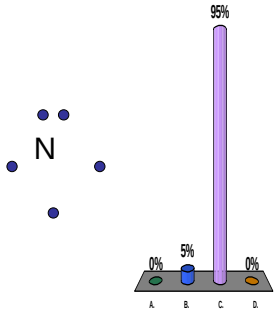
In-class activities

February 4, 2010

Afternoon class results

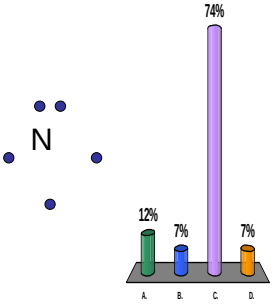
How many unpaired valence electrons are there in a nitrogen atom?

A. One.
B. Two.
C. Three.
D. Five.



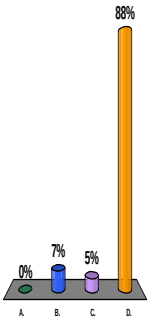
How many bonds is nitrogen able to make?

A. One.
B. Two.
C. Three.
D. Five.



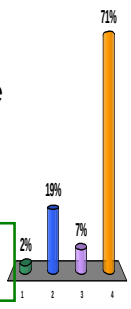
The neon atom tends NOT to gain any additional electrons because

A. its nuclear charge is not great enough.
B. that would result in a positive ion.
C. of the repulsions they would have with electrons in the same shell.
D. there is no more room available in its outermost occupied shell.



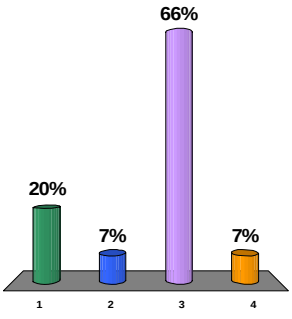
An atom loses an electron to another atom. Is this a physical or a chemical change for the atom that lost the electron?

A. Physical change involving the formation of negative ions.
B. Chemical change involving the formation of negative ions.
C. Physical change involving the formation of positive ions.
D. Chemical change involving the formation of positive ions.



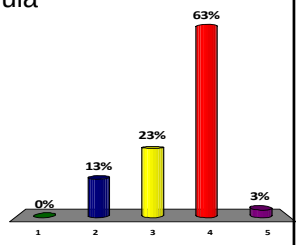
Magnesium ions carry a 2+ charge, and chloride ions carry a 1– charge. What is the chemical formula for the ionic compound magnesium chloride?

A. MgCl
B. Mg_2Cl
C. $MgCl_2$
D. Mg_2Cl_2



What is the chemical formula for calcium chloride?

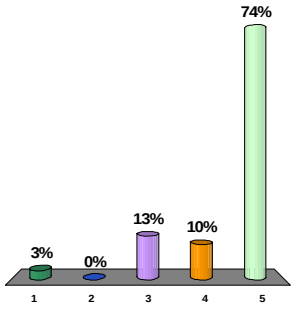
1. Any of these could be it
2. CaCl
3. Ca_2Cl
4. $CaCl_2$
5. Ca_2Cl_2



The formula can be determined by paying attention to the valence electrons: calcium has 2, that's why it's in group 2; and chlorine has 7, like all elements in group 17. Chlorine has a place for one more electron in it's valence shell, and it collects this one from the calcium. But since calcium has two available, two chlorines take advantage of this.
The resulting molecule has a net charge of zero: 2 chlorine bonded to 1 calcium.

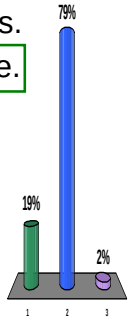
When nitrogen and fluorine combine to form a *molecule*, the most likely chemical formula is

A. N_3F
B. N_2F
C. NF_4
D. NF
E. NF_3



A hydrogen atom does not form more than one covalent bond, because it

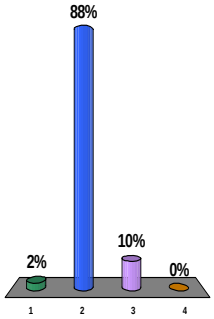
A. has only one shell of electrons.
B. has only one electron to share.
C. loses its valence electron so readily.



Classify the following bond as ionic, covalent, or metallic
(Na, atomic number 11; Cl, atomic number 17)

Na with Cl Na with Na Cl with Cl

A. metallic, covalent, covalent
B. ionic, metallic, covalent
C. ionic, ionic, covalent
D. covalent, metallic, ionic



Atoms of metallic elements can form ionic bonds, but they are not very good at forming covalent bonds. Why?

A. These atoms are too large to be able to come in close contact with other atoms.
B. They have a great tendency to lose electrons.
C. They are on the wrong side of the periodic table.
D. Their valence shells are already filled with electrons.

How many electrons are used to draw the electron-dot structure for hydrogen peroxide, a covalent compound with the formula H_2O_2?

A. 14
B. 8
C. 7
D. 4