August 24th 2016

RIGHT NOW

- Please get out a pencil/pen your notebook, folder, and any signed forms.
- Before class begins write down what the focus of our work time today is as well as your homework.
- **WT:** Quiz, video, and Notes
- **Closure:** This is like that…
- **HW:** Review your notes!

Warm Up:

Prepare for your Quiz.
Can you:
Explain phase change

Identify and explain physical and chemical properties and changes

Explain the Law of Conservation of Matter

Balance Equations

I will be able to:

I will be able to identify and explain the difference of atoms and molecules, as well as create a Bohr model of an atom correctly structuring critical components of an atom.

EQ:

How are valence electrons helpful in bonding?

What are the maximum number of electrons in the first three energy levels of an atom?

What is the correlation between protons, and electrons in an atom?

Why do we say atoms are neutral?

Where is most of the mass of an atom found?

And they dance all night in atomic structure

Protons and neutrons, nucleus or center

Out in shells there they [redacted]

'C[redacted]

Th[redacted]

An[redacted]

I th[redacted]

[redacted]

Set up in the shells not rows (wow)

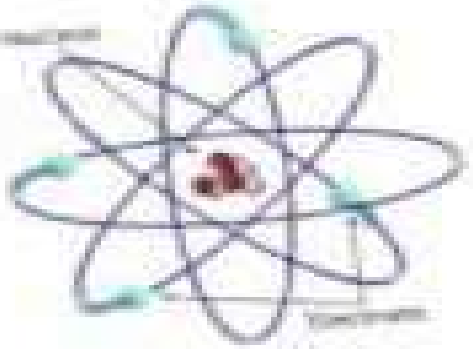
Negatively charged electron

Size of atoms by the cloud (the atoms by the cloud)

