10

!!

Double Everything

An approach for the more complicated ones (it works for the simpler ones too!)



1.

2.

3.

Together

4) $\_2\_\ Fe(OH)_3 \rightarrow \_\_\ Fe_2O_3 + \_3\_\ H_2O$

Fe - ~~1~~ 2
O - ~~3~~ 6
H - ~~3~~ 6

Fe - 2
O - ~~4~~ 6
H - ~~2~~ 6

Your turn!

5) $\underline{2}\ HNO_3 + \_\_\ Mg(OH)_2 \rightarrow \underline{2}\ H_2O + \_\_\ Mg(NO_3)_2$

Mg - 1
N - ~~1~~ 2
H - ~~3~~ 4
O - ~~5~~ 8

| Mg - 1
| N - 2
| H - ~~2~~ 4
| O - ~~1~~ 8

Try #6-9