Tuesday, February 3rd, 2015

HW: Agenda Questions

Classroom expectations:

1. **Wear Kenwood ID.**
2. **Cell phones, music players, and headphones are put away.**
3. **Food is disposed of or put away.**
4. **Dressed appropriately.**
5. **Notebook is out and you are ready for today's class.**

Objective: We will apply the octet rule to explain the formation and structure of a covalent bond.

CB Catalyst:

A.) 0.80 mL

B.) 1.20 mL

C.) 1.60 mL

D.) 2.00 mL

2/3	Week 21 Agenda	107
2/3	Week 21 Catalyst	108
2/3	Defining Covalent Compounds	109

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HW: Agenda Questions, Online Simulation

Classroom expectations:

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PA Catalyst:

F.) 5

G.) 6

H.) 8

J.) 9

2/3	Week 21 Agenda	107
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Announcements

- No after school tutoring this week (unless you make an appointment.)
- Tutoring will resume next Tues/Thurs of next week.

Notebooks

- Notebook **Quiz** next week!!
- Make sure you have:
  - pages 107-109 in your notebook.
  - periodic table glued in the back.
  - Agenda, Catalyst, and Notesheet stapled

Notes: Covalent bonds

Review

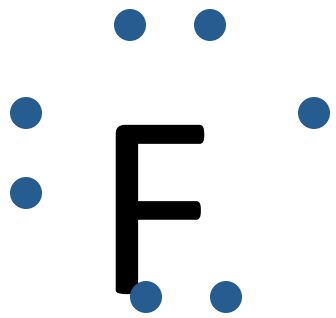
- A.) A chemical bond is an attractive force that holds two or more atoms together.
- B.) A molecule is a unit of 2 or more atoms chemically combined together. (NOTE: IT is a **SINGLE** unit of a compound!

Review

- A.) A chemical bond is an attractive force that holds two or more atoms together.
- B.) A molecule is a unit of 2 or more atoms chemically combined together. (NOTE: IT is a **SINGLE** unit of a compound!

Example: Covalent Bonding

- Fluorine has seven valence electrons (but would like to have 8)



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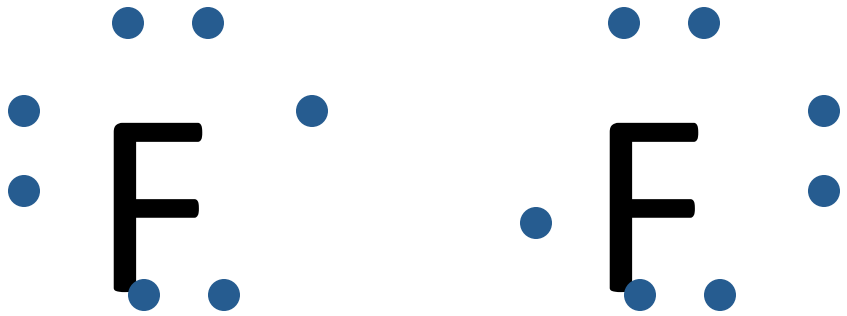

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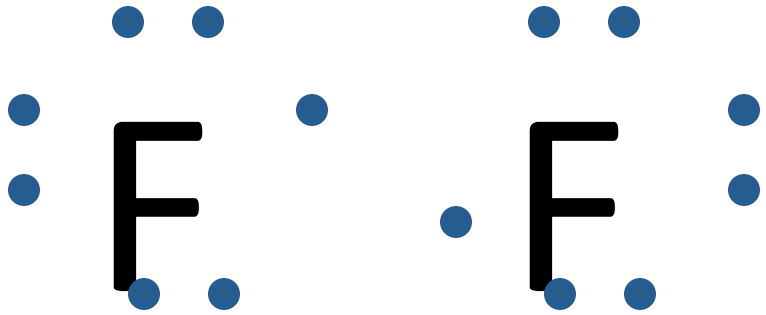

