

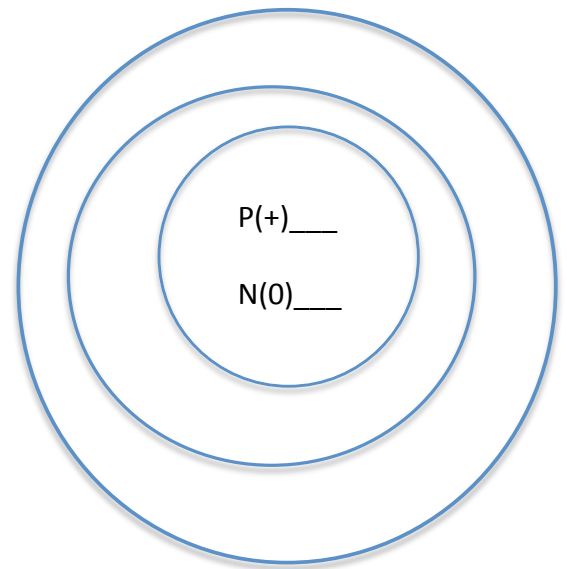
# Do Now (5 min)

## 1-26-11

Part #1: Answer the Following questions on a separate sheet:

1. The atomic number of C (Carbon) is \_\_\_\_\_.
2. What is the atomic mass of C (Carbon) is \_\_\_\_\_.
3. How many protons does C (Carbon) have?
4. How many electrons (-) does C (Carbon) have?
5. How many neutrons does C (Carbon) have?

Part #2: Draw an atomic Model of C



Note: electrons (-) do not have much mass, so we do not include them in the *atomic mass*

# Bonding of Atoms

1-26-11

# 1-26-11 Agenda

1. Do Now (5 min)
2. Objectives (2.5 min)
3. Bonding of Atoms (20 min)
4. Molecules vs. Compounds (10 min)
5. Radioactive Isotopes (If time) (10 min)
6. Closing (2.5 min)
7. Exit Slip (5 min)
8. Participation Grades (5 min)

## Objectives (3 min)

- Content (The objectives you'll master today)
- **SWBAT:**
  1. *Explain the two major ways atoms bond to form molecules and compounds*
- Language (How you will master the objectives)
- **By:**
  1. *Drawing atomic models*
    - a) *Writing notes based on the PowerPoint*

# 1. Bonding of Atoms(20 min)

Objective: SWBAT: *Explain the two major ways atoms bond to form molecules and compounds by drawing atomic models and discussing the topic in class*

When atoms bond (combine) they either gain or loose or share **electrons** ( $e^-$ )

From yesterday we know...

- Each shell can hold a different number of electrons (-)
- Each shell “wants” to be full
- The shells can hold the following amounts of electrons(-)

Shell #1: up to **2**  $e^-$   
Shell #2: up to **8**  $e^-$   
Shell #3: up to **18**  $e^-$   
Shell #4: up to **32**  $e^-$   
Shell #5: up to **50**  $e^-$   
Shell #6: up to **72**  $e^-$

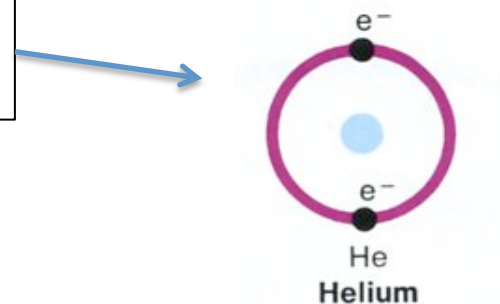
For The Rest of Our Class...

Shell #1: up to **2**  $e^-$   
Shell #2: up to **8**  $e^-$   
Shell #3: up to **8**  $e^-$

When atoms have a full outer shell....

- we say they are **stable or inert**: (unlikely to bond with other atoms by loosing or gaining an  $e^-$ )

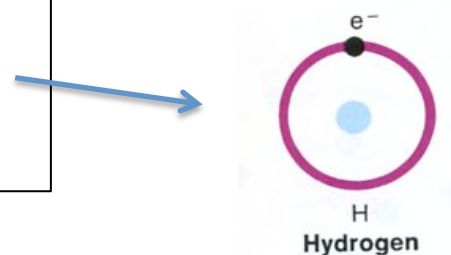
**Stable/Inert**  
Helium atom



When atoms do not have a full outer shell....

