Do Now (5 min)
4-12-11

- What does Chemistry have to do with life?

Chemistry The Basis of Life: Matter, Atoms and Molecules

4-12-11

4-12-11 Agenda

1. Do Now (5 min)
2. Objectives (2.5 min)
3. Living Material and Chemistry(20 min)
4. Matter Atoms and Molecules(20 min)
5. Closing (2.5 min)
6. Exit Slip (5 min)
7. Participation Grades (5 min)

Objectives (3 min)

- Content (The objectives you'll master today)
- **SWBAT:**
  1. *Explain how the study of living material is dependent on the study of chemistry*
  2. *Describe the relationships between matter, atoms and molecules*
- Language (How you will master the objectives)
- **By:**
  1. *Writing notes based on the PowerPoint*
  2. *Writing notes based on the PowerPoint*

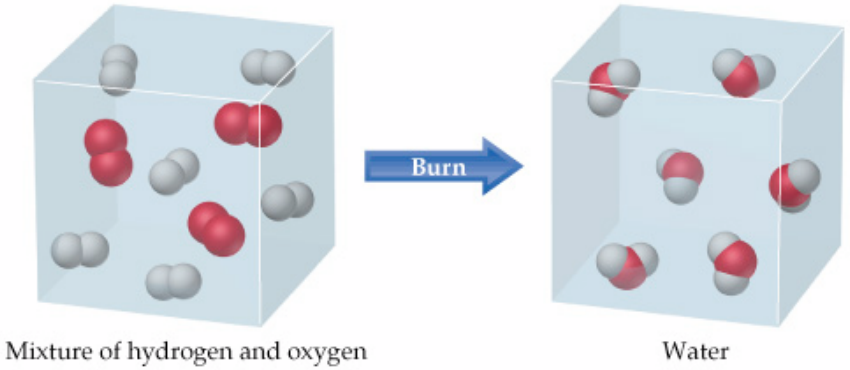
Living Material and Chemistry (20 min)

Objective: SWBAT: *Explain how the study of living material is dependent on the study of chemistry by writing notes based on the PowerPoint*

Chemistry: the branch of science dealing with the composition of substances and the changes that take place in their composition

In other words…chemistry is the study of what things are made of (their "ingredients") and how those things can change (how the "ingredients" can change)

If we burn hydrogen gas (the white colored molecules) in the present of oxygen (the red molecules) we will get water H_20)



Think/Turn/Talk:

Why is the study of living material dependent on the study of chemistry? (Hint: From what materials are humans made?)

Living Material and Chemistry (20 min)