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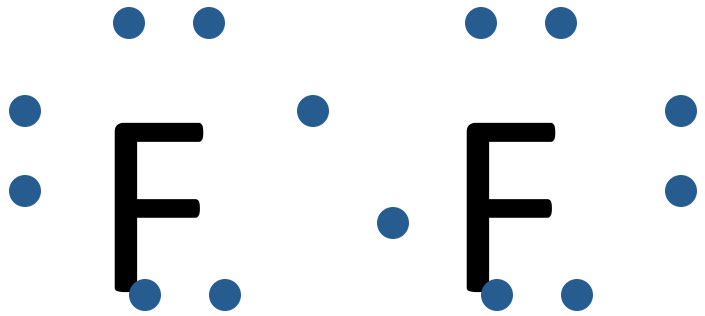

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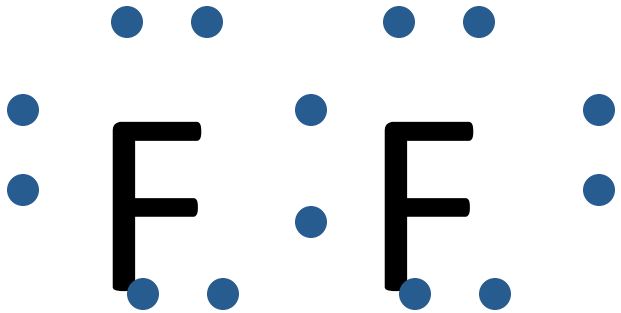
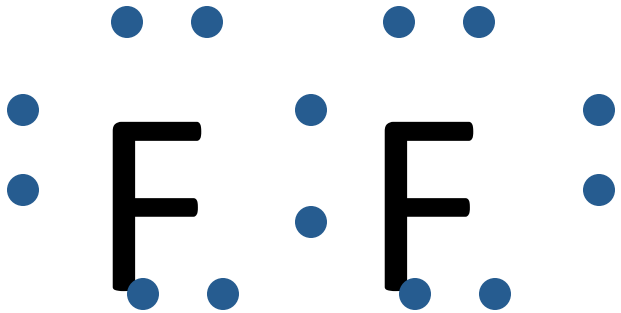


Example: Covalent Bonding

- Fluorine has seven valence electrons
- A second atom also has seven
- By sharing electrons…
- **…both end with full outer shells**



