Do Now: What is the chemical formula of aluminum oxide?


Man, this is too much work! Is there an easier way????

## Aim: How do we get the formula of a binary ionic compound?

Refer to the PERIODIC TABLE

1. To get the subscripts, just "criss-cross" the oxidation states and drop the signs ( $+/-$ ).

magnesium fluoride


MgF2
potassium oxide

$\mathrm{K}_{2} \mathrm{O}$
-Don't write " 1 " for a subscript; the symbol of the element stands for " 1 ".
-All of these compounds end in -ide b/c they are binary = consist of only 2 elements.
-The subscripts in a formula indicate the number of ions of each element needed to form a neutral compound.

calcium oxide

-Simplify when needed.

$$
\begin{aligned}
& \mathrm{Pb}_{4}^{+4} \mathrm{OC}_{\Delta}^{-2} \\
& \mathrm{~Pb}_{2} \mathrm{O}_{4} \rightarrow \mathrm{PbO}_{2}
\end{aligned}
$$

2. For nonmetals with multiple oxidation states, take the "top one" (most common).

3. For metals with multiple oxidation states, the Roman numerals in the names of their compounds indicate the charges of the metals. (This is called the Stock System of nomenclature.)
$\mathrm{Cu}^{+2}$ copper (I) chloride
CuCl

$\mathrm{CuCl}_{2}$

Note: the Roman numeral is the actual charge, not the order in which it appears.


Again, the Roman numeral is the oxidation state of the $\mathbf{1}^{\text {st }}$ element.


For metals with only one oxidation state, don't write a Roman numeral; examples, $\mathrm{Na}^{+1}, \mathrm{Mg}^{+2}, \mathrm{Zn}^{+2}$..

