Cl = -1 OR +7
S = -2 OR +6
N = -3 OR +5
C = -4 OR +4

Name: _____
Period: _____ Date: _____

Oxidation Numbers Activity K and L

Directions: The chart below shows elements, compounds or ions and their respective oxidation numbers. Using the chart below, fill in the rules for determining the oxidation numbers for elements in compounds, ions, or alone.

0 K	+1 -1 RbCl	+1 -2 Na_2O	+1 -1 H_2O_2	+2 -1 $MgBr_2$
+1 +2 -2 $Na_2S_2O_3$	+1 +6 -2 HSO_4^{-1} -8	+1 0 +1 -2 $HC_2H_3O_2$	+4 -2 N_2O_4	+2 -2 FeO
+2 -2 CaS	-3 +1 +5 -2 $(NH_4)_3PO_4$	+4 -2 CO_2	-3 +1 -2 $(NH_4)_2S$	+5 -2 N_2O_5
+1 +6 -2 $K_2Cr_2O_7$	+3 -1 $FeCl_3$	+2 -2 CO	0 N_2	+4 -2 CO_3^{-2}
+5 -2 PO_4^{-3}	0 Ag	+2 -1 $FeCl_2$	+2 -2 NO	+6 -1 SF_6
			0 O_3	+1 -1 LiH

Rules for Assigning Oxidation Numbers

The oxidation number of…

1) Individual elements is always 0. Examples: _____
2) Group 1A is always +1. Examples: _____
3) Group 2A is always +2. Examples: _____
4) Oxygen is ~~usually~~ always -2 except in _____. Examples: _____
5) Hydrogen is ~~usually~~ always +1 except in _____. Examples: _____
6) In general, first you usually assign the first and last oxidation numbers in a ternary compound and the middle last. Examples: _____
7) In general, you usually assign the nonmetal oxidation number first in a binary compound.
8) In a compound, total charges always equal 0. Examples: _____
9) In a polyatomic ion, the sum of the charges equals the charge.

Examples: _____

Assign oxidation number to each atom in the following formulas. Write the numbers directly above the symbols in each formula.

10) 0 Cu	11) +1 -1 NaF	12) +3 -2 Al_2O_3 +6 -6	13) +1 -2 H_2O +2 -2	14) +2 -2 +1 $Mg(OH)_2$ -4 +2
15) +1 -2 Rb_2S	16) -4 +1 SiH_4 +4	17) +5 -2 NO_3^{-1} -6	18) +1 +6 -2 H_2SO_4 +2 -8	19) +4 -2 PbO_2 -4
20) +5 -1 PCl_5 -5	21) +1 +7 -2 $HClO_3$ +8 -6 +2	22) +4 -2 CO_3^{2-} -6	23) 0 H_2	24) +5 -2 PO_4^{-3} -8

25) Define oxidation number: _____

_____

Given: $\overset{0}{Mg} + \overset{0}{Cl_2} \rightarrow \overset{+2\ -1}{MgCl_2}$ (2)

OIL RIG — oxidation is losing, reduction is gaining; e^- e^-

26) Mg changes in oxidation # from 0 to +2 and (**gains/loses**) 2 e-. $Mg^0 \rightarrow Mg^{2+} + 2e^-$
Mg is (**oxidized/reduced**).

27) Cl changes in oxidation # from 0 to -1 and (**gains/loses**) 1 e-. $Cl_2^0 + 2e^- \rightarrow Cl_2^{1-}$
Cl is (**oxidized/reduced**).

Given: $\overset{0}{Fe} + \overset{+2\ -2}{CuO} \rightarrow \overset{0}{Cu} + \overset{+2\ -2}{FeO}$ (2)

28) Fe changes in oxidation # from 0 to +2 and (**gains/loses**) 2 e-. $Fe^0 \rightarrow Fe^{2+} + 2e^-$
Fe is (**oxidized/reduced**).

29) Cu changes in oxidation # from +2 to 0 and (**gains/loses**) 2 e-. $Cu^{2+} + 2e^- \rightarrow Cu^0$
Cu is (**oxidized/reduced**).

30) Oxygen is called a Spectator ion because it does not participate in the reaction and it is not oxidized or reduced.
agent