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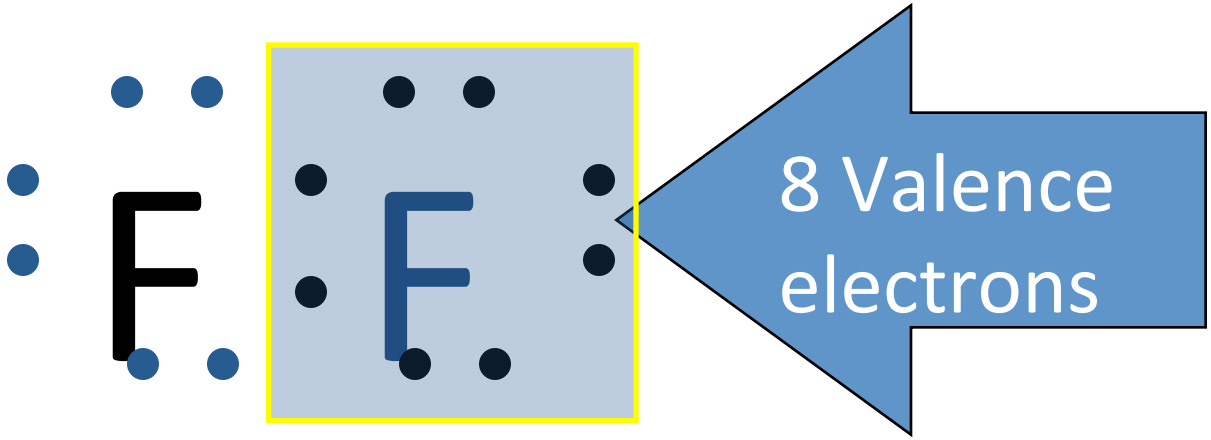
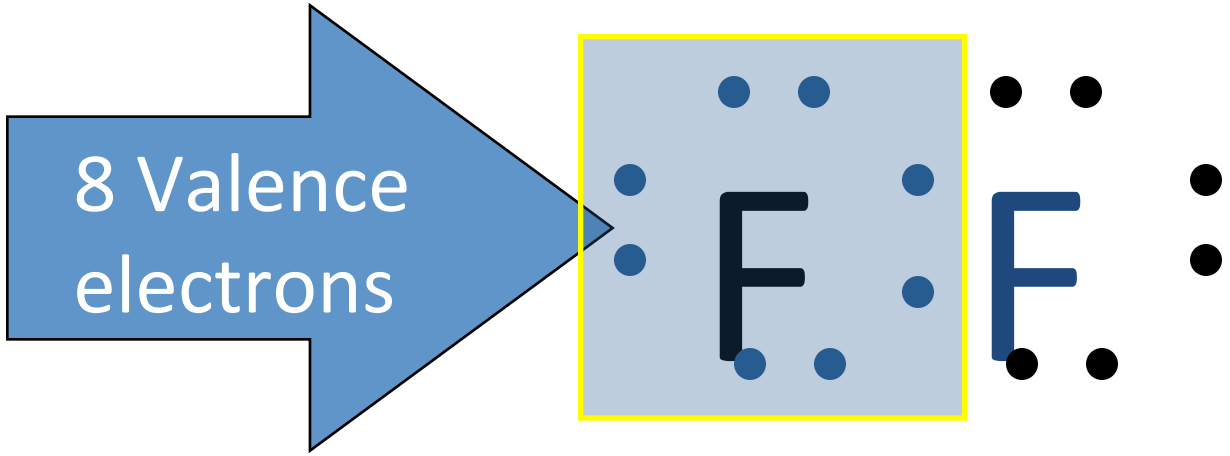


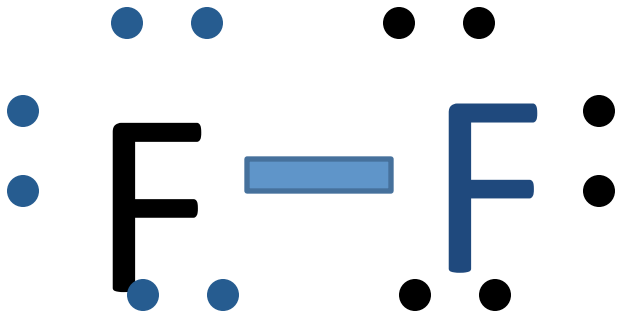
Covalent bonding

- All atoms want a 8 valance electrons
- If an atom cannot take the electron (ionic) they will share with another atom so…
- …both end with full outer shells



Covalent bonding

- Can also be drawn with a line between the two atoms
- Each atom has a total of 8 valence electrons shared between them.