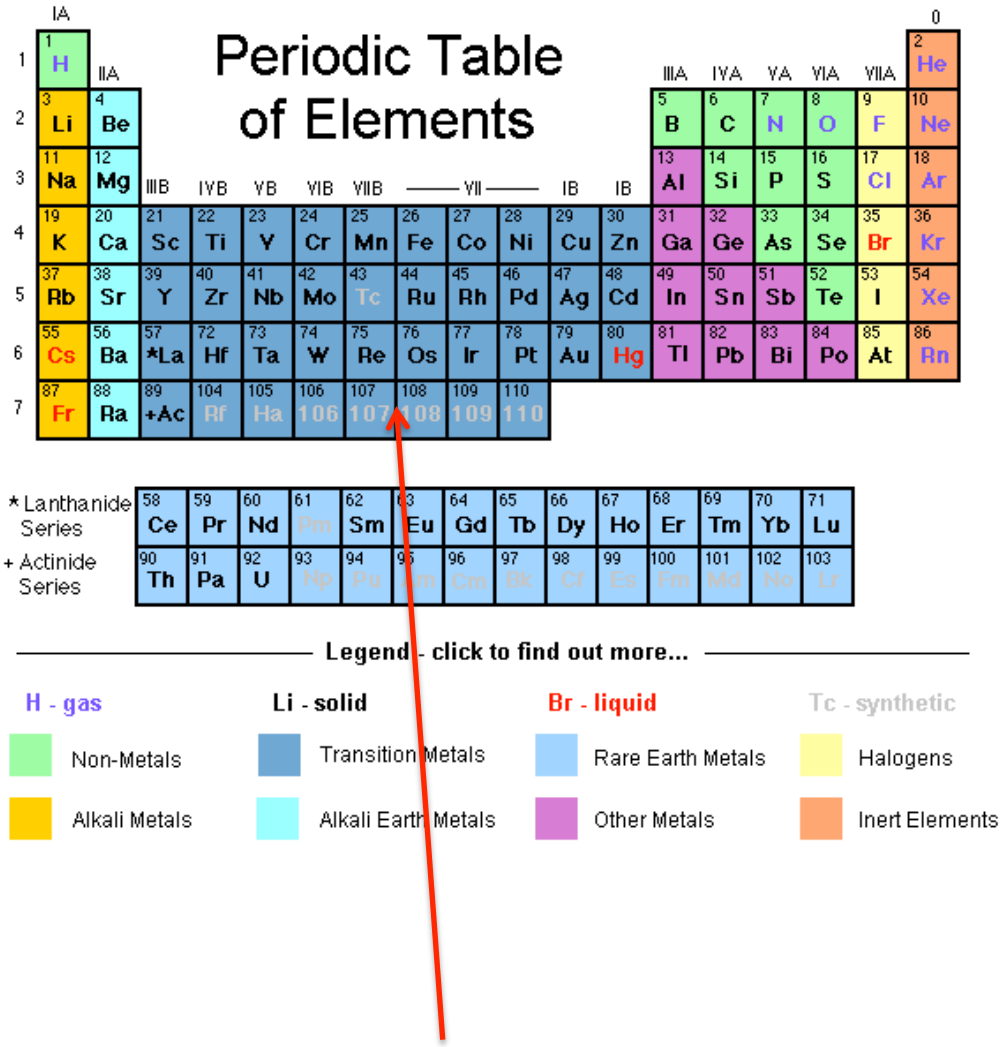
Objective: SWBAT: *Explain how the study of living material is dependent on the study of chemistry by writing notes based on the PowerPoint*

Matter: anything that has weight and takes up space

Element: a basic chemical substance
(presently 110 known to humans)

Atom: tiny invisible particles (building blocks of all matter, elements, chemicals, etc.)

Think/Turn/Talk
From what is matter made?
From what are all of the elements made?



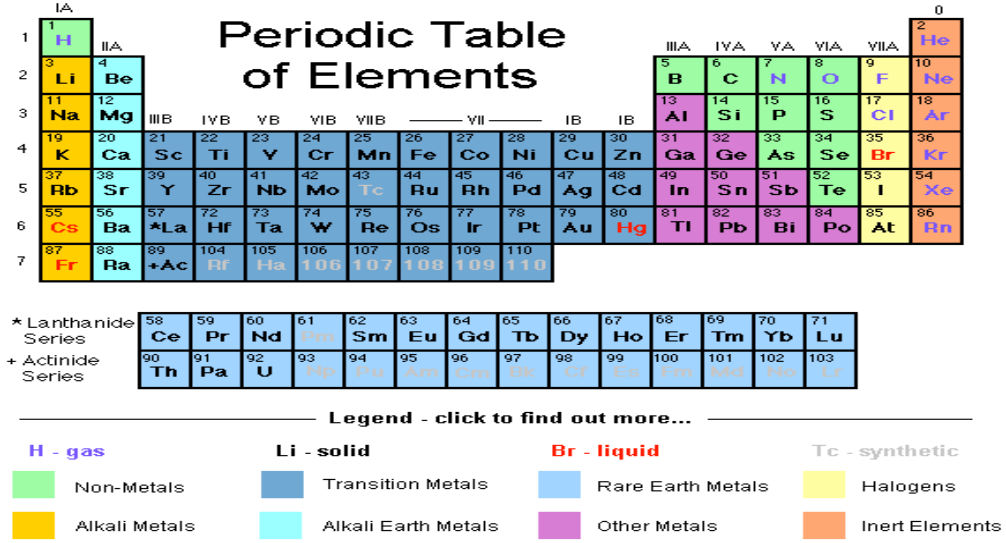
Living organisms need about 20 of these elements!