Number of them equals protons

They are smaller than protons in mass

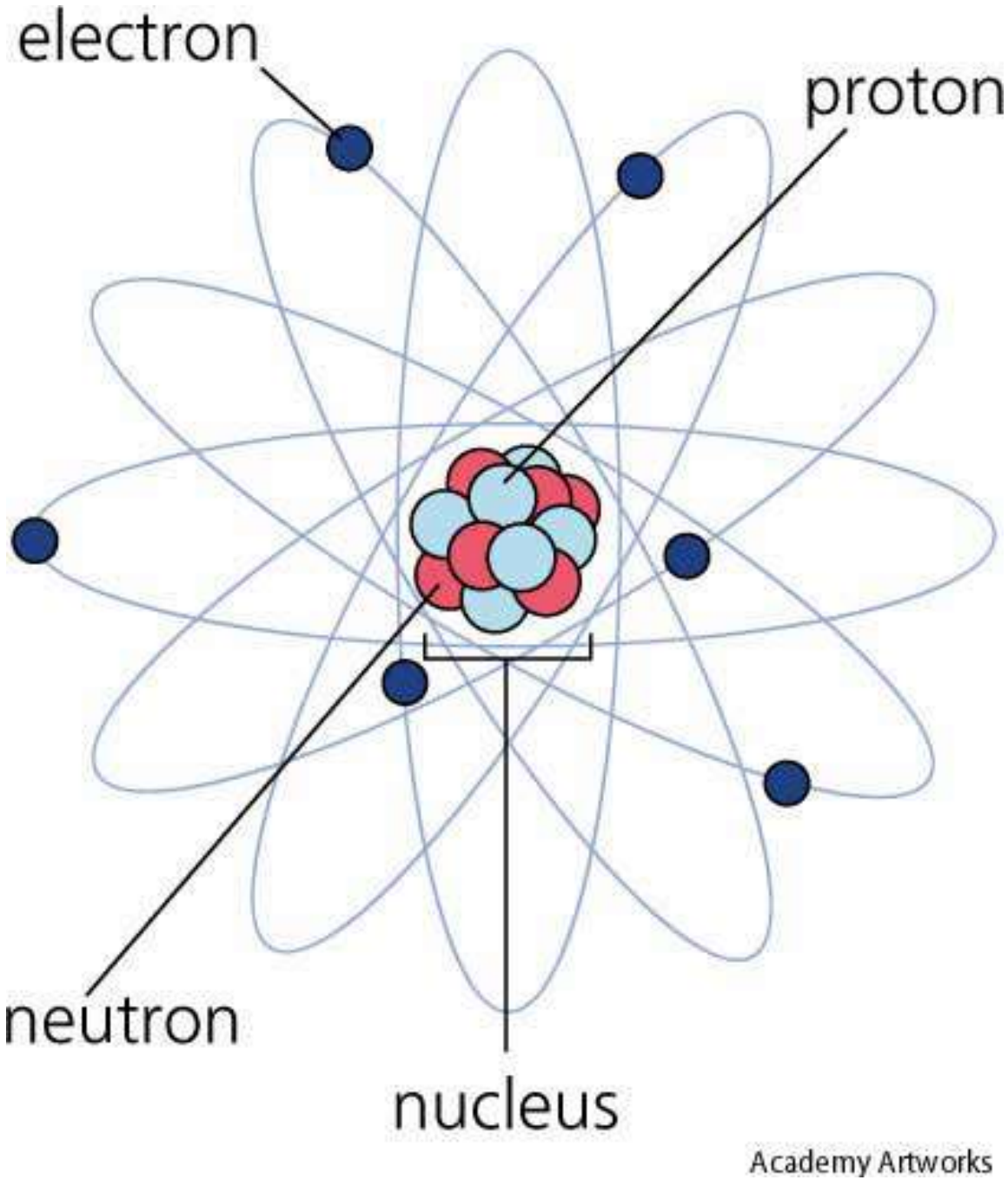
1,800 of them makes a match

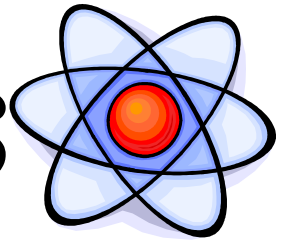


[redacted]

3rd shell = 18 electrons

Atoms, Elements, Molecules, and Compounds!

