Breaking apart ionic compounds into ions

All ionic compounds can be broken up into cations (-) and anions (+)

The charge of the compound is neutral unless stated otherwise:

NaCl = neutral

HCO_3^- = negative charge (-1)

The coefficients and subscript numbers need to be taken into account:

2 $CaCl_2$ = 2 Ca ions and 4 Cl ions

Al_2O_3 = 2 Al ions and 3 O ions

3 $Mg(OH)_2$ = 3 Mg ions and 6 OH ions (3x2)

Ionic compound	Anion	Cation	Net charge
$CaBr_2$	2 Br^- (-1 as halogen)	Ca^{2+} (+2 as group 2)	2x(-1) + (+2) = 0
NiF_3	3 F^- (-1 as halogen)	Ni^{3+} (needs to be +3 for net charge to be 0)	3x(-1) + (+3) = 0
$Ba_3(PO_4)_2$	2 PO_4^{3-} (phosphate ion is always -3)	3 Ba^{2+} (+2 as group 2)	2x(-3) + 3x(+2) = 0
$ZnSO_4$	SO_4^{2-} (SO_4 is always -2)	Zn^{2+} (needs to be +2 for net charge to be 0)	(+2) + (-2) = 0
$Ca(NO_3)_2$	2 NO_3^- (nitrate ion is always -1)	Ca^{2+} (+2 as group 2)	2x(-1) + (+2) = 0
K_3N	N^{3-} (nitride ions is always -3)	3 K^+ (+1 as group 1)	(-3) + 3x(+1) = 0

The coefficient for each of these ionic compounds is 1. For the examples below the coefficient is greater than 1, therefore the number of each ion is different

2 $CaBr_2$	2 Ca^{2+}	4 Br^-
3 NiF_3	3 Ni^{3+}	9 F^-
4 $Ba_3(PO_4)_2$	12 Ba^{2+}	8 PO_4^{3-}
5 $ZnSO_4$	5 Zn^{2+}	5 SO_4^{2-}
6 $Ca(NO_3)_2$	6 Ca^{2+}	12 NO_3^-
7 K_3N	21 K^+	7 N^{3-}

Notice that for those containing brackets, the coefficient is multiplied by the number after the brackets

4 $Ba_3(PO_4)_2$ = Ba: (4x3) PO_4: (4x2)

6 $Ca(NO_3)_2$ = Ca: (6x1) NO_3: (6x2)