

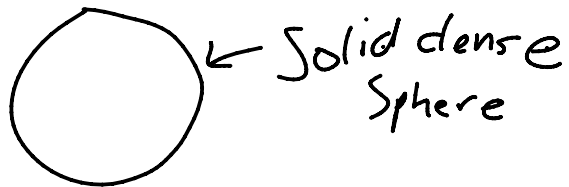
# Atoms and Elements Review - Period 2

October 21, 2019 8:32 AM

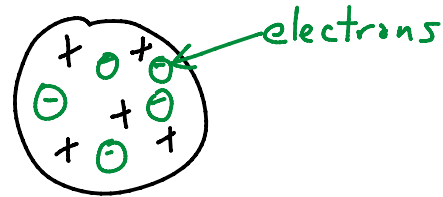
## Chemistry Review

### - History

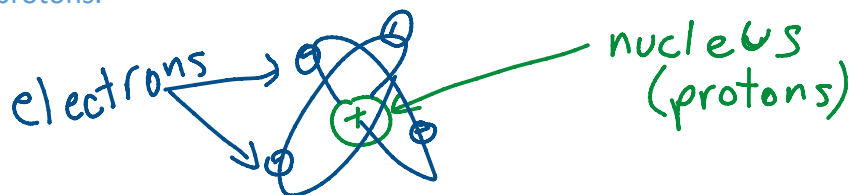
- Who were the people and scientists we discussed that contributed to the model of an atom?
  - What was each person's **belief or goal**, and if they had a **model of an atom**, what was it?
  - Include: Aristotle, Democritus, John Dalton, J.J. Thomson, Ernest Rutherford, Niels Bohr
  - **Aristotle**: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



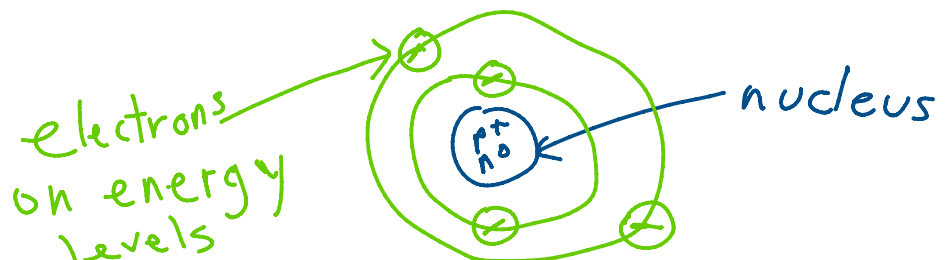
- **JJ Thomson**: Plum Pudding Model - atoms are dense positive spheres, with negative electrons spread throughout.
  - He discovered the electrons.



- **Ernest Rutherford**: Nuclear Model - atoms have a dense positive nucleus with protons, and the electrons occupied empty space around the nucleus.
  - He discovered protons.



- **Niels Bohr**: Planetary Model (Bohr Diagrams) - electrons are organized into energy levels or 'orbits' around the positive nucleus.
  - He discovered the energy levels/orbits



### - Model of an atom

- What are the 3 subatomic particles?
  - Protons, neutrons, electrons
- What are the charges of each particle?
  - Protons = positive
  - Neutrons = neutral
  - Electrons = negative
- What is the mass (or weight) of each particle?
  - Protons = 1 atomic mass unit (amu)
  - Neutrons = 1 atomic mass unit (amu)
  - Electrons = no mass
- Where is each particle found in the model of an atom?
  - Protons = in the nucleus
  - Neutrons = in the nucleus
  - Electrons = around the nucleus on orbits
- How can you find the number of each particle from the periodic table?
  - Protons = atomic number
  - Neutrons = atomic mass subtract the atomic number
  - Electrons = number of protons (atomic number)

#### - Bohr Diagrams

- How do you draw a Bohr diagram?
  - Step 1: Draw nucleus, and place correct number of protons and neutrons into it.
  - Step 2: draw the correct number of electron orbits.
  - Step 3: place the correct number of electrons on each orbit.
- How do you determine the amount of protons and neutrons?
  - Protons are is the atomic number
  - Neutrons is the atomic mass subtract the atomic number
- Where do the protons and neutrons belong in the diagram?
  - In the nucleus
- How many electrons belong on each orbit/shell?
  - 1st orbit = 2 electrons
  - 2nd orbit = 8 electrons
  - 3rd orbit = 8 electrons
  - ◆ \*\*\*orbits need to be filled before moving onto the next orbit.
- 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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