Living Material and Chemistry (20 min)

Objective: SWBAT: *Explain how the study of living material is dependent on the study of chemistry by writing notes based on the PowerPoint*

Chart 2.1 Major elements in the human body

Major elements	Symbol	Approximate percentage of the human body (by weight)
Oxygen	O	65.0%
Carbon	C	18.5
Hydrogen	H	9.5
Nitrogen	N	3.2
Calcium	Ca	1.5
Phosphorus	P	1.0
Potassium	K	0.4
Sulfur	S	0.3
Chlorine	Cl	0.2
Sodium	Na	0.2
Magnesium	Mg	0.1
		Total 99.9%
Trace elements		
Cobalt	Co	
Copper	Cu	
Fluorine	F	Together less than 0.1%
Iodine	I	
Iron	Fe	
Manganese	Mn	
Zinc	Zn	



Calculate/Turn/Talk:

How many pound of Oxygen and Carbon do you have in your own body?

Calculation:

Oxygen: _____(your body weight) x 0.65

Carbon: _____(your body weight) x 0.185

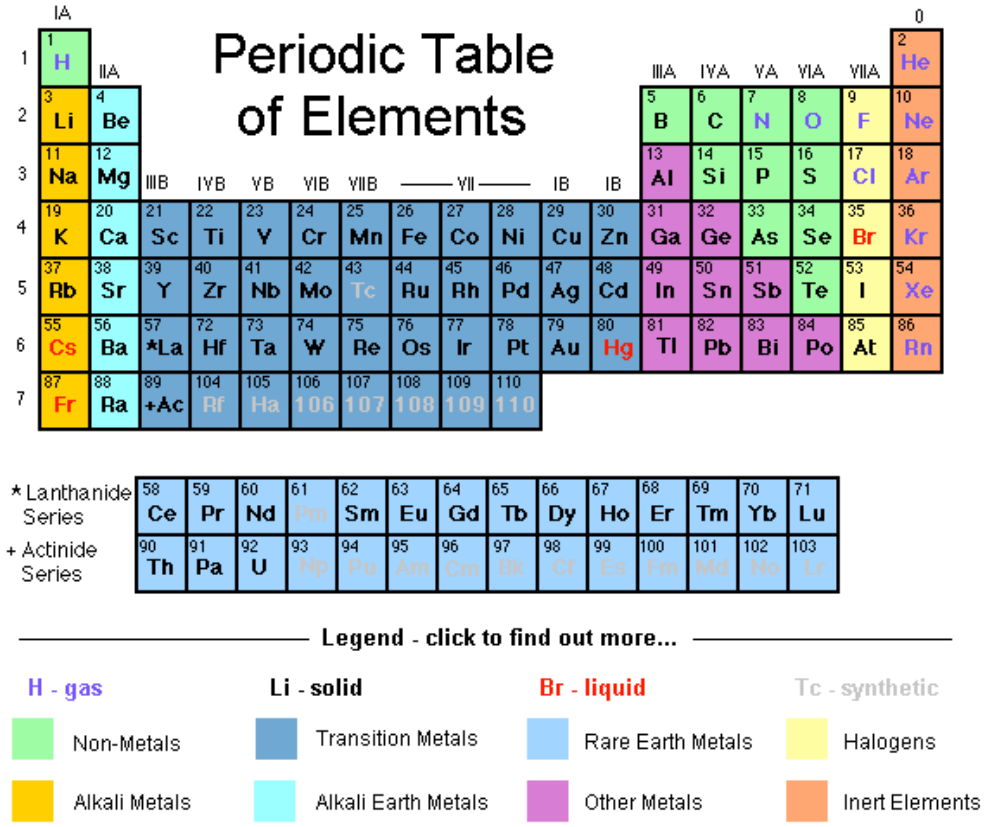
Living Material and Chemistry (20 min)

Objective: SWBAT: *Explain how the study of living material is dependent on the study of chemistry by writing notes based on the PowerPoint*

Atom: tiny invisible particles (building blocks of all matter, elements, chemicals, etc.)

