Science 9

Chemistry III

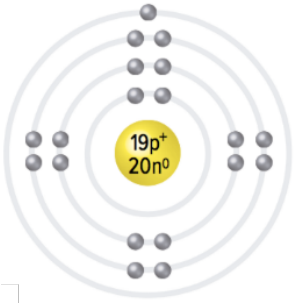
Name:
Date:
Block:

1. **Bohr Models**
2. **Ions**

Bohr Models

_____ _____ are a way of representing the _____ arrangements of atoms using energy shells.

- Shows how many _____ occupy each specific _____ level/shell.



There is a _____ amount of electrons that are able to occupy each energy shell.

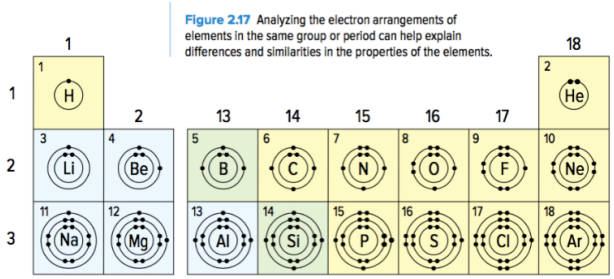
- First shell: ____electrons
- Second shell: ____ electrons
- Third shell: ____ electrons

The ____ shell that contains electrons is called the _____ shell.

- The electrons that occupy the valence shell is called _____ _____.

Some _____ that we can see on the _____ _____:

- Atoms in the same _____ have the same number of _____ _____
- Atoms in the same _____ have the same number of occupied _____ _____



How do we draw Bohr models?

1. State the number of protons and neutrons in the middle.
2. Find the number of electrons the element contains.
3. Draw the first energy shell and fill in the electrons. Keep in mind that the first energy shell can contain a maximum of TWO electrons.
4. Once the energy shell is full, draw the next shell and continue to draw out the electrons. Be sure to place the electrons in pairs if possible.

Helium Atom	Sodium Atom

Ions

Many elements do not occur _____ on their own as they are _____ _____. In order for elements to become stable, they often form _____ in order to achieve a _____ _____ shell.

An ion is _____ when elements either _____ or _____ an _____. Ions are defined as a _____ _____.

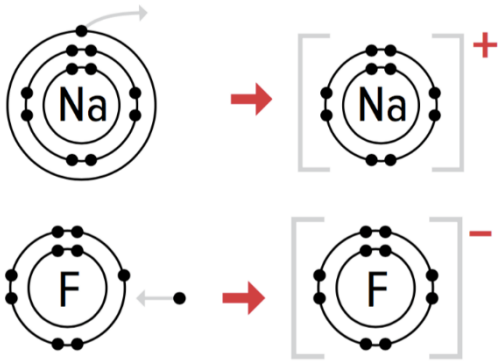
- It is considered to be a charged atom because the number of electrons and the number of protons _____ _____ match.

In order to achieve a full valence shell, elements will either lose or gain electrons. When atoms…

- _____ an electron: becomes a _____ charged ion
- _____ an electron: becomes a _____ charged ion

We can figure out if atoms gain/lose electrons by looking at their _____ _____.

- When the ion charge is _____ (e.g.: +1), the atom is _____ electrons. This is called a _____.
- When the ion charge is _____ (e.g.: -1), the atoms is _____ electrons. This is called an _____.



The _____ associated with the ion charge is the _____ of electrons that atoms will gain or lose.

Note:
_____ of an element is linked to how close it is to having a _____ valence shell.

- The _____ _____ families (Group 1 and Group 17) are only _____ electron away from a full valence shell.
- _____ _____ (Group 18) are stable (_____) because they have full valence shells.
  - These atoms do not tend to gain, lose, or share electrons.

How do we draw Bohr models?

1. State the number of protons and neutrons in the middle.
2. Determine the ion charge of the element and find the number of electrons the element contains. Note: positive ions mean remove electrons while negative ions mean receive electrons.
3. Draw the first energy shell and fill in the electrons. Keep in mind that the first energy shell can contain a maximum of TWO electrons.
4. Once the energy shell is full, draw the next shell and continue to draw out the electrons. Be sure to place the electrons in pairs if possible.
5. Once all the electrons have been placed in the model, draw square brackets around the model and write the ion charge of the element on the top right hand corner OUTSIDE of the square brackets.

Sulphur Ion	Sodium Ion

Complete the following table:

Atom/Ion	Atomic #	Charge	Atomic Mass	# of Protons	# of Neutrons	# of Electrons	Bohr Diagram
Carbon Ion	6		12			2	
Lithium Atom		0	7	3			
Magnesium Atom		0	24			12	
Boron Ion	5	+3			6	2	
Argon Atom	18	0				18	

Atom/Ion	Atomic #	Charge	Atomic Mass	# of Protons	# of Neutrons	# of Electrons	Bohr Diagram
Aluminum Ion					14	10	
Calcium Atom	20		40	20			
Nitrogen Atom		0			7		
Fluorine Ion		-1		9			
Oxygen Ion	8			8			
Potassium Ion							