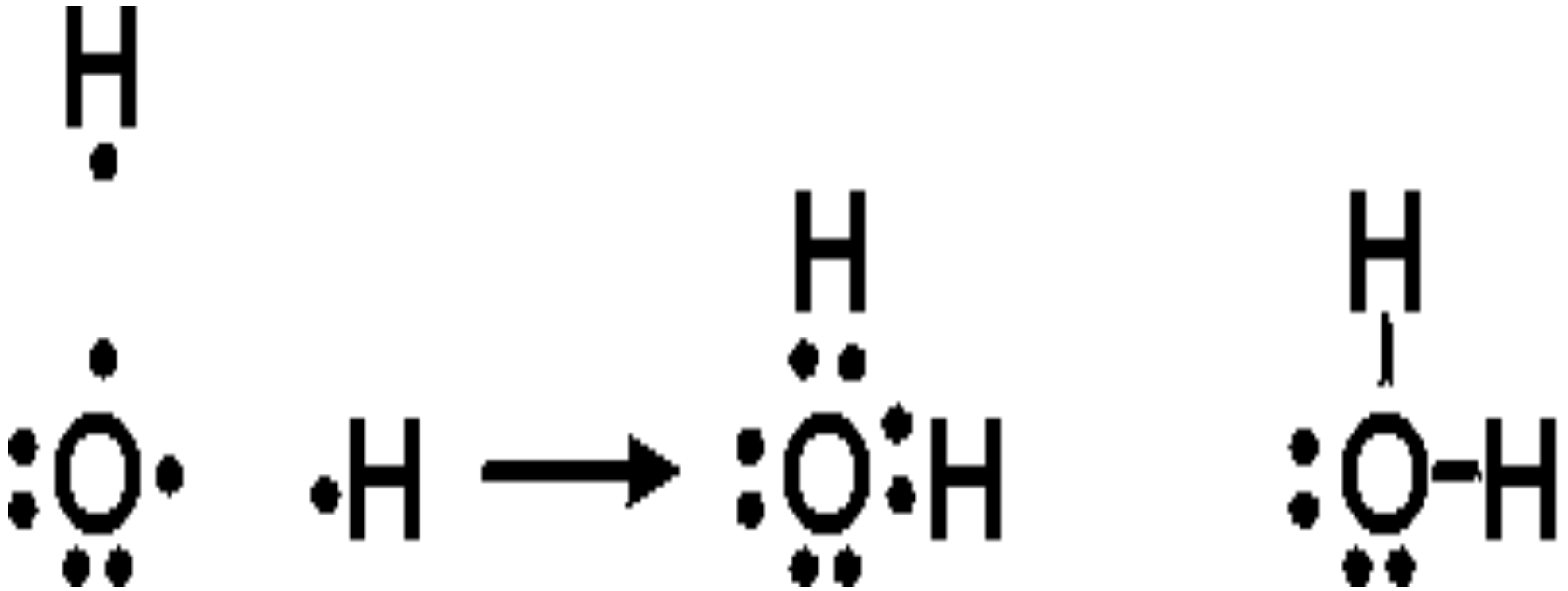
Covalent Compounds

- All covalent compounds are composed of two or more nonmetals.
- All nonmetals have high electronegativities so they want to attract extra electrons towards themselves.