All atoms are made from four different charged parts:

1. Nucleus (the central area of an atom)
2. Electrons(-) (constantly move around the nucleus)
3. Protons(+) (a large particle in the nucleus)
4. Neutrons (0) (a particle w/ similar size to a proton)



Living Material and Chemistry (20 min)

Objective: SWBAT: *Explain how the study of living material is dependent on the study of chemistry by writing notes based on the PowerPoint*

All atoms are made from four different charged parts:

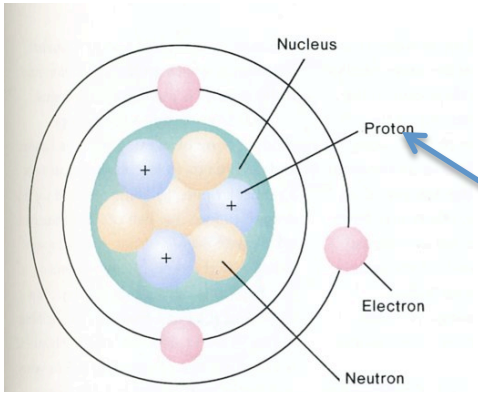
1. Nucleus (the central area of an atom)
2. Electrons(-) (constantly move around the nucleus)
3. Protons(+) (a large particle in the nucleus)
4. Neutrons (0) (a particle w/ similar size to a proton)

