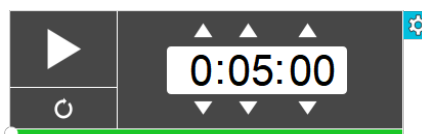
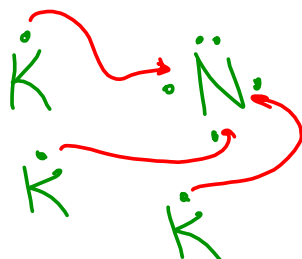
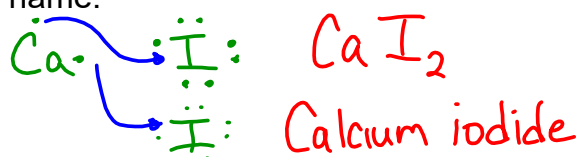


Warm Up



Show, using Lewis diagrams how the following elements form ionic compounds. Then write the chemical formula and the name.

- 1) Calcium and Iodine
- 2) Potassium and nitrogen



More complicated ions - the transition metals

If you look at iron on your periodic table it lists **two** possible ions: +3 and +2.

This first one listed is the **most common** ion.

Many of the transition metals (columns 3-12) have multiple ions possible (Chromium actually has 4, although only two are listed on your periodic table).

	iron	
26	+3, +2	
	Fe	
	55.85	

So, when we talk about iron oxide, how do we know which ion of iron it is?

Actually we put the ion charge in the name, like this:

iron (II) oxide Fe^{+2}
iron (III) oxide Fe^{+3}

ionic charge

Iron (II) oxide has an iron *cation* of +2, where iron (III) oxide has an iron cation of +3. *Cation* is the term for a positive ion.

cat-ion

A negatively charged ion
is an anion
ann-ion

Your turn:

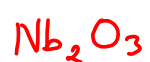
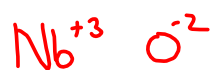
What is the chemical formula for

Ruthenium (IV) bromide?



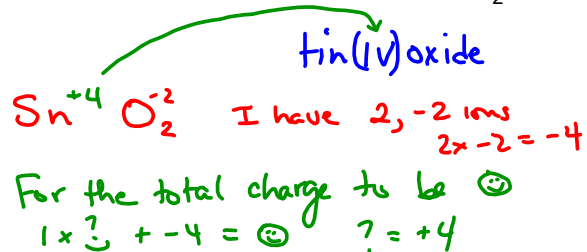
$$1 \times +4 + 4 \times -1 = 0$$

Niobium (III) oxide?



Naming transition metal ionic compounds from the chemical formula

What is the chemical name for SnO_2 ?

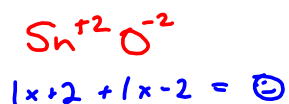


$\text{Sn}^{+4,+2}$
 since tin has more than 1
 ion charge, we need to put it
 in the name

tin(IV)oxide

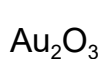
What about SnO ?

tin(II)oxide



Your turn

Name the following compounds:



gold (III) oxide
 $3 \times -2 = -6$ $2 \times ? = +6$ $? = +3$



platinum (IV) fluoride



$4 \times -1 = -4$ $1 \times ? = +4$ $? = +4$



iridium bromide

no brackets required (iridium is NOT multi-valent)

Polyatomic ions

Poly means *many* so polyatomic ions have multiple atoms. There are a few listed on the back of your periodic table.

For example OH^- is a polyatomic ion with oxygen and hydrogen with a -1 charge and is called *hydroxide*.

NaOH

$\text{Ca}(\text{OH})_2$

Note: If there are more than one ion group, we put the group in brackets and place the number *outside* the bracket.

What about the chemical formulas for polyatomic ions?

calcium acetate

ammonium oxide