- we say they are **unstable**: (likely to bond with other atoms by loosing or gaining an  $e^-$ )

**Unstable**  
Hydrogen atom



# Bonding of Atoms(20 min)

Objective: SWBAT: *Explain the two major ways atoms bond to form molecules and compounds by drawing atomic models and discussing the topic in class*

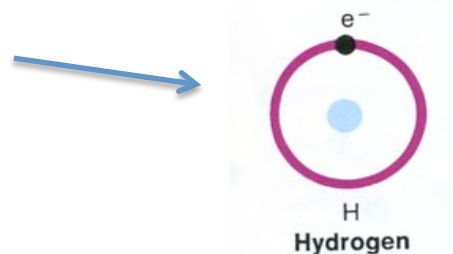
When atoms have a full outer shell....  
-we say they are **stable** or **inert**:  
(unlikely to bond with other atoms by losing or gaining or sharing an  $e^-$ )

**Stable/Inert**  
Helium atom

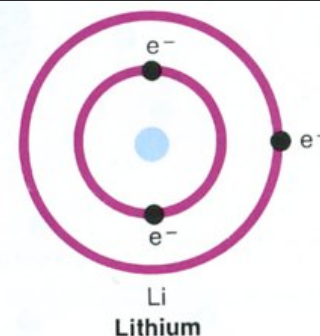


When atoms do not have a full outer shell....  
-we say they are **unstable**: (likely to bond with other atoms by losing or gaining or sharing an  $e^-$ )

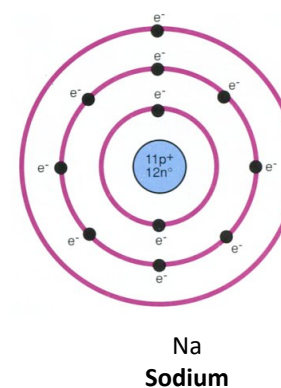
**Unstable**  
Hydrogen atom



Which of the following two atoms is more **stable**: Helium or Lithium?



Which of the following two atoms is more **stable**: Hydrogen or Sodium?



# Bonding of Atoms(20 min)

Objective: SWBAT: *Explain the two major ways atoms bond to form molecules and compounds by drawing atomic models and discussing the topic in class*

We already know that...

When atoms bond (combine) they either gain or loose or share **electrons** ( $e^-$ )

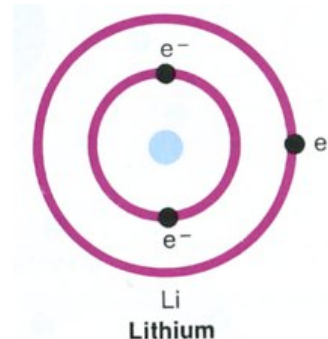
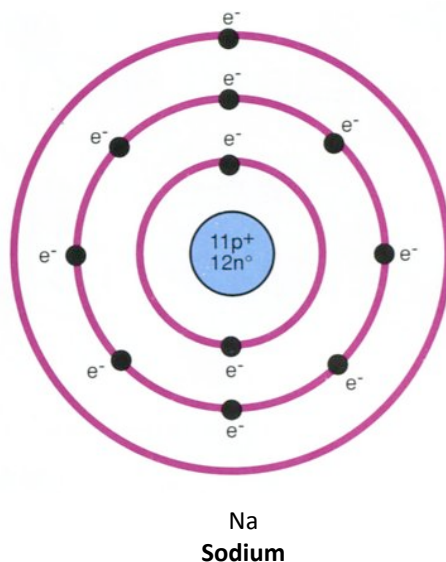
Atoms will gain electrons if:

-the shell is halfway or more than halfway full

Atoms will lose an electron if:

-the shell is less than halfway full

Will the following atoms gain or lose electrons when they bond with another atom or are they so stable they will not gain or lose electrons?



# Bonding of Atoms(20 min)

Objective: SWBAT: *Explain the two major ways atoms bond to form molecules and compounds by drawing atomic models and discussing the topic in class*

We already know that...

When atoms bond (combine) they either gain or lose or share **electrons ( $e^-$ )**