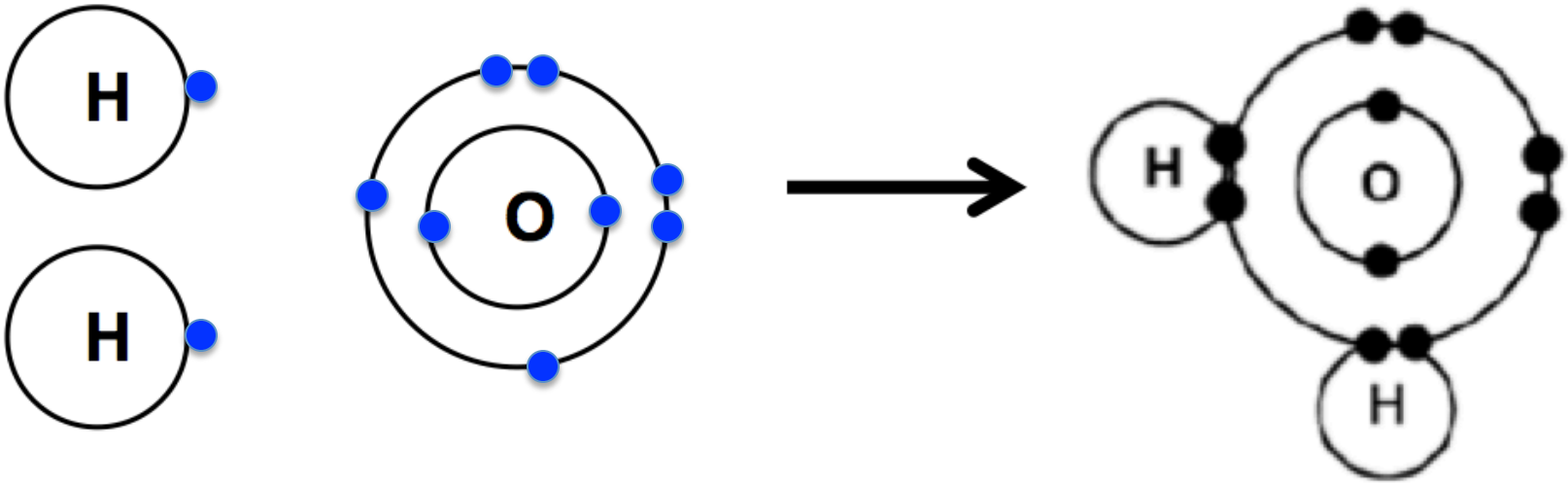
Covalent Compounds

- Therefore, the atoms in covalent compounds share electrons.
- By sharing electrons, the atoms can have a full outer shell and obey the octet rule.

Lewis Dot Structure



Bohr Structure



Practice

A.) Covalent

B.) Ionic

C.) Ionic

D.) Metallic

Practice

E.) Ionic

F.) Covalent

G.) Covalent

H.) Covalent

Review: Ionic Compounds

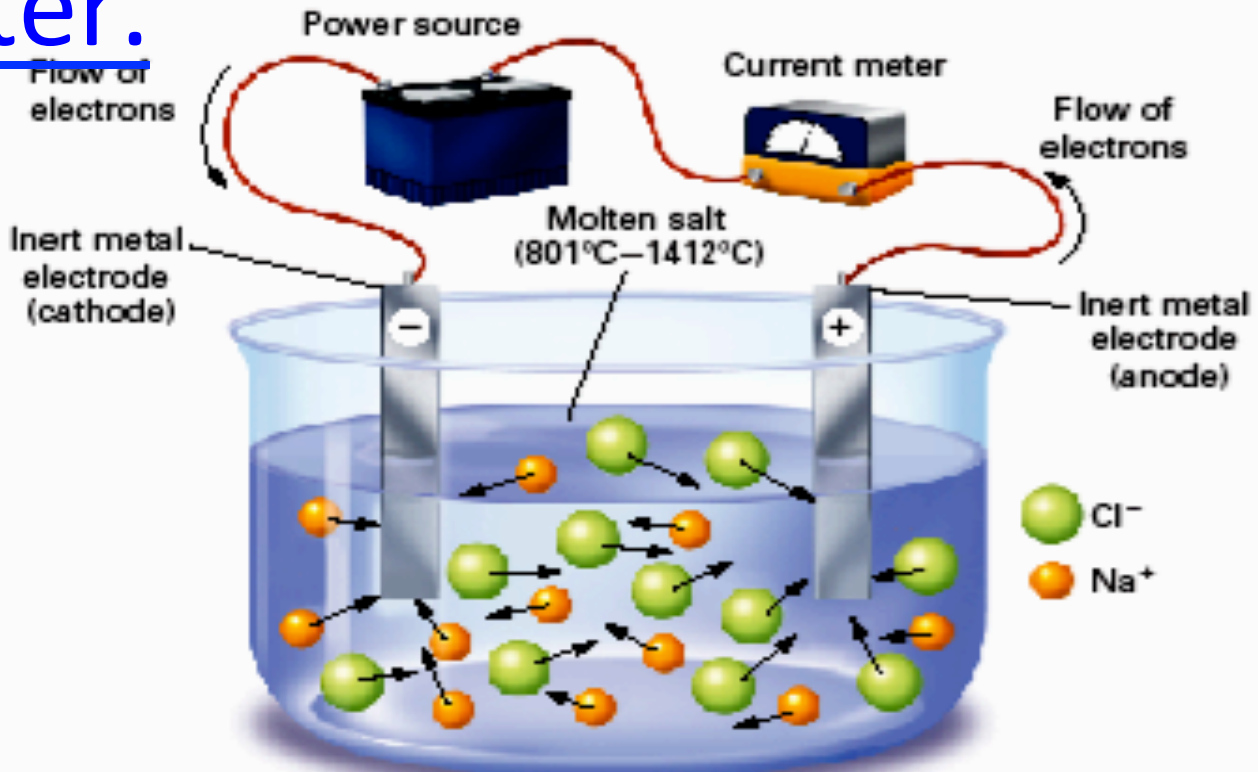
- High melting and boiling points.