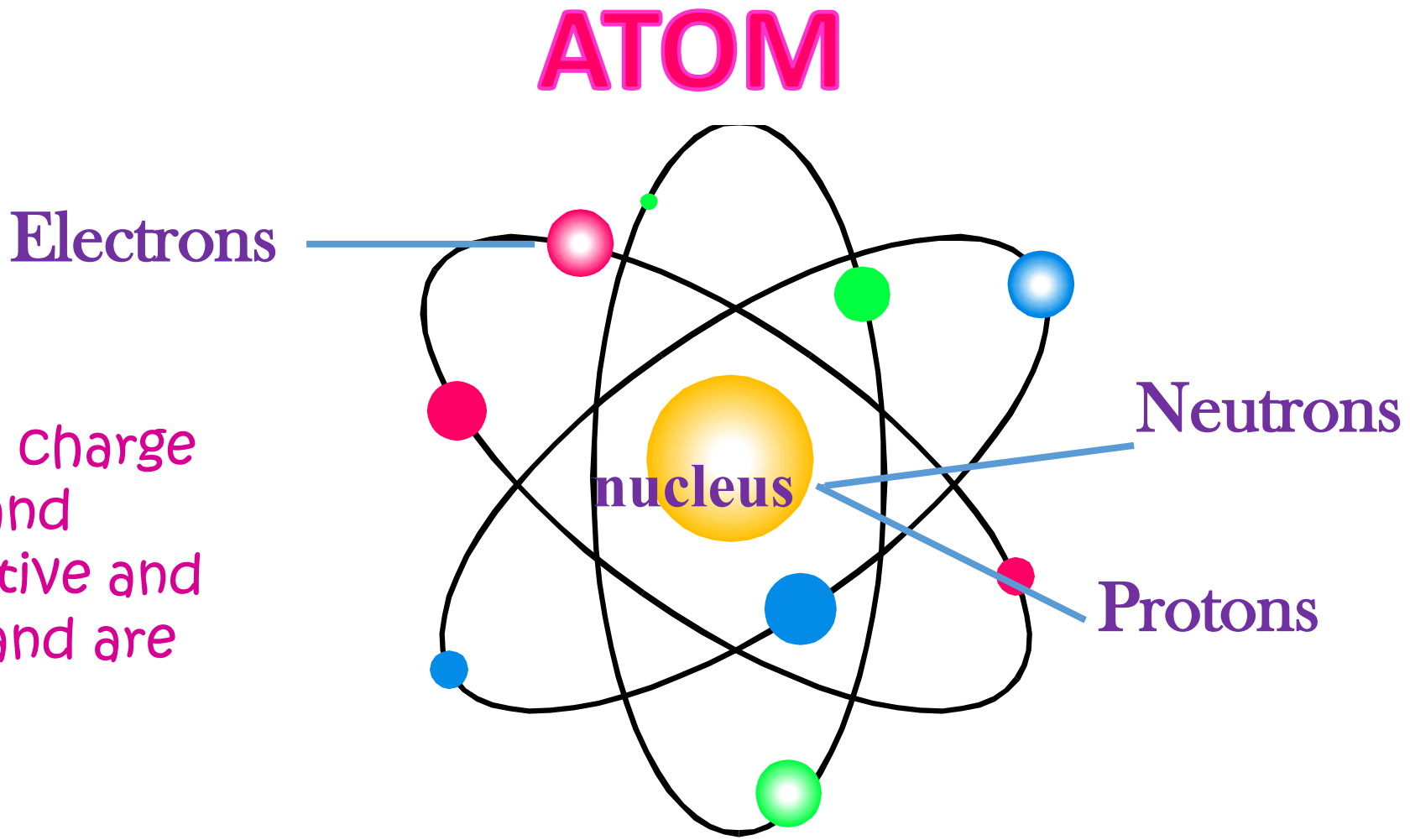


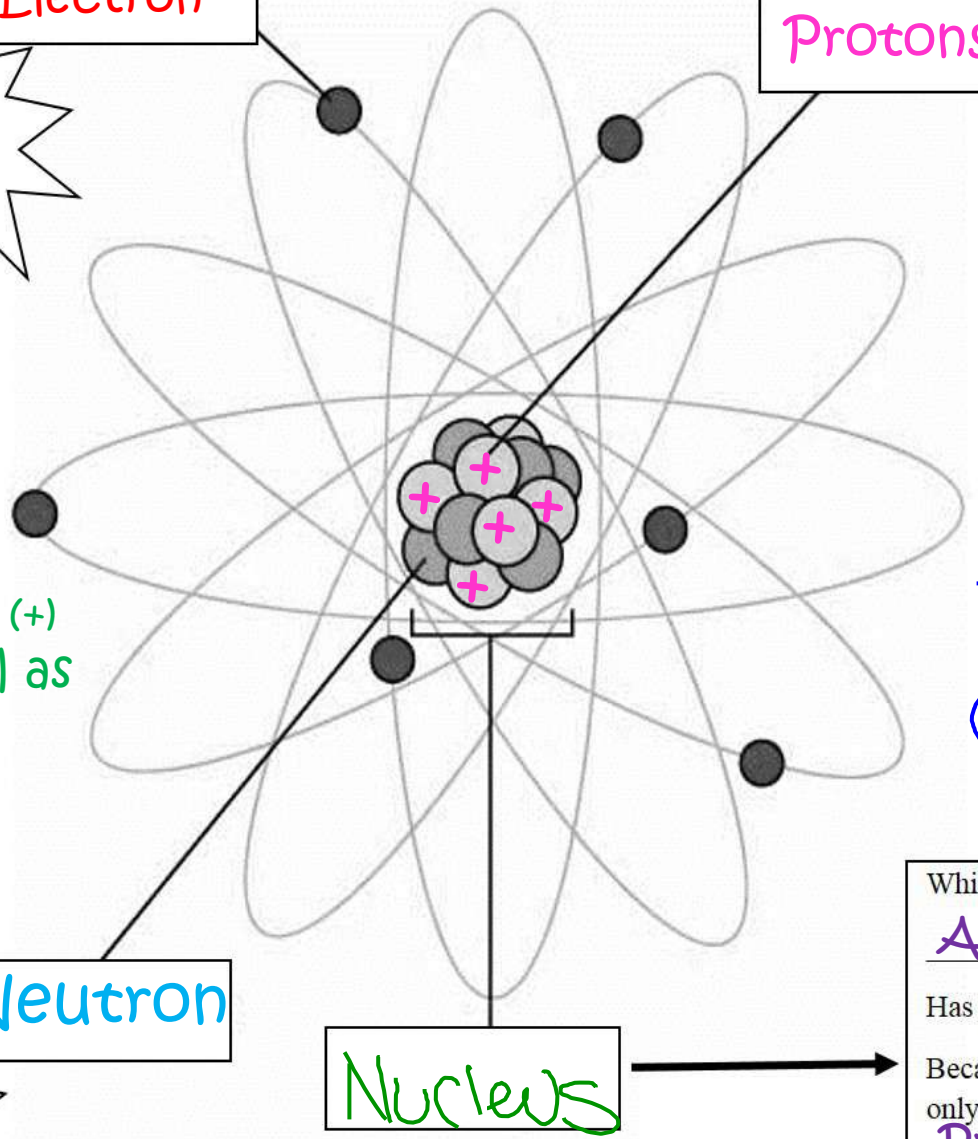
Atoms 

- The building blocks of matter!
- the basic unit of a chemical element
- Composed of charged particles called electrons, protons, and neutrons

Location of Subatomic Particles

ATOMS have NO charge because protons and electrons are positive and negative charges and are equal in number.





