ionic bonds-

transfer of e's

metal / nonmetal

\+ −

NaCl Na^+ Cl^-

Sodium chloride

metal nonmetal

usually found on the periodic table.

Mg^{+2} N^{-3}

Mg^{+2} N^{-3}

Mg^{+2}

$+6 \quad -6 = 0$

When the compound comes together is must have a charge of 0.

Mg^{+2} N^{-3}

Mg^{+2} N^{-3}

Mg^{+2}

$+6 \quad -6 = 0$

Mg_3N_2

magnesium nitride

AlN

aluminum nitride

Al^{+3} N^{-3}

Al^{+3} N^{-3}

~~Al_3N_3~~

transition metals plus Sn, Bi, Pb have more than 1 ion state

You must use the charges on the metal w/ a roman numeral.

charge on metal

iron (II) oxide

Fe^{+2} O^{-2}

FeO

Fe_2O_3 ← given

iron (III) oxide

Fe^{+3}

Fe^{+3}

O^{-2}

O^{-2}

O^{-2}

$+6 \quad -6 = 0$

$PbBr_4$

lead(IV) bromide

Pb^{+4} Br^- Br^- Br^- Br^-

-4

silver (I) oxide

Ag^{+1} O^{-2}

Ag^{+1}

$+2 \quad -2 = 0$

Ag_2O

Calcium nitride

2. Copper (II) nitride ← given

(II) ← charge of ion

Ba_3P_2 Barium phosphide

Cs_2O

Cu^{+2} N^{-3}

Cu^{+2} N^{-3}

Cu^{+2}

$+6 \quad -6 = 0$

Cu_3N_2

Polyatomic ions – more than one atom w/ a total charge

base $(OH)^-$ hydroxide

NH_4^+ ammonium

NO_3^- nitrate

CO_3^{-2} carbonate

CN^- cyanide

$C_2H_3O_2^-$ acetate

SO_4^{-2} sulfate

PO_4^{-3} phosphate

HCO_3^- bicarbonate

HSO_4^- bisulfate

Salt

$NaNO_3$

sodium nitrate

$Na(NO_3)$

Na^+ NO_3^-

Salt

Calcium phosphate

Ca^{+2} PO_4^{-3}

Ca^{+2} PO_4^{-3}

Ca^{+2}

$+6$ -6 $= 0$

$Ca_3(PO_4)_2$

~~$Ca_3P_2O_8$~~

~~$Ca_3P_2O_8$~~

(acid)

Ammonium phosphate

NH_4^+ PO_4^{-3}

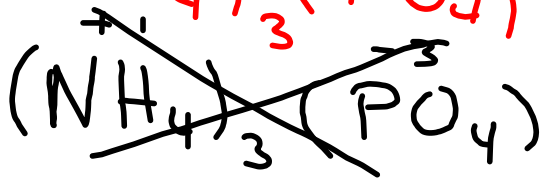
NH_4^+

NH_4^+

$+3 \quad -3 = 0$

$(NH_4)_3PO_4$

$(NH_4)_3(PO_4)$



Salt

$Fe_2(SO_4)_3$

iron (III) sulfate

Fe^{+3} SO_4^{-2}

Fe^{+3} SO_4^{-2}

SO_4^{-2}

+6 -6 = 0

aluminum hydroxide

base

Al^{+3} OH^-

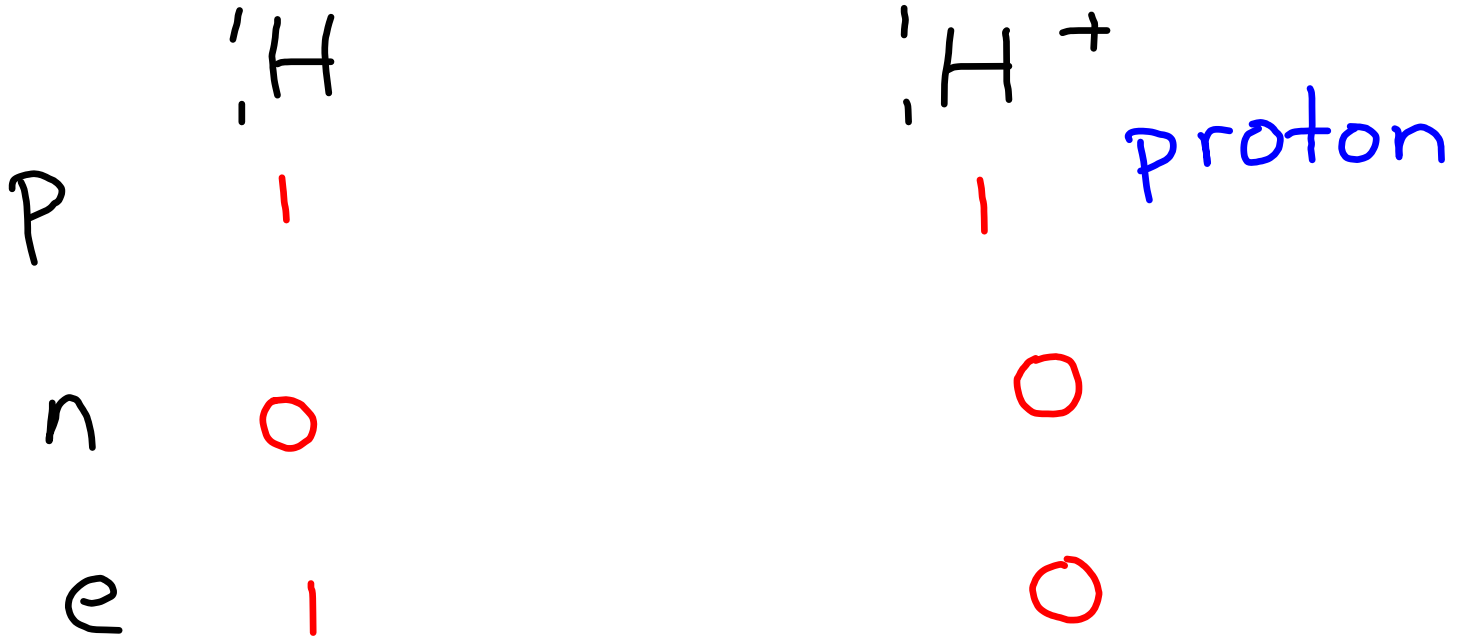
OH^-

OH^-

$+3 \quad -3 = 0$

$Al(OH)_3$

acids must have a H^+



binary acid- two atom w/ one being a H^+ and the other is a halogen

acids

HCl

hydrochloric acid

HBr

hydrobromic acid

HI

hydroiodic acid

HF

hydrofluoric acid

H_2SO_4 acid

~~hydro~~ sulfuric acid

Sulfuric acid

H^{+1} SO_4^{-2}

H^{+1}

$+2 \quad -2 = 0$

acid

nitric acid

~~H_2NO_3~~

H^+ NO_3^{-1}

~~H^+~~

HNO_3

acid

H_3PO_4 H^+ PO_4^{-3}

phosphoric acid

$HC_2H_3O_2$

acetic acid