***Example:** Salt (NaCl) melts at 800°C. That's the same temp as molten lava!!!*

81

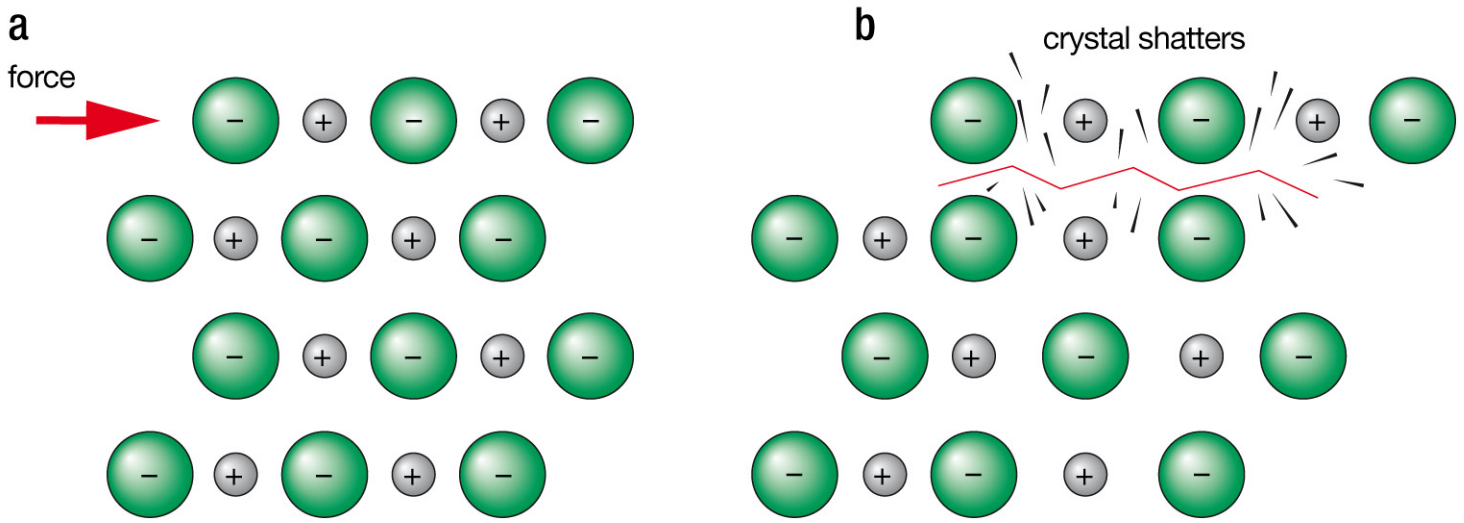
Figure 7.11 Electrical Conductivity of Molten Sodium Chloride - Page 198

Ionic Compounds conduct electricity when dissolved in water.