Electron

With a − charge.

Protons

With a + charge.

Neutron

With a NO charge.

Nucleus

Because electrons(-) = protons (+) there is no charge in ATOM as a whole unit.

Protons (+)
Always / Always / Always
(=) Equal Electrons (−)

Which makes up the atom's Atomic mass.

Has a + charge.

Because the electrons are only 1/1800th the size of either Protons or neutrons.

August 25th 2016

RIGHT NOW

- Please get out a pencil/pen your notebook, folder, and any signed forms.
- Before class begins write down what the focus of our work time today is as well as your homework.
- **WT:** Notes
- **Closure:** TOD sheet
- **HW:** Review your notes!

Matter Project.

Warm Up:

This is like that…

An atom is like a _____ because…

I will be able to:

I will be able to identify and explain the difference of atoms and molecules, as well as create a Bohr model of an atom correctly structuring critical components of an atom.

EQ:

How are valence electrons helpful in bonding?

What are the maximum number of electrons in the first three energy levels of an atom?

What is the correlation between protons, and electrons in an atom?

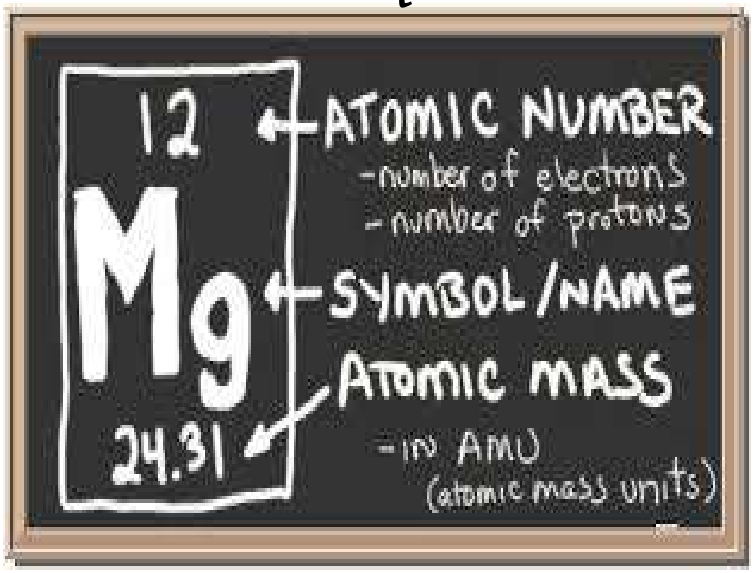
Why do we say atoms are neutral?

Where is most of the mass of an atom found?

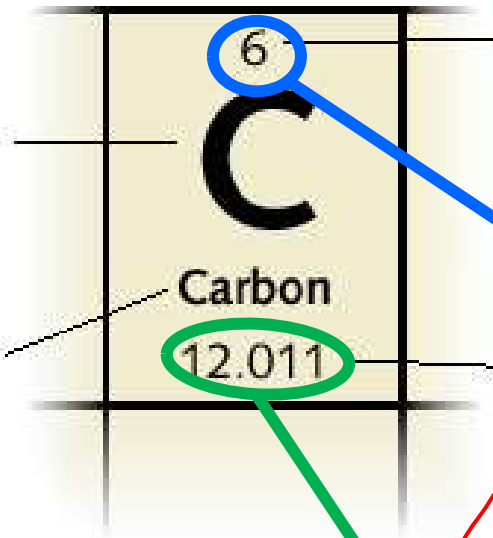
Element

- A substance that cannot be separated into simpler substances by chemical means
- Explanation for how one particular atom behaves (the "script" or classification of an atom with all the critical information about that atom)
- Ex: C (carbon), H (hydrogen), Na(sodium), Fe (iron), and Cl (chlorine)

Element Square



The Element Square



Symbol
A one- or two-letter abbreviation derived from the element's English or Latin name.

Name
Element's common name.

Atomic Number
Equal to the number of protons in the nucleus, as well as the number of electrons in the electron cloud.