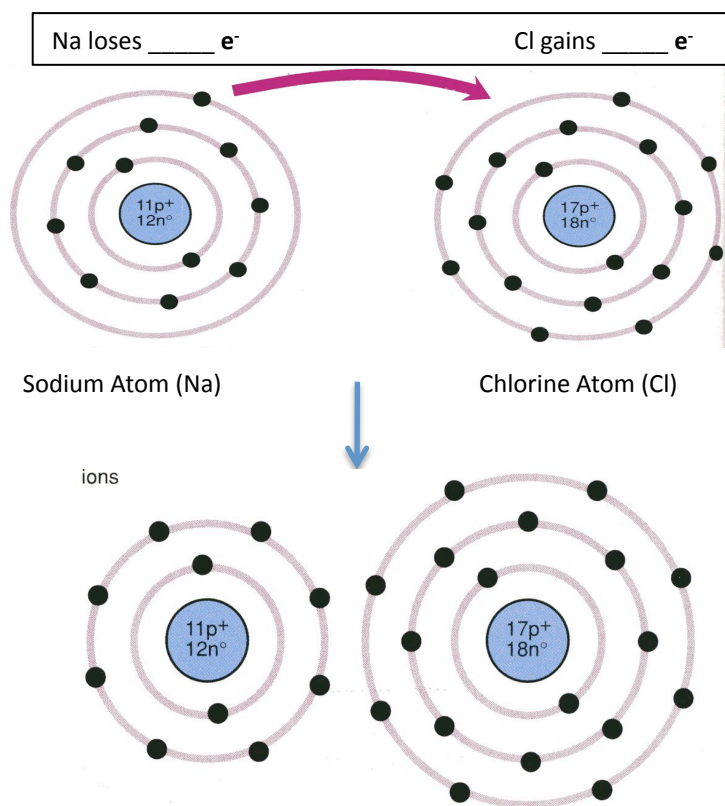
Atoms will **gain** electrons if:

-the shell is **halfway** or **more than halfway** full

Atoms will **lose** an electron if:

-the shell is **less than halfway** full

**Type #1: Ionic Bond: ( $e^-$ ) is given/taken**



What do you think the charges are for each of the atoms?

Sodium (Na)\_\_\_\_\_ charge

Chlorine (Cl)\_\_\_\_\_ charge

**Ion:** (atoms that have become electrically charged, either (+) or (-) by gaining or losing electrons)



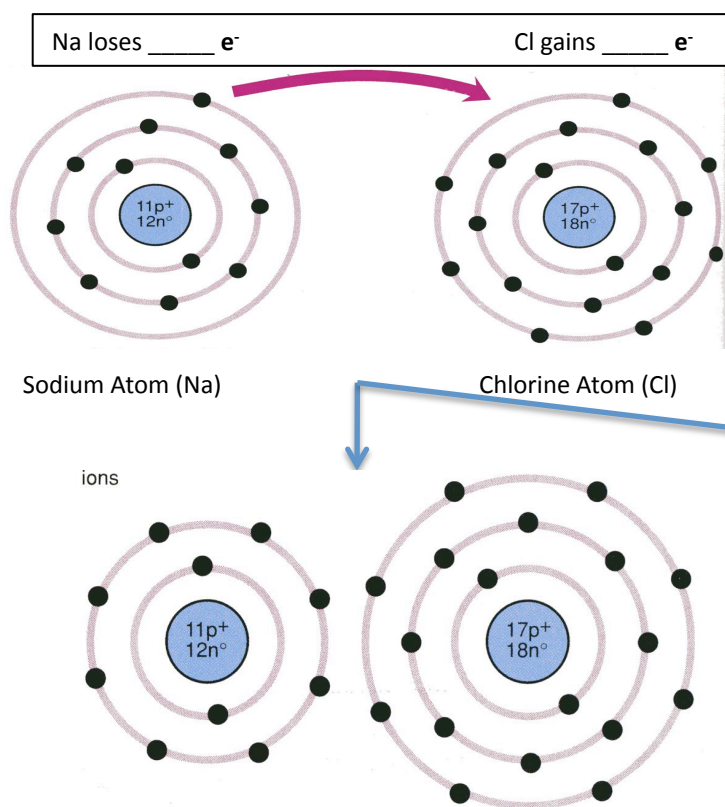
# Bonding of Atoms(20 min)

Objective: SWBAT: *Explain the two major ways atoms bond to form molecules and compounds by drawing atomic models and discussing the topic in class*

We already know that...

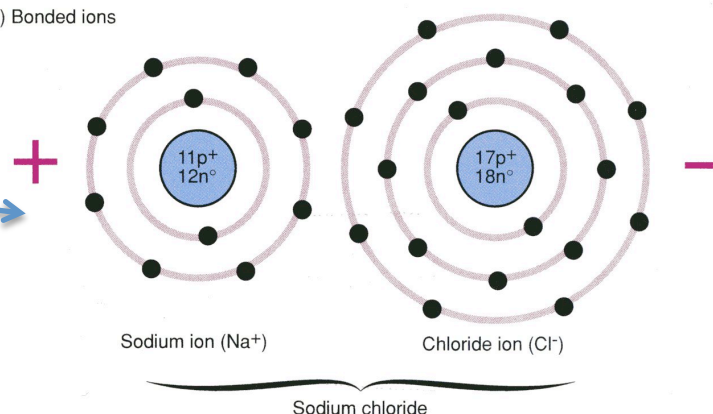
When atoms bond (combine) they either gain or loose or share **electrons** ( $e^-$ )