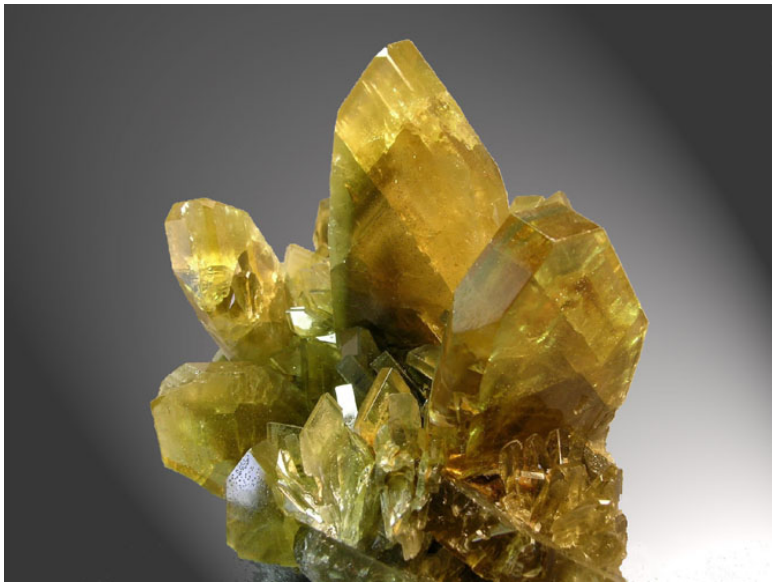
Properties of Ionic Compounds

Ionic compounds are NOT malleable. They break when a force is applied.



Review: Ionic Compounds

Most ionic compounds are crystalline solids at room temperature.



Barite ($BaSO_4$)

Aragonite ($CaCO_3$)

Covalent Compounds

- Low melting and boiling points.

***Example:** Sugar ($C_{12}H_{22}O_{11}$) melts at 186°C (366°F).*

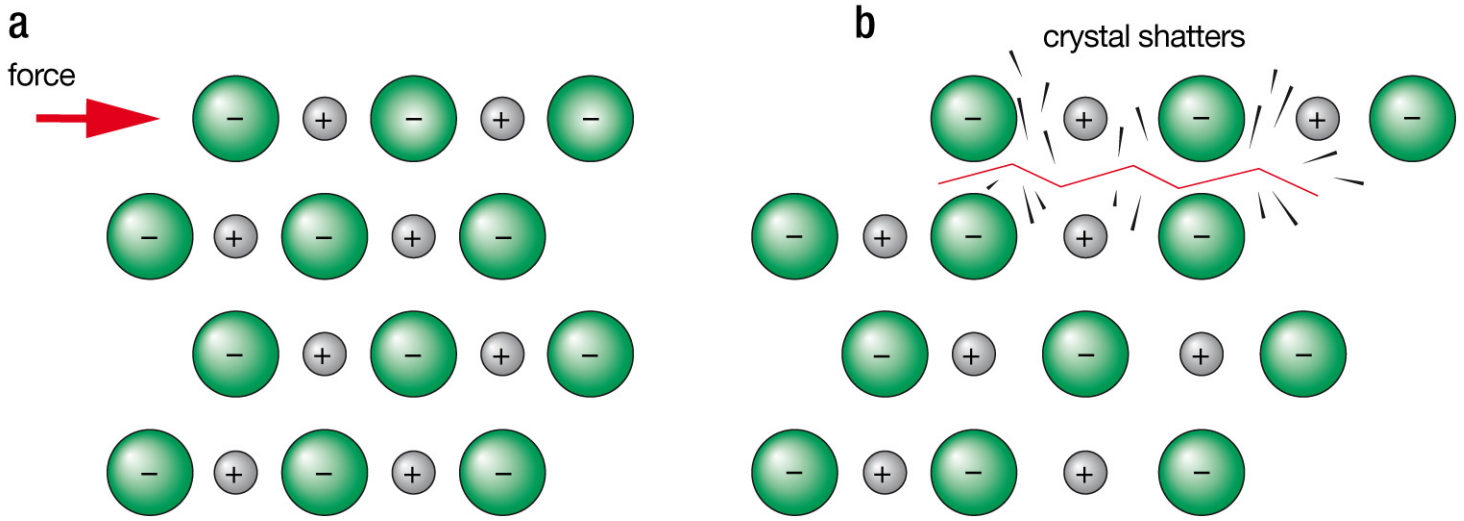
Covalent Compounds

- Covalent Compounds Do NOT conduct electricity when dissolved in water.

Covalent Compounds

Covalent compounds are NOT malleable.

They break when a force is applied.



Covalent Compounds

Most covalent compounds are soft and squishy *when compared to ionic compounds.*

(Note: soft is a reference to ionic. Ice may not seem soft to your skull, but it's softer than most ionic compounds.)