6 protons, 6 electrons =

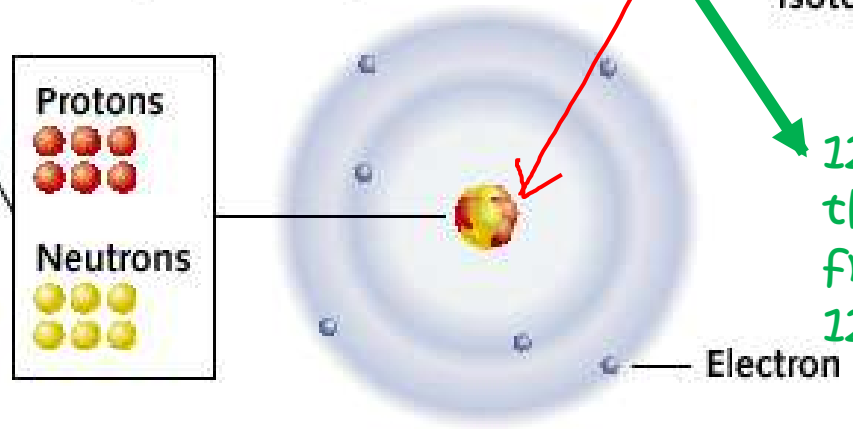
13 mass
−6 P
7 N

Extra N! mass
Isotope

Atomic Mass
Weighted average of the masses of all the element's isotopes. Rounding the atomic mass to the nearest whole number yields the mass number of the most common isotope.

N+P

Mass Number
The sum of the numbers of protons and neutrons in a specific isotope.



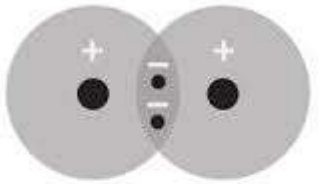
Carbon Atom

12 total mass of Protons and Neutrons; use the atomic number to subtract Protons from the total to find out Neutrons.
12 total - 6 Protons =6 Neutrons

Molecules

- A molecule is a group of two or more atoms that stick together chemically
- Ex: H_2, CO_2, and H_2O

Example Molecule: 2 Atoms of the same Element



Hydrogen Molecule (H_2)

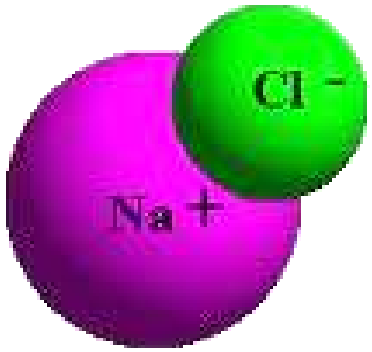
H–H

Example Molecule: 3 Atoms of different Elements

Compounds

- A compound is a molecule that is made from at least **two different elements**.
- Ex: H_2O, CO_2, CH_4, and CH_3COO

Ex:

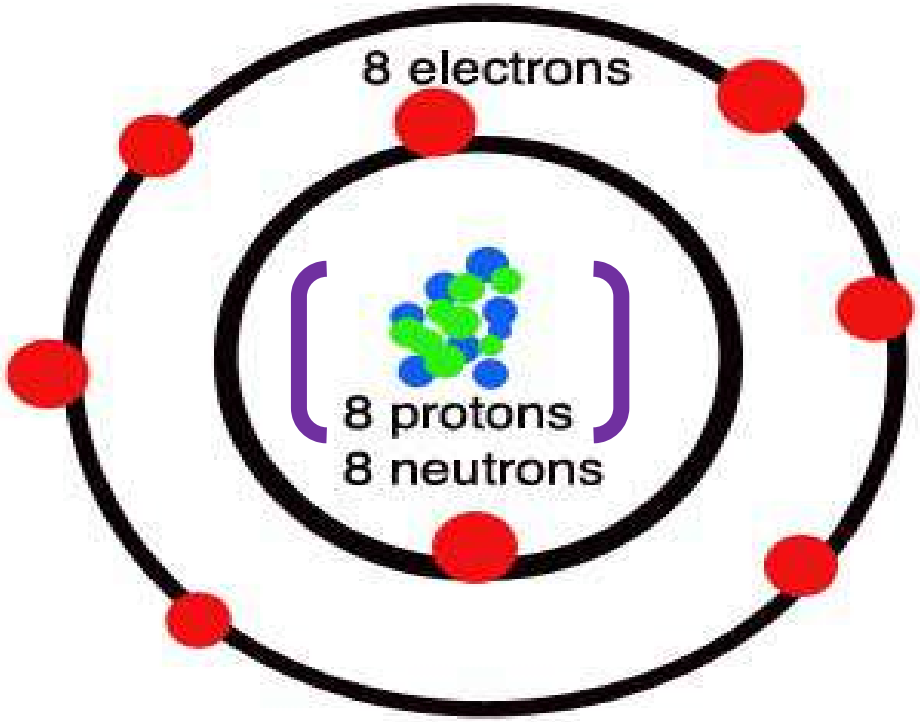


Salt

NaCl = **sodium chloride** Na = sodium Cl = chlorine

H_2O = **water** H = hydrogen O = oxygen

Nature of Matter: The Atom



The center of the atom is called the **Nucleus**

- The nucleus holds two types of particles in it: **neutrons** and **protons.**
- Since the **neutron** has no electric charge, and the **proton** has a +1 charge, the **nucleus** has an overall +1 charge.
- Most of the mass of an atom is located here in the **nucleus**.

NUCLEUS

- A **neutron** has no electrical charge associated with it, we say it has a charge of 0.

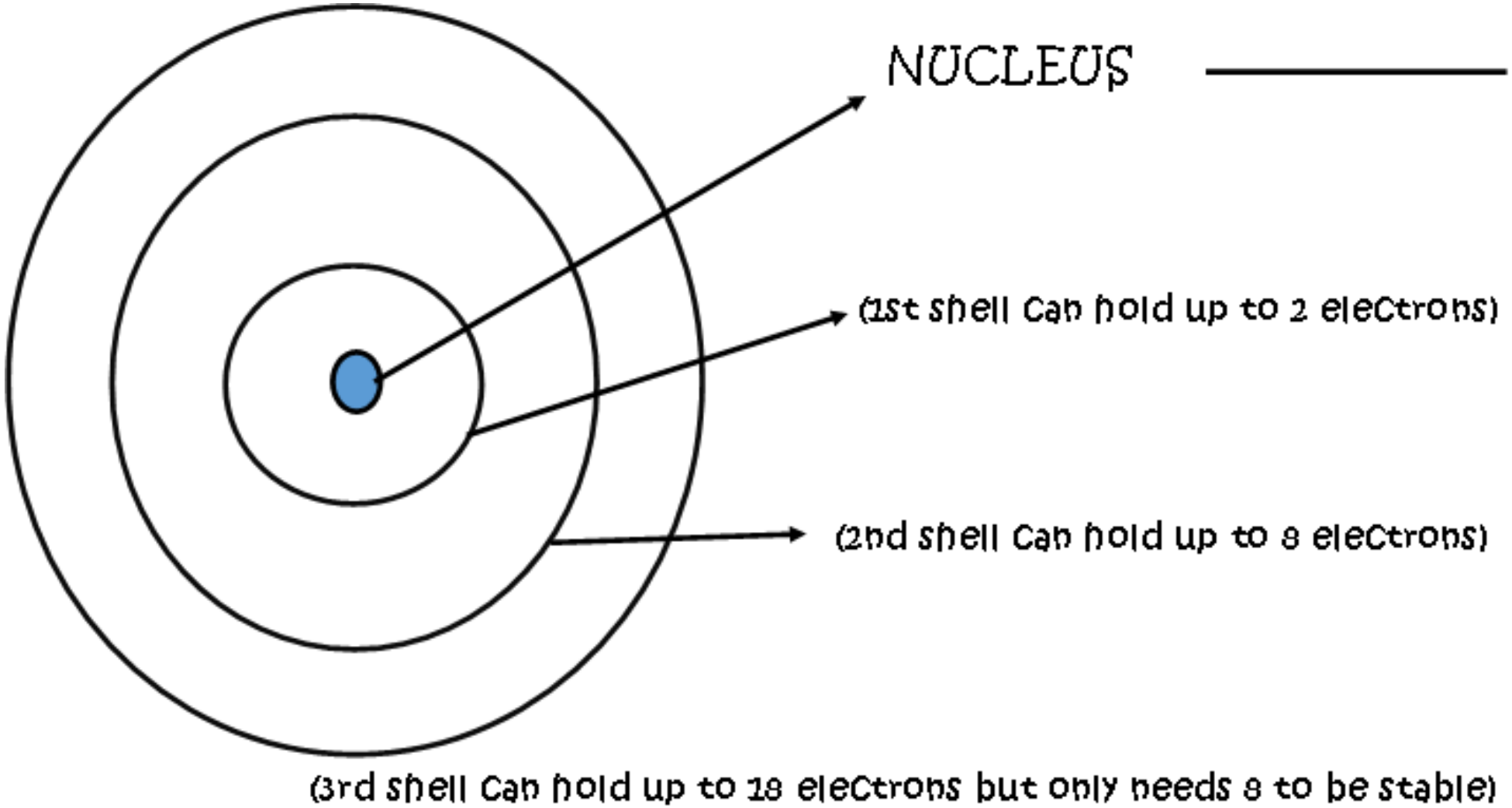
A **neutron** is found in the nucleus only.