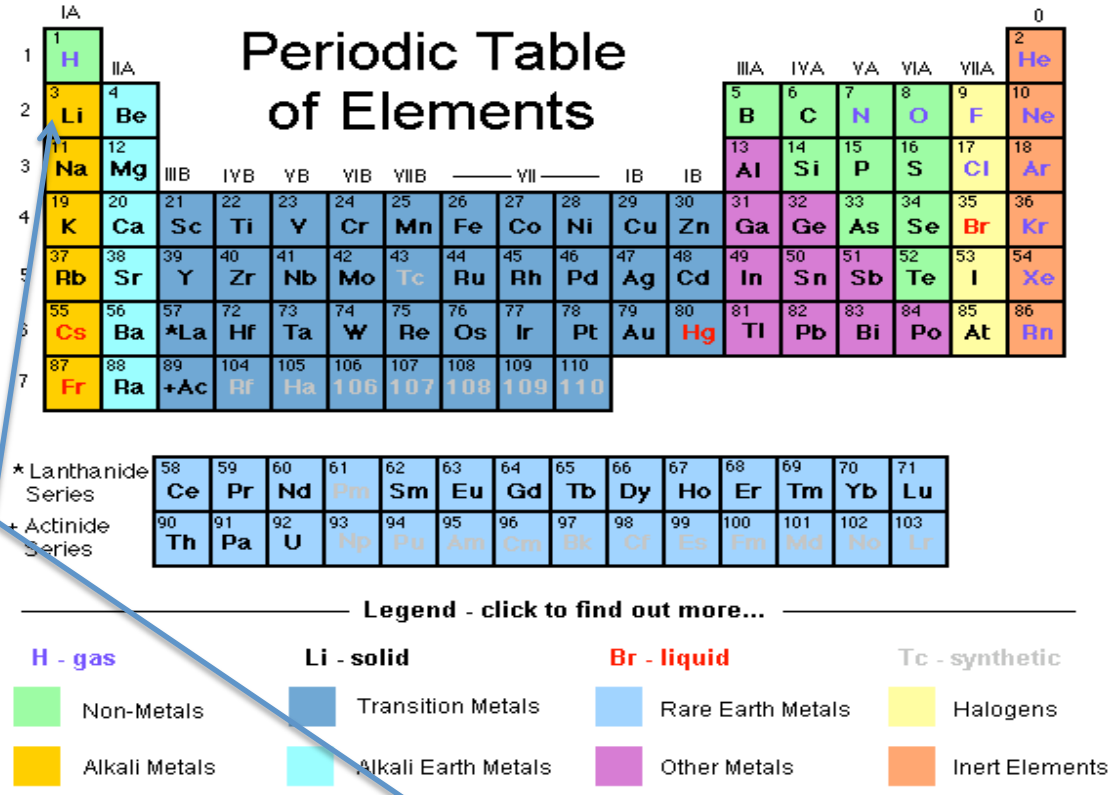
Important

The number of protons determines the element

The Periodic Table tells you this Information

Protons (+) always = Electrons (-)





Atomic Number: The number of protons an element has

Think/Turn/Talk:

-What type of atom is pictured to the right? (Hint)

-Draw a diagram of the element that has 11 protons? What is it?

Closing/HW (5 min)

- Did you master the following objectives?

Content (The objectives you'll master today)

SWBAT:

1. *Explain how the study of living material is dependent on the study of chemistry*
2. *Describe the relationships between matter, atoms and molecules*

Language (How you will master the objectives)

By:

1. *Writing notes based on the PowerPoint*
2. *Writing notes based on the PowerPoint*

Exit Slip (5 min)

- On a separate sheet of paper, write your **NAME, DATE, and BLOCK at the top.**

1. What is the relationship between matter and the elements?
2. What are 5 of the most common elements in the human body?
3. Draw a diagram of a helium atom (hint 2 protons)
4. What does the **atomic number** tell you?

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?

Graded Do Now (5 min)
1-25-11

Based on your notes from yesterday…

1. What is the relationship between matter and the elements?
2. What are 5 of the most common elements in the human body?
3. Draw a diagram of a helium atom (hint 2 protons)
4. What does the **atomic number** tell you?

Atomic Weight and Number: Modeling Atoms

1-25-11

1-25-11 Agenda

1. Do Now (5 min)
2. Objectives (2.5 min)
3. Atomic Number vs. Atomic Weight (20 min)
4. Modeling Atoms (20 min)
5. Closing (2.5 min)
6. Exit Slip (5 min)
7. Participation Grades (5 min)

Objectives (3 min)

- 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*

Atomic Structure vs. Atomic Weight(20 min)

Objective: SWBAT: *Explain the structure of atoms by drawing atomic models and by writing notes based on the PowerPoint*

Every atom has its own unique structure

This atom has:

