

# Atoms and Elements Review - Period 5

October 21, 2019 8:32 AM

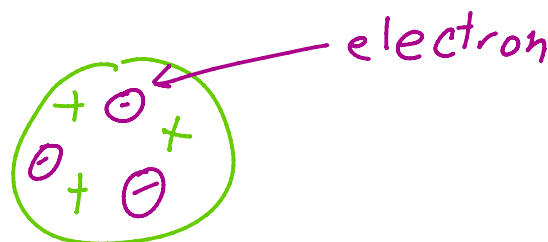
## Chemistry Review

### - History

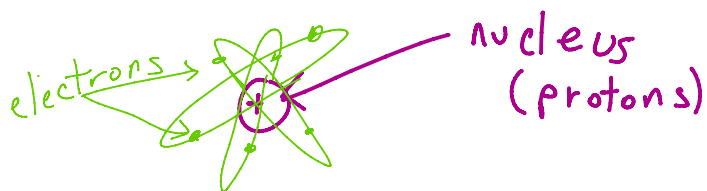
- Who were the people and scientists we discussed that contributed to the model of an atom?
  - What was each person's **belief or goal**, and if they had a **model of an atom**, what was it?
  - Include: Aristotle, Democritus, John Dalton, J.J. Thomson, Ernest Rutherford, Niels Bohr
  - **Aristotle**: 4 Element Theory - everything was made up of 4 elements: earth, air/wind, water, fire.
  - **Democritus**: Everything was made up of tiny, indivisible particles: called them 'atomos'
  - **John Dalton**: Billiard ball model - atoms were tiny, indivisible spheres. They could not be broken, and made everything up.
    - Atomic Theory



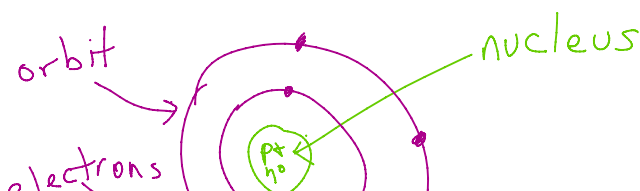
- **JJ Thomson**: Plum Pudding Model - atoms were positive spheres with negative electrons spread throughout.
  - He discovered the electron

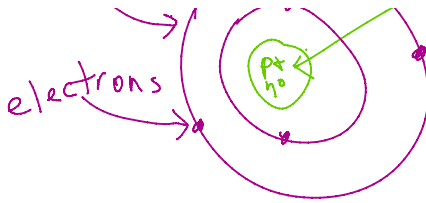


- **Ernest Rutherford**: Nuclear Model - atoms have a dense positive nucleus, and had electrons in empty space around the nucleus.
  - He discovered the proton



- **Niels Bohr**: Planetary Model (Bohr Diagram) - atoms have a nucleus with protons and neutrons, and the electrons are organized onto different energy levels (orbits/shells)





## - Model of an atom

- What are the 3 subatomic particles?
  - Protons
  - Electrons
  - Neutrons
- What are the charges of each particle?
  - Protons - positive (pros are good!)
  - Electrons - negative (electrocution is bad)
  - Neutrons - neutral (NEU-tral)
- What is the mass (or weight) of each particle?
  - Protons - 1 atomic mass unit (amu)
  - Electrons - have no mass
  - Neutrons - 1 atomic mass unit (amu)

\*\*\*\*\*This is why we take the mass subtract protons to figure out the number of neutrons!
- Where is each particle found in the model of an atom?
  - Protons - in the nucleus
  - Electrons - around the nucleus/on orbits
  - Neutrons - in the nucleus
  - \*\*\*Think of Bohr Diagrams!!!!
- How can you find the number of each particle from the **periodic table**?
  - Protons = atomic number
  - Electrons = same as protons (atomic number)
  - Neutrons = atomic mass subtract the protons (atomic number)

## - Bohr Diagrams

- How do you draw a Bohr diagram?
  - Step 1: Determine number the protons, neutrons, and electrons
  - Step 2: Draw the nucleus, and put the number of protons and neutrons inside.
  - Step 3: Draw the correct number of orbits (period number = number of orbits)
  - Step 4: Draw the correct number of electrons on each orbit.
  - How do you determine the amount of protons and neutrons?
  - Where do the protons and neutrons belong in the diagram?
  - How many electrons belong on each orbit/shell?
  - What is the valence orbit/shell?
  - What are valence electrons?
    - What is an easy way to find the number of valence electrons using your Periodic Table?

## - Period Table

- Who were the scientists that lead to the development of the Periodic Table?
- What are the columns of the Periodic Table called?
  - What do these columns have in common?
- What are the rows of the Periodic Table called?

- What do these rows have in common?
- What are the names of specific groups or families that are coloured on your Periodic Table?
  - Include: Alkali Metals, Alkaline Earth Metals, Halogens, Nobel Gases
- Where do you find metals on the Periodic Table?
- Where do you find metalloids on the Periodic Table?
- Where do you find non-metals on the Periodic Table?
  
- **Classifying Matter**
  - What is matter?
    - What is the difference between the terms atom, element, compound, molecule, pure substance, and mixture?
  - How is matter classified into metals, non-metals, and metalloids?
    - What are the common properties of metals and non-metals?
  - What is the difference between a physical property and a chemical property?
    - What are examples of each?
  - What is the difference between a physical change and a chemical change?
    - What are examples of each?
    - How do you know a chemical change has taken place?
- **Counting Atoms**
  - How do you determine the elements that are written in a formula?
  - How do you determine the number of each type of atom in a formula?
  - How do you determine the number of molecules from the written formula?
  - What is the difference between a subscript and a coefficient?
  - Know how to determine the number of atoms in a formula that involves a bracket.

## Vocabulary

These are terms that you should understand. Read through the list and write out definitions to any word you do not understand the meaning of. Words in *italics* are names of people/scientists.

- alchemy
- Alkali metals
- Alkaline Earth metals
- atom
- atomic mass
- atomic number
- Bohr Diagram
- combustibility
- compound
- conductivity
- corrosion
- *Dalton*
- *Democritus*
- ductility
- electron
- element
- energy level
- family
- group
- Halogens

- Law of Conservation of Matter
- lustre
- malleability
- *Mendeleev*
- metalloid
- molecule
- neutral
- neutron
- Noble gases
- nucleus
- orbit
- oxidation
- period
- precipitate
- proton
- reactivity
- *Rutherford*
- solubility
- state/phase
- subatomic
- *Thomson*
- toxicity
- valence

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