

Atoms are made out of three basic particles:

- Protons** – carry a positive charge
- Neutrons** – carry no charge
- Electrons** – carry a negative charge and circle the nucleus

Protons and Neutrons join together to form the Nucleus – the central part of the atom

Click on a particle to learn more about it

Fun Facts

Handwritten notes: Nucleus, outside of Nucleus.

taken from: <http://education.jlab.org/atomtour/listofparticles.html>

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Electrons

- Negatively charged (-)
- Almost have no mass ($1/1836^{\text{th}}$ mass of protons & neutrons)
- Located around the outside of the nucleus

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Proton

- Same mass as neutrons
- Positively charged (+)
- Located in center of atom (nucleus)

* Number of protons in an atom is equal to the elements atomic number.

Handwritten: protons = atomic number

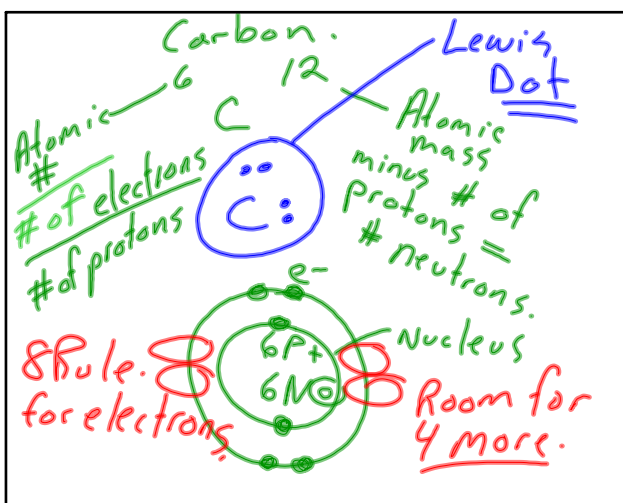
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Neutron

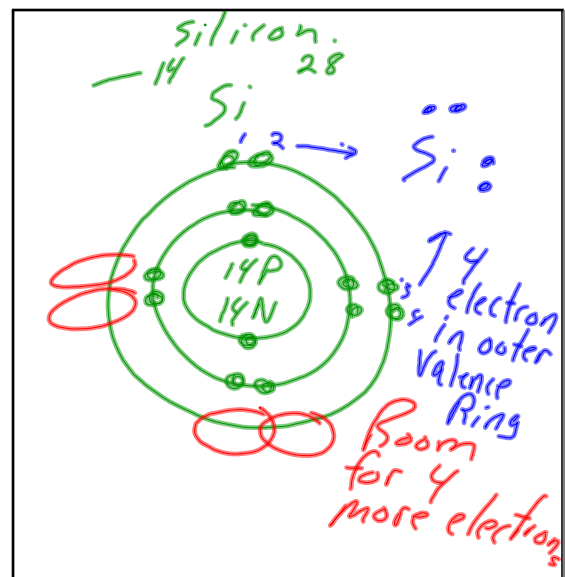
- Same mass as proton
- No charge
- Located in nucleus
- Number per atom may vary – but is similar to number of protons

Handwritten: Atomic Mass – # of protons = # of neutrons.

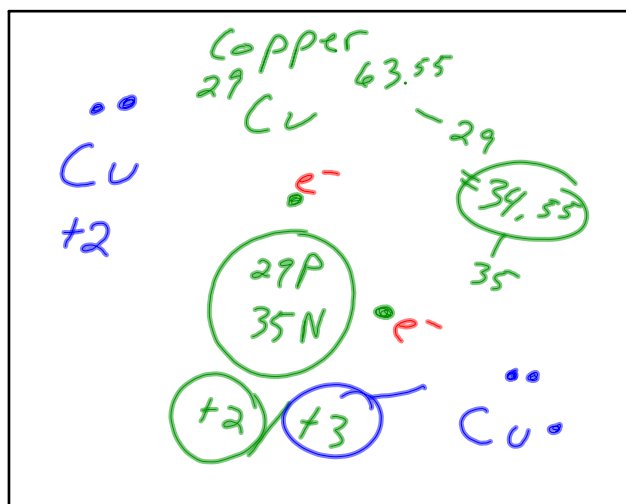
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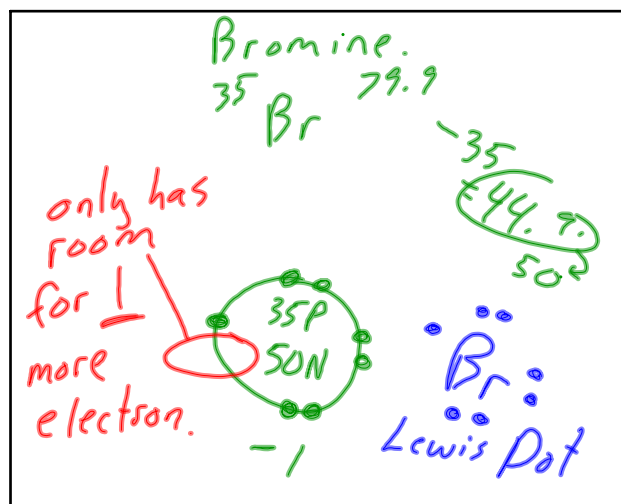
Feb 7-12:30 PM



Feb 7-12:33 PM



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Feb 7-12:42 PM

Bohr's Planetary Model of the Atom

Test 1

- Bohr suggested that:
- Electrons move around the nucleus in circular paths called orbits, like planets around the sun.
- Each electron has a definite amount of energy.
- The order of filling of electrons in the first three orbits is 2, 8, 8. *(but changes after this)*
- Electrons are more stable when they are at the lower energy.

valence Rings

only the outside valence ring shares electrons

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Bohr - Rutherford Diagrams

- Find the # of protons, neutrons, and electrons
- Draw protons (p^+), (n^0) in circle (i.e. "nucleus")
- Draw electrons around in shells - 2, 8, 8 are the numbers of electrons allowed in the rings for the first 20 elements

He

Li

2 p⁺
2 n⁰

3 p⁺
4 n⁰

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Lewis Dot Diagrams

- Used to easily show the outer level electrons (valence electrons) of atoms.

Step 1: Determine the valence electrons

Group 1 - 1	15 - 5
2 - 2	16 - 6
13 - 3	17 - 7
14 - 4	18 - 8

Titanium

Ti

Ti / *Ti*

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Draw Bohr + Lewis for 1st 20 elements.

GO!

Hydrogen

Bohr

Lewis

H

H

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