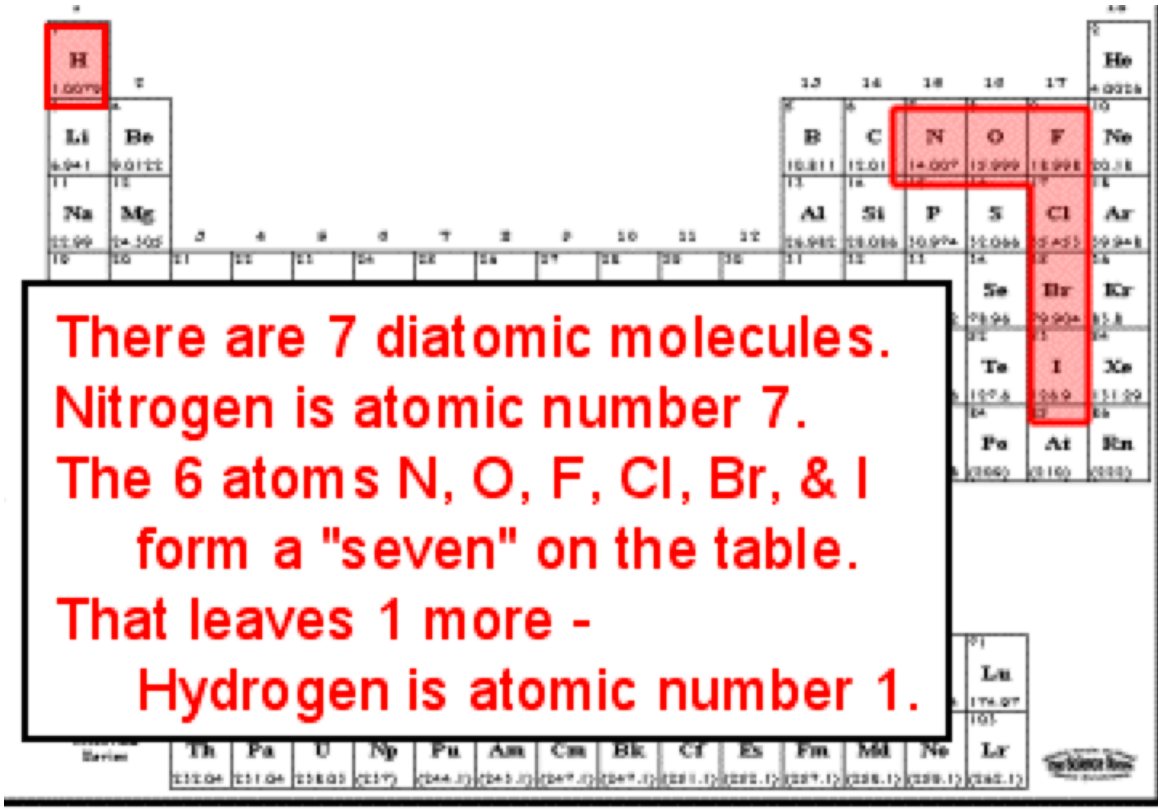
- Single Bond: 1 pair of electrons are shared. (2 electrons total)
- Double Bond: 2 pairs of electrons are shared (4 electrons total)
- Triple Bond: 3 pairs of electrons are shared (6 electrons total)

Diatomic

- The word diatomic can be broken up into two root words:
  - Di : which means two
  - Atomic: refers to atoms atoms
- A diatomic molecule is a molecule that is made up of two atoms of the same type of element. Naturally occurs in nature.
  - Example: O_2

List of Diatomic Molecules

1. Hydrogen (H_2)
2. Nitrogen (N_2)
3. Oxygen (O_2)
4. Fluorine (F_2)
5. Chlorine (Cl_2)
6. Bromine (Br_2)
7. Iodine (I_2)



How to remember it

- HOFBrINCl (“Hoff-Brinkle”… idk just go with it! ☺)

- I Never Bring Classwork Home On Fridays

Quiz

- You will be asked to identify the 7 diatomic molecules on the quiz