**Type #1: Ionic Bond:** ( $e^-$ ) is given/taken



**Ion:** (atoms that have become electrically charged, either (+) or (-) by gaining or losing electrons)

(b) Bonded ions



# Bonding of Atoms(20 min)

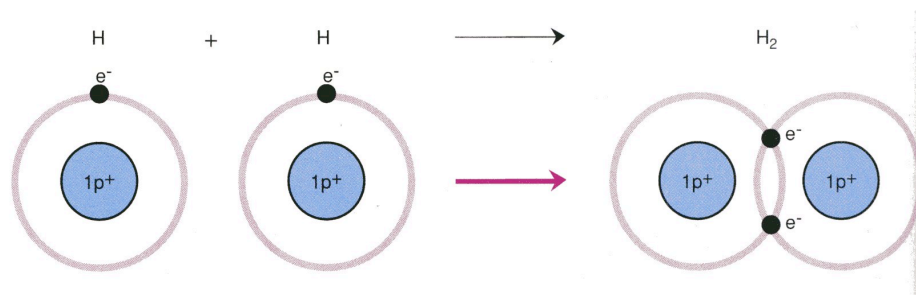
Objective: SWBAT: *Explain the two major ways atoms bond to form molecules and compounds by drawing atomic models and discussing the topic in class*

We already know that...

When atoms bond (combine) they either gain or loose or share **electrons** ( $e^-$ )

**Type #2: Covalent Bond:** ( $e^-$ ) is shared

H shares \_\_\_\_\_  $e^-$       H shares \_\_\_\_\_  $e^-$



# Molecules vs. Compounds (10 min)

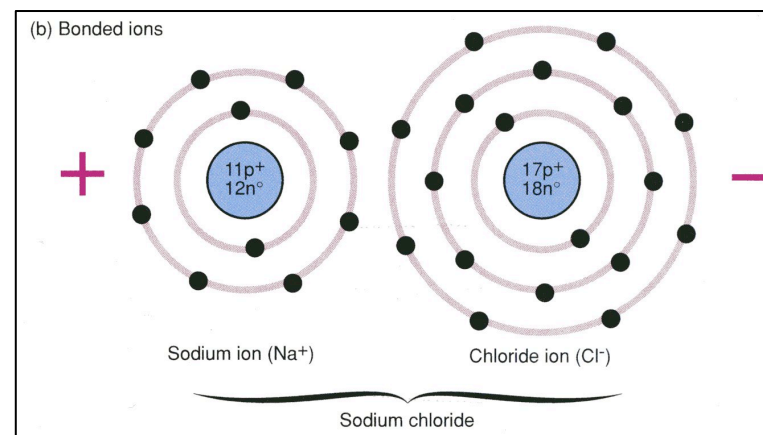
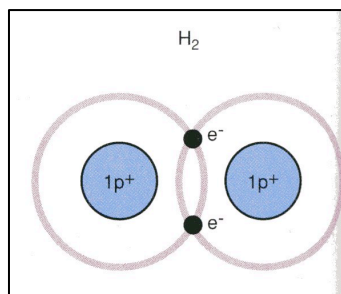
Objective: SWBAT: *Explain the two major ways atoms bond to form molecules and compounds by drawing atomic models and discussing the topic in class*

Finally...This is simple... 😊

**Molecule:** (two or more atoms of the same element bonded together)

**Compound:** (two or more atoms of different elements bonded together)

Molecule or Compound?



# Radioactive Isotopes (If time) (10 min)

Objective: SWBAT: *Explain the two major ways atoms bond to form molecules and compounds by drawing atomic models and discussing the topic in class*

Together, lets read, p. 32

# Closing/**HW** (5 min)

- Did you master the following objectives?

Content (The objectives you'll master today)

**SWBAT:**

1. *Explain the structure of atoms by drawing atomic models and by writing notes based on the PowerPoint*

Language (How you will master the objectives)

**By:**

1. *Drawing atomic models*
  - a) *Writing notes based on the PowerPoint*

# Exit Slip (5 min)

1. What is an **ion**
2. What are the **two types of chemical bonds**?
3. Describe what happens during each type of bond.
4. What is a **molecule**?
5. What is a **compound**?

# Participation Grades (5 min)

- Each day **YOU** will decide the grade you deserve...Though, I reserve the right to change these.
- Your 5-point daily participation grade is based on CLA's core-values:
  - CLA Students are S.M.A.R.T.
    - S = Self-Controlled
    - M = Motivated
    - A = Accountable
    - R = Respectful
    - T = Timely
  - One point for each core-value
    - (5 points possible each day)
- What do you deserve today?