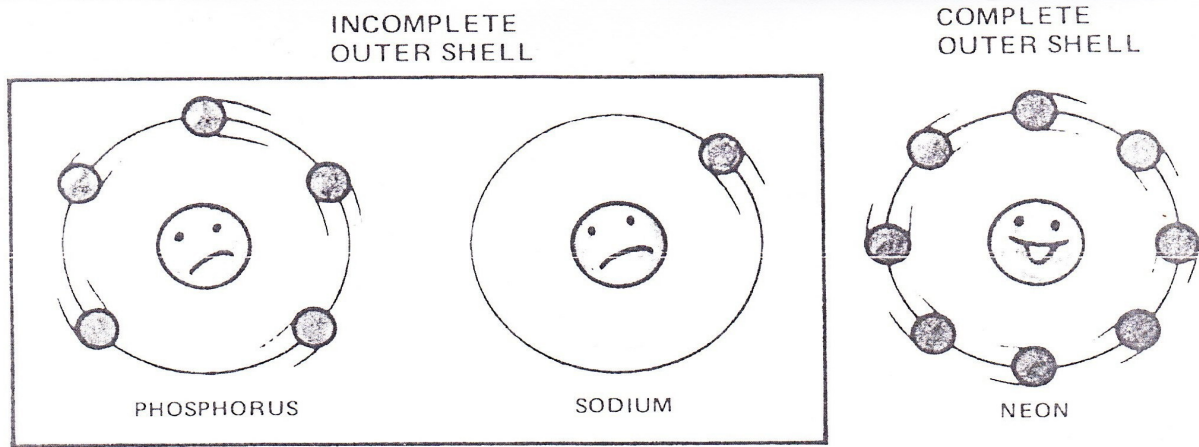


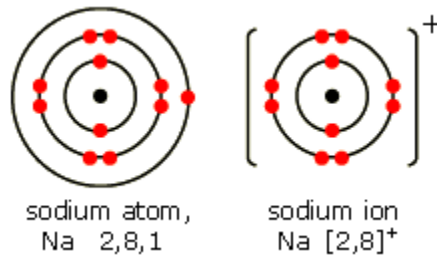
Name: _____

Ions! SNC2D



Atoms are most stable (and therefore happy) when they have _____.

Atoms that have fewer electrons in their outer shells than it would take to fill that shell will preferentially _____ electrons.



E.g. Sodium has _____ valence electron. It would need to gain _____ to fill that shell.

So it loses _____ instead. It now has fewer shells, but the last one is full.

Because sodium has lost a negatively-charged electron, it now has a _____ charge.

Positively-charged ions are called _____.

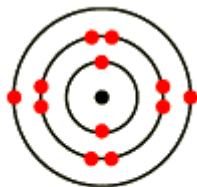
The elements that form positively-charged ions are _____.

The charge on an ion is said to be its valence charge, or simply valence.

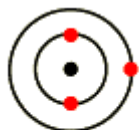
E.g. The valence of sodium is _____ or _____.

Let's look at some more metal ions. . . .

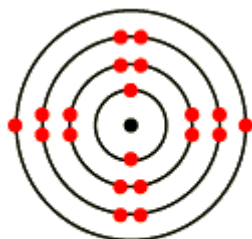
Given the following Bohr diagrams, what will the valence of the ions be?



magnesium atom,
Mg 2,8,2



lithium atom
Li 2,1



calcium atom,
Ca 2,8,8,2

Note that sodium and lithium, both in the _____ column, both have a valence of _____.

And magnesium and calcium, both in the _____ column, have a valence of _____.

Since elements in the same column or family on the periodic table have the same number of _____
_____, they will typically form ions in the same way and have the same valence charge.

Some metals can form ions in two different ways and have two possible valences; these metals are said to
be _____.

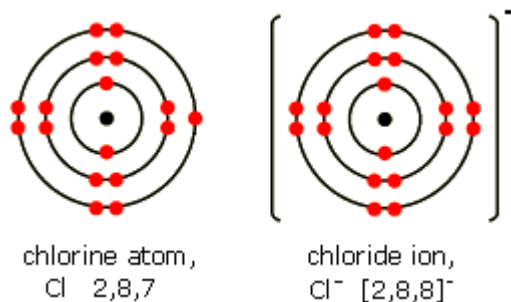
E.g. the valence of lead is _____ or _____.

(Check the periodic table in your textbook or, during a test, a chemistry “cheat sheet.”)

To indicate which ion we are dealing with, we write the valence charge in Roman numerals after the name
of the metal.

E.g. lead (_____) or lead (_____)

Atoms that have more electrons in their outer shells than it would take to fill that shell will preferentially _____ electrons.



E.g. Chlorine has _____ valence electrons. It would need to gain _____ to fill that shell.

So it just gains 1 (that was given up by a metal).

Because chlorine has gained a negatively-charged electron, it now has a _____ charge.

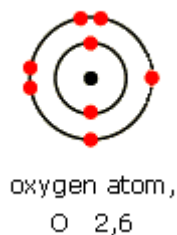
Negatively-charged ions are called _____.

The elements that form negatively-charged ions are _____.

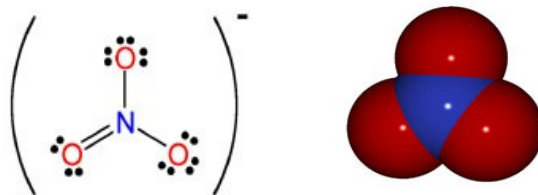
Non-metals, when they form ions, change their names to:
the first syllable + the suffix "ide"

- chlorine → _____
- fluorine → _____
- bromine → _____
- oxygen → _____
- sulphur → _____
- nitrogen → _____
- phosphorus → _____

Given the following Bohr diagram, what will the valence of the ion be?



A polyatomic ion is a group of atoms bonded together (by shared electrons) that acts as a single ion.



E.g. Nitrate NO_3^-

Nick and His Polyatomic Ions

Nick the Camel had a Clam for Supper in Phoenix.

First consonants = _____

of vowels = _____

of consonants = _____

One extra oxygen “per-ate”	Normal	One less oxygen “ite”	Two less oxygens “hypo-ite”
	Nick		
	Camel		
	Clam		
	Supper		
	Phoenix		

You should also be familiar with:

HCO_3^- _____

OH^- _____

NH_4^+ _____