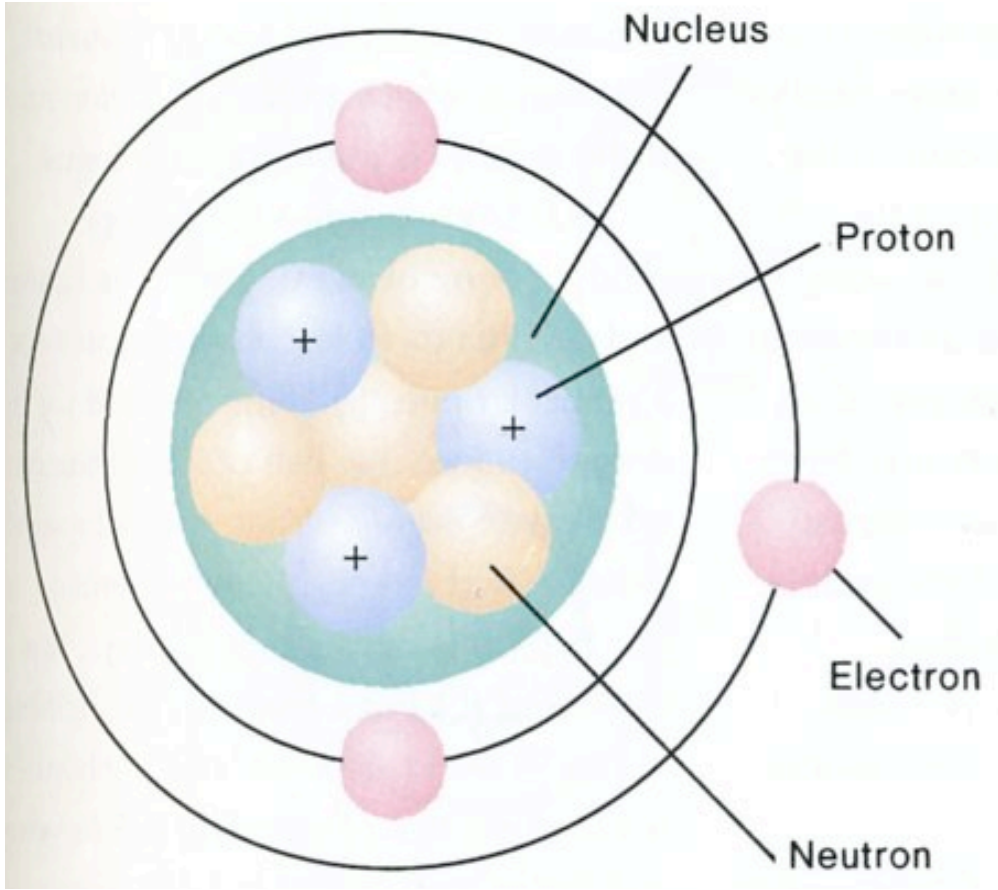
_____Protons(+)

Which means it is an atom of

_____

Since it has ____Protons (+) it must also have _____Electrons(-) because…

Protons(+) <u>usually</u> equals Electrons (-)



Atomic Structure vs. Atomic Weight(20 min)

Objective: SWBAT: *Explain the structure of atoms by drawing atomic models and by writing notes based on the PowerPoint*

Every atom has its own unique structure

This atom has:

3 Protons(+)

Therefore we say its *atomic number* is **three**

Atomic Number:

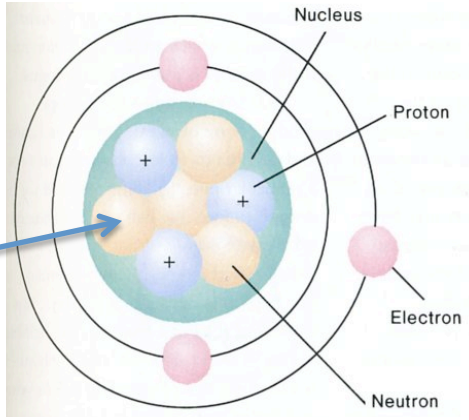
-All atoms also have **neutrons (0)**

(You will have to use the periodic table to figure out the number of **neutrons(0)**)

In this atom, there are 4 neutrons (0)

Therefore we say the *atomic mass* is **seven**

Atomic Mass:



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

Modeling Atoms (20 min)

Objective: SWBAT: *Explain the structure of atoms by drawing atomic models and by writing notes based on the PowerPoint*

Atomic Number: number of protons(+)	**Atomic Mass**: number of protons and neutrons(0)

Part #1: Answer the Following questions:

1. What is the atomic number of Na (sodium)?

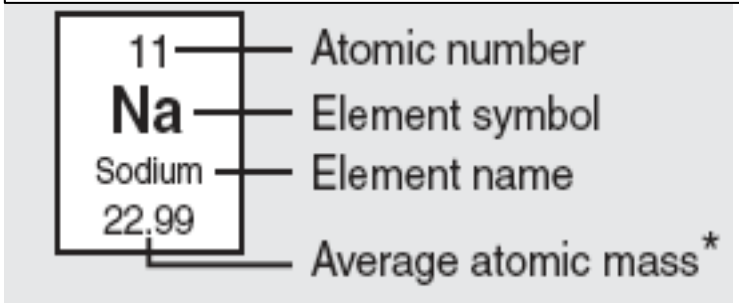
2. What is the atomic mass of Na (sodium)?