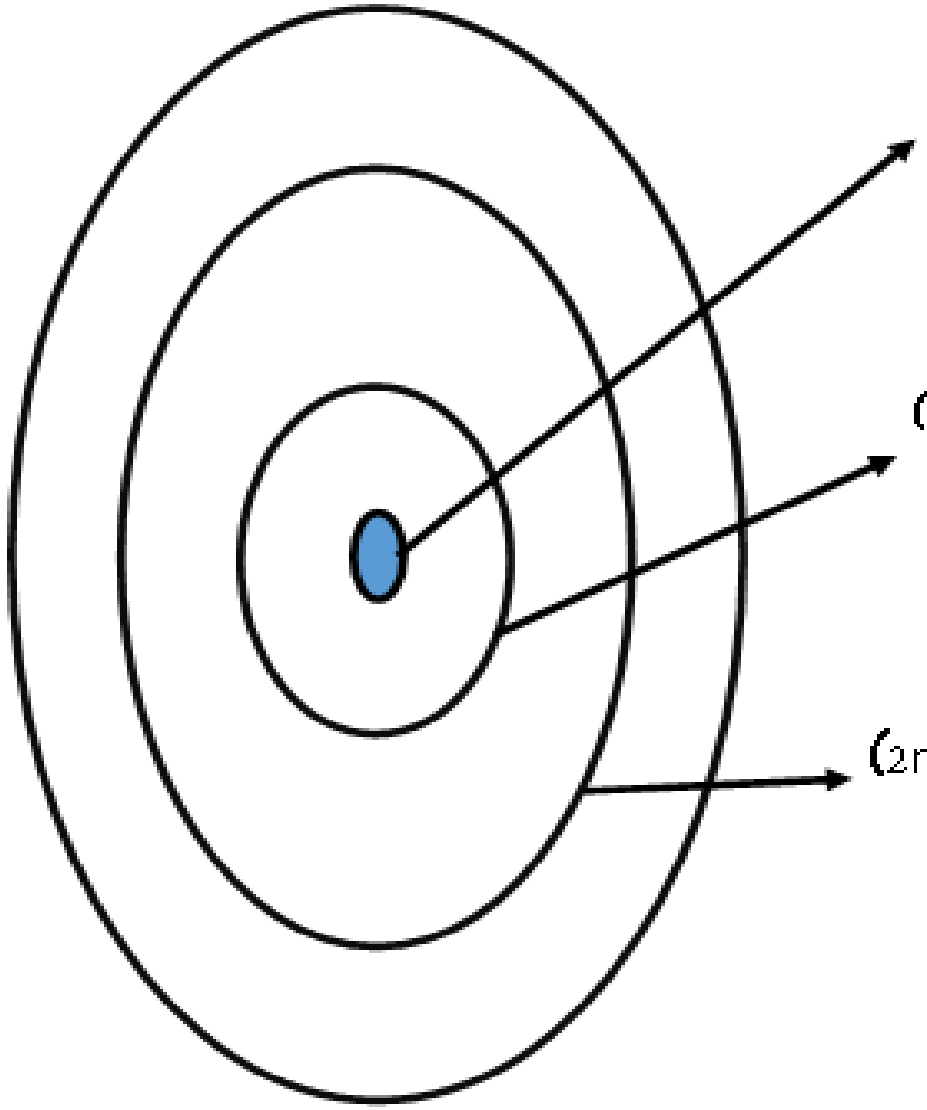
- A **proton** always has an electrical charge of +1 amu.
- A **proton** is found in the nucleus only
- The nucleus of an atom gets its overall charge from the **proton**.

ENERGY LEVEL/SHELLS

- **Electrons** are very small particles located outside the nucleus. They orbit (circle around) the nucleus at high speeds, like the Earth orbits the sun.
- An **electron** has an electrical charge of –1.
- Electrons orbit on rings or energy levels. The outside ring is called the "valence shell"
- The valence shell is where one atom bonds together with another atom.

