Polyatomic ions (Radicals)

2 or more non-metals which form a covalent bond, but also form a charge.

p.44 ex CO_3^{2-}

Bonding and naming metals with polyatomic ions.

Bonding: use x-over rule between metal and PI

Naming: name 1st element, name PI

example	x-over rule	name
Ca and CO_3^{2-}	Ca^{+2} CO_3^{-2} = $CaCO_3$	calcium carbonate
Ca and NO_3^-	Ca^{+2} NO_3^{-1} $Ca(NO_3)_2$	calcium nitrate
Ca and PO_4^{3-}	Ca^{+2} PO_4^{-3} $Ca_3(PO_4)_2$	calcium phosphate
Al and OH^-	Al^{+3} OH^{-1} $Al(OH)_3$	Aluminum hydroxide
Al and CO_3^{2-}	Al^{+3} CO_3^{-2} $Al_2(CO_3)_3$	aluminum carbonate

B NO_2^- Na OH^- Mg ClO_3^-

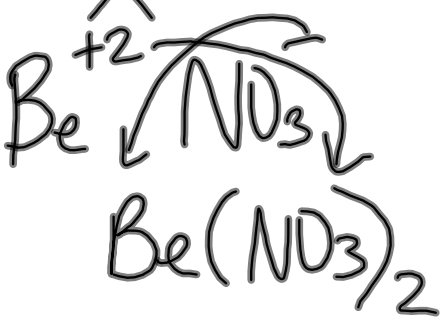
$B(NO_2)_3$ $NaOH$ $Mg(ClO_3)_2$

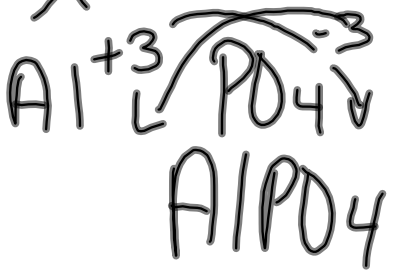
$LiOH$

KOH

Determining if bond is possible

Ex 1: $Be_3(NO_3)_2$ charge is NO_3^- Ex 2: $Al(PO_4)_3$ charge is PO_4^{3-}





Sample question:

The charge for nitrite is NO_2^-, choose the answer which shows correct bonds.

1- $Ca(NO_2)_2$ ✓ Ca^{2+} NO_2^- = $Ca(NO_2)_2$

2- $Al_3(NO_2)_3$ × Al^{+3} NO_2^- = $Al(NO_2)_3$

3- KNO_2 ✓ K^{+1} NO_2^- = KNO_2

A) 1 and 2 B) 1 and 3 C) 2 and 3 D) 1, 2 and 3

Determining charge of radical

Use atom number the metal has after x-over rule is done.

ex: $Mg_3(AsO_4)_2$ -3

$LiOH$ -1

H_2SO_4 -2

$AlPO_4$ -3

Write all the possible bonds that the following atoms and radicals can form.

Na Al CO_3^{2-} NO_3^-

Vocabulary:

cation= metal

anion= radical

$Al_2(CO_3)_3$

cation anion