Unit 5 NAME

Class Work 12/13/13

5.1 Introduction to Chemical Bonding

SPARK (Take out your textbook work!)

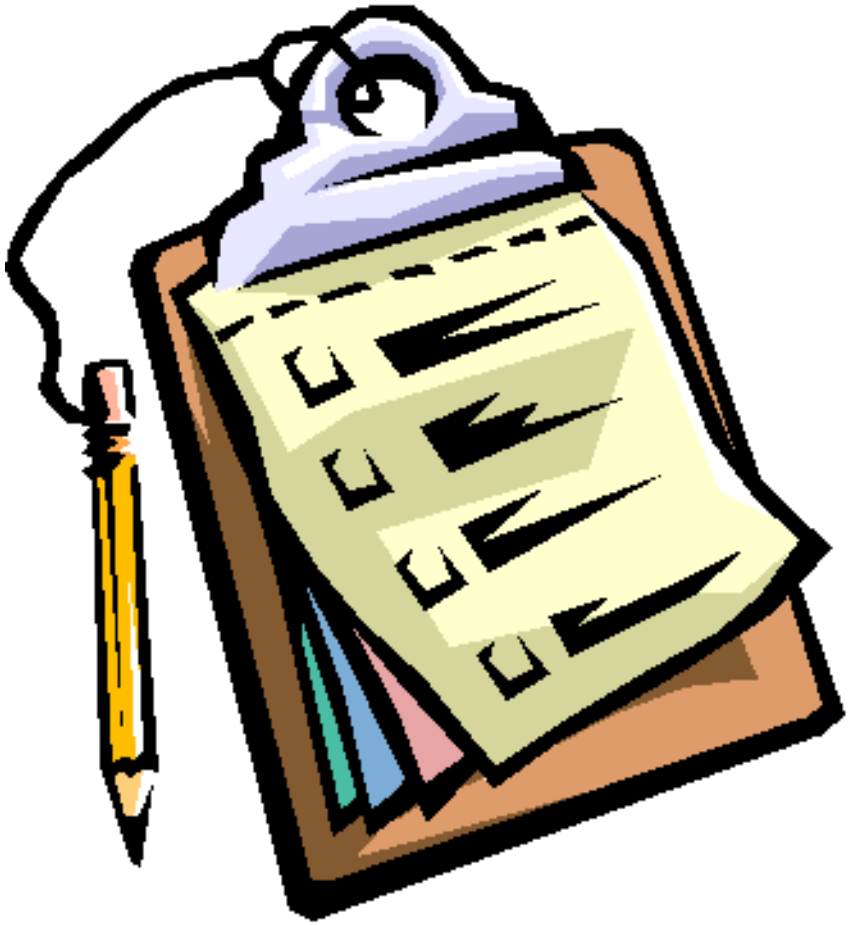
1. What is the electronegativity difference between C and H?
2. What is the electronegativity difference between Na and Cl?

Objective

SWBAT describe chemical bonding and explain why atoms bond

Agenda:

- SPARK/Objective
- Review – chemical formulas
- Lesson
- Practice
- Exit Ticket
- Homework



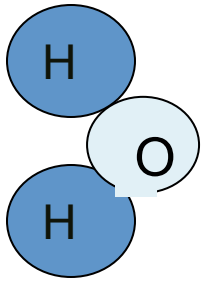
Objective: SWBAT explain trends in electronegativity

Review of the number of atoms in a compound!

H_2O

$Cu(NO_3)_2$

Copper	1
Nitrogen	2
Oxygen	6



Task

- For the following set of compounds, identify the elements and number of atoms of each element!

CO_2

CO_2

1 Carbon

2 Oxygen

Na_2SO_4

Na_2SO_4

2 Sodium

1 Sulfur

4 Oxygen

$Fe(NO_3)_2$

$Fe(NO_3)_2$

2 Iron
2 Nitrogen
6 Oxygen

$(NH_4)_3PO_4$

$(NH_4)_3PO_4$

3 Nitrogen

12 Hydrogen

1 Phosphorus

4 Oxygen

How does chemical bonding relate to being in an elevator?

Chemical Bonding

- Forces that hold atoms together
- Anytime you BREAK a chemical bond it requires energy and is an **endothermic process.**

$$A\ B + \text{energy} \rightarrow A + B$$

Chemical Bonding

- Anytime you FORM a bond, energy is released. It is an **exothermic process**.

$$A + B \rightarrow AB + \text{energy}$$

Less Stable → More Stable

More Potential Energy → Less Potential Energy

CHEMICAL BONDS

- Why is energy released when a bond is formed?
- Resulting **compound** is more stable
  - It has less potential energy.
  - The more energy released, the more stable the compound is and the stronger the bond!

Based on what you watched in yesterday's movie and what you read for homework…

- Why are elements more stable in compounds?