Energy Shells





NUCLEUS _____

(1st shell can hold up to **2** electrons)

(2nd shell can hold up to **8** electrons)

(3rd shell can hold up to 18 electrons but only needs 8 to be stable)

⊕ _____

◯ _____

⊖ _____

ATOM REVIEW

The atomic # is _____

And _____

The atomic mass is _____

How can you determine the number of neutrons in an atom? _____

_____

An atoms charge is always_____

Because_____

Explain the statement:
All compounds are molecules but not all molecules are compounds

Molecules can consist of two of the same elements. Compounds can not!

- Ex: H_2 is a molecule, but not a compound because there is only one kind of element combined

Explain the connection….

ELEMENT		
ATOM		

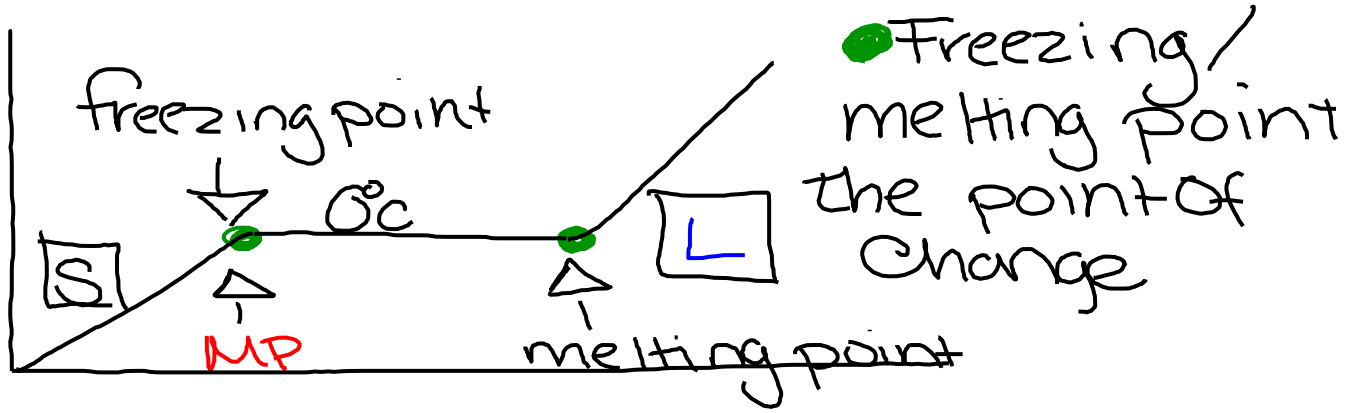
MOLECULES		
COMPOUND MOLECULE		

- DO: I will be able to differentiate between atoms, elements, molecules, and compounds.
- EQ:
  How are molecules created?
  Explain this statement: All compounds are molecules but not all molecules are compounds.

Check Yourself Questions

1.The melting point and boiling point of silver are 960 degrees C and 1950 degrees C respectively. What is the freezing point of silver?

a. 0 degrees C
b. 100 degrees C
c. 960 degrees C
d. 1950 degrees C



2. Which of the following is an element?

a. NaCl
b. Fe3O2
c. OH
d. Fe

1. Sodium is an element found in table salt. It contains 11 protons and 12 neutrons. How many electrons are found in a neutral atom of sodium?

a. 11

b. 12

c. 23

d. 1

Explanation:

2. What does the law of conservation of matter state?

.

A. The total mass of the reactants is greater than the total mass of the products.

B. The total mass of the reactants is less than the total mass of the products.

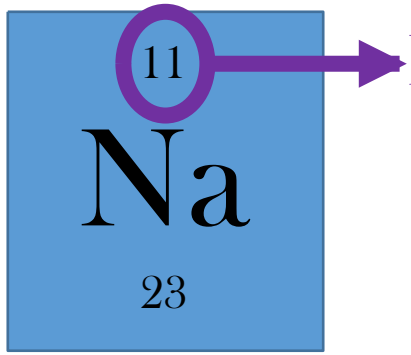
C. The total mass of the reactants equals the total mass of the products

D. Matter can not change form.

Explanation:

Daily Checks

1. Sodium is an element found in table salt. It contains 11 protons and 12 neutrons. How many electrons are found in a neutral atom of sodium?



Protons(11) = Electrons (11)

a. 11

b. 12

c. 23

d. 1

2. What does the law of conservation of matter state?

Starting Mass = Ending Mass

Reactants = Products

A. The total mass of the reactants is greater than the total mass of the products.

B. The total mass of the reactants is less than the total mass of the products.

C. The total mass of the reactants equals the total mass of the products

D. Matter can not change form.

Periodic Table