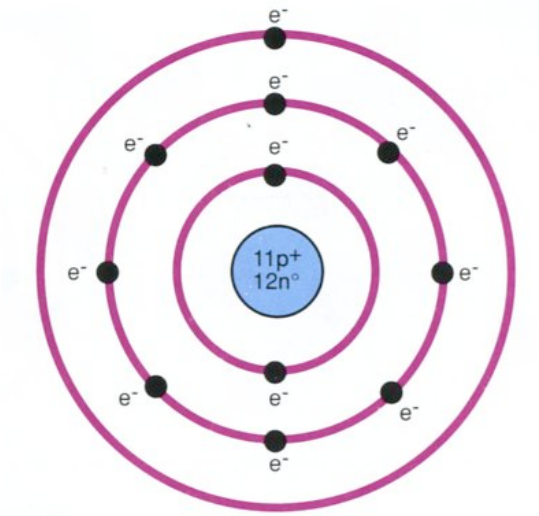
3. How many protons does Na (sodium) have?

4. How many electrons (-) does Na (sodium) have?

5. What is the atomic mass of Na (sodium)?

6. How many neutrons does Na (sodium) have?





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

Modeling Atoms (I Do) (20 min)

Objective: SWBAT: *Explain the structure of atoms by drawing atomic models and by writing notes based on the PowerPoint*

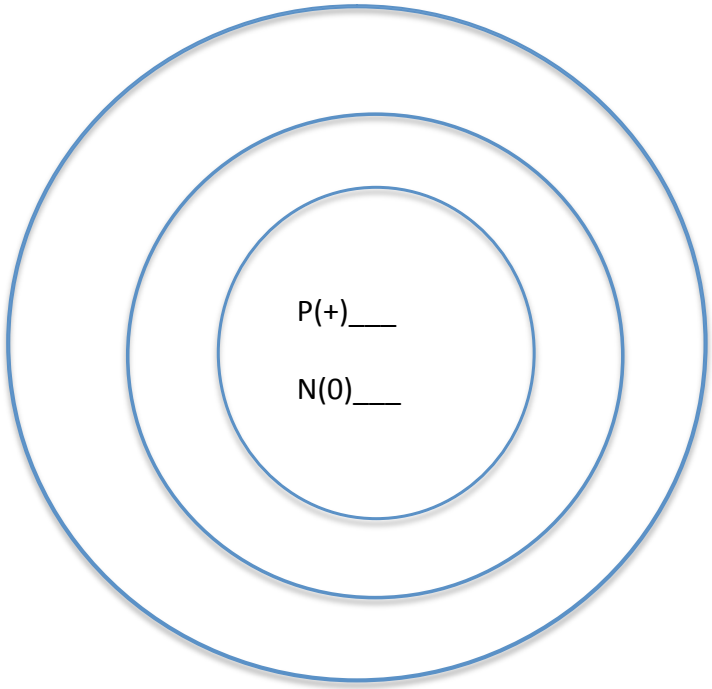
Atoms have **electron shells:** (circular paths electrons(-) follow)

-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$^-$**



Draw an atomic model of Na (sodium)

Modeling Atoms (We Do) (20 min)

Objective: SWBAT: *Explain the structure of atoms by drawing atomic models and by writing notes based on the PowerPoint*

<u>Atomic Number</u>: number of protons(+)

<u>Atomic Mass</u>: number of protons and neutrons(0)

Part #1: Answer the Following questions:

1. What is the atomic number of Cl (chlorine)?

2. What is the atomic mass of Cl (chlorine)?

3. How many protons does Cl (chlorine) have?

4. How many electrons (-) does Cl (chlorine) have?

5. What is the atomic mass of Cl (chlorine)?

6. How many neutrons does Cl (chlorine) have?

Part #2: Draw an atomic Model of Cl

-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$^-$**
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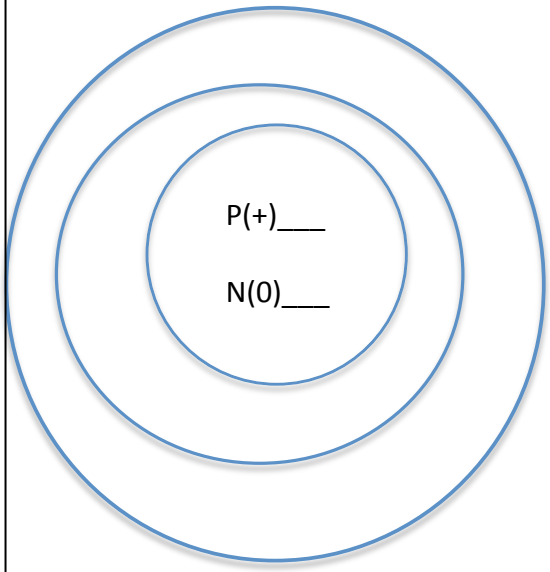

Note: electrons (-) do not have much mass, so we do not include them in the *atomic mass*

Modeling Atoms (You Do) (20 min)

Objective: SWBAT: *Explain the structure of atoms by drawing atomic models and by writing notes based on the PowerPoint*

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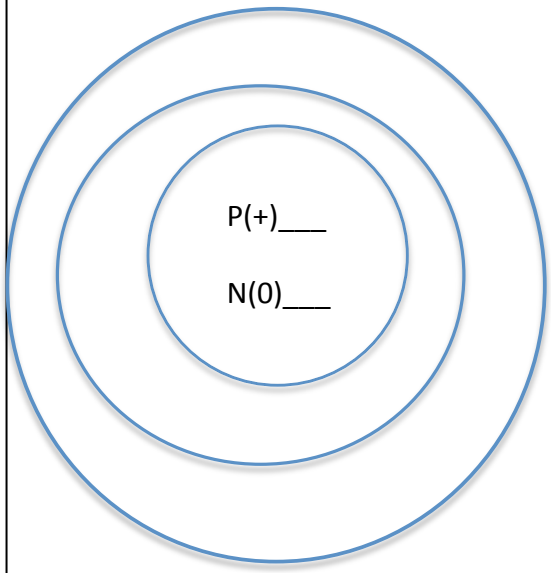
Part #2: Draw an atomic Model of Cl



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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)

Periodic Tables AWAY! ☺

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

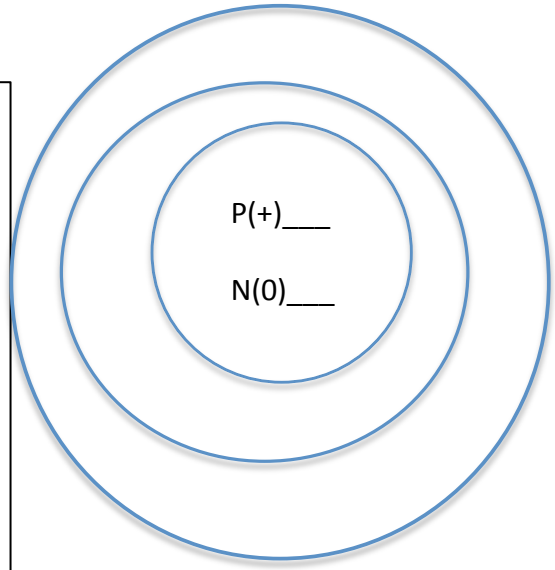
Facts:
-The atomic number of N (nitrogen) is 7.
-What is the atomic mass of N (nitrogen) is 14

1. How many protons does N (nitrogen) have?

2. How many electrons (-) does N (nitrogen) have?

3. How many neutrons does N (nitrogen) have?

Part #2: Draw an atomic Model of N



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

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