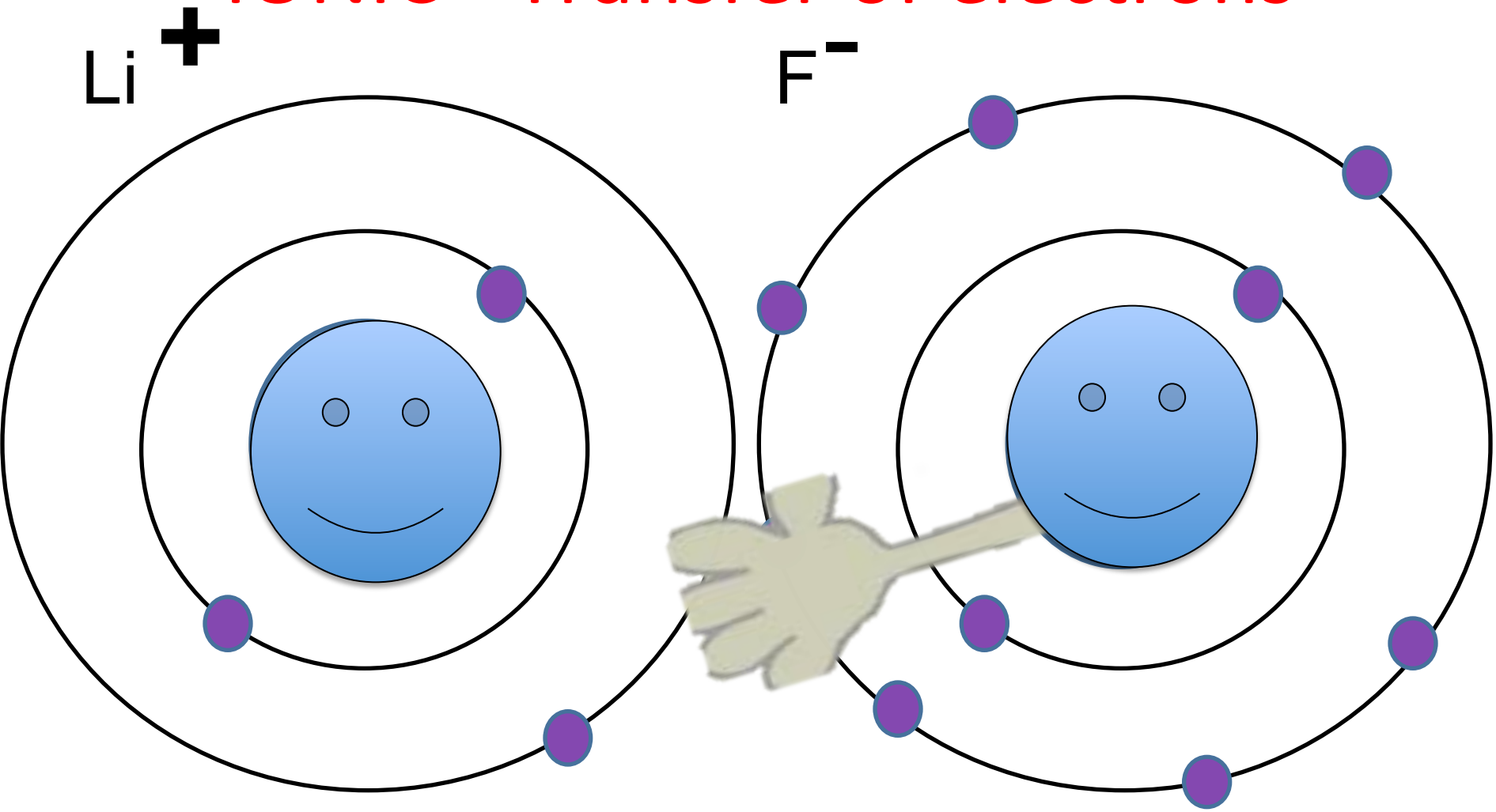
Chemical Bonds

- Atoms bond to achieve the noble gas configuration or FULL VALENCE SHELL.
  - What is a full valence shell??

