Solubility Rules and Oxidation Number Assignment Rules

I. Solubility Rules for Ionic Compounds in Water

SOLUBLE: Compounds containing	
Li^+, Na^+, K^+, NH_4^+	
NO_3^-, $C_2H_3O_2^-$	
Cl^-, Br^-, I^-	Except when paired with Ag^+, Hg_2^{2+}, Pb^{2+}
SO_4^{2-}	Except when paired with Ca^{2+}, Sr^{2+}, Ba^{2+}, Pb^{2+}

INSOLUBLE: Compounds containing	
OH^-	Except when paired with Li^+, Na^+, K^+, NH_4^+. *Hydroxides of Ca^{2+}, Sr^{2+}, Ba^{2+} are slightly soluble
S^{2-}	Except when paired with Li^+, Na^+, K^+, NH_4^+, Ca^{2+}, Sr^{2+}, Ba^{2+}
CO_3^{2-}, PO_4^{3-}	Except when paired with Li^+, Na^+, K^+, NH_4^+.

II. Rules for Assigning Oxidation Numbers

General Rules

1. For an atom in its elemental form: ox. number = 0 (eg. Na, O_2, Cl_2)
2. For a monoatomic ion: ox. number = ion charge
3. Sum of ox. numbers for the atoms in a compound = 0.
4. Sum of ox. numbers for the atoms in a polyatomic ion = ion charge

Rules for Specific Elements

Element	**Oxidation Number**
Group 1A	+1
Group 2A	+2
H	+1 if bonded to nonmetals (-1 if bonded to metals)
Halogens (7A)	-1 (Exception: Halogens other than F are positive when bonded to O)
O	-2 (Exceptions: -1 in peroxides)

***Other elements can have a range of ox. numbers (eg. +4 to -4 for C).**