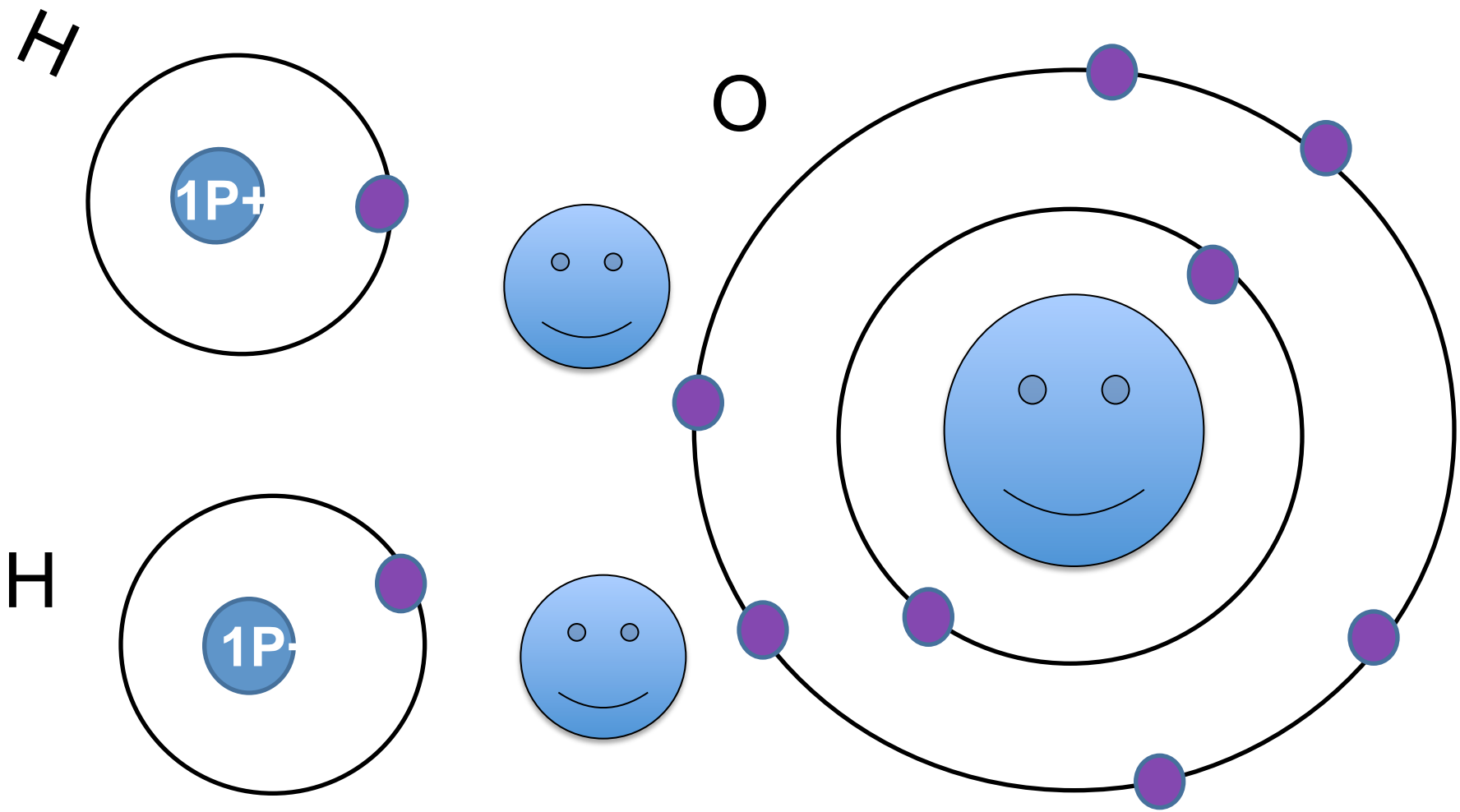
Types of Bonding!

- Ionic Bonding
  - **Electrons are transferred!**
- Covalent Bonding
  - **Electrons are shared!**

IONIC - Transfer of electrons



Covalent - Sharing of electrons



Independent Practice

- Take 8 minutes to work on your independent practice!

Review

1. Which atom is most likely to bond with an atom?

1) An atom with 8 valence electrons.
2) An atom with 7 valence electrons.
3) An atom with 6 valence electrons.
4) An atom with 4 valence electrons.

Review

2. Atom A has 7 electrons in its outer shell. Atom B has 1 electron in its outer shell. After bonding, both have 8 in their outer shell, but Atom A has a -1 charge and Atom B has a +1 charge. What kind of bond is this?

1) Ionic
2) Covalent
3) Metallic
4) Electronic

Review

3. An atom has 15 total electrons, how many does it have in its outer shell?

1) 3
2) 4
3) 5
4) 6

Review

4. Which atom is most likely to bond with another atom?

1) An atom with 8 valence electrons.
2) An atom with 10 total electrons
3) An atom with 2 total electrons
4) An atom with 9 total electrons

Review

5. Cations have positive charges. Anions have negative charges. What force draws the two together?

1) Magnetic Attraction
2) Ionic Attraction
3) Electromagnetic attraction
4) Electrostatic attraction

Exit Ticket

- Are most elements more stable as compounds or as elements? Explain.

*Use an example such as LiF to explain.

HOMEWORK

Read pages 203-207 in your textbook and answer questions 1 and 2 on page 207!

Objective: SWBAT demonstrate mastery of Unit 4 topics!