Atomic theory ---the idea that all matter is made up of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. It is a very old idea dating back to the ancient Greeks. Over time, scientists have come up with various models for the atom based on their observations. These atomic models have been \_\_\_\_\_\_\_\_\_\_\_\_ and revise as new scientific evidence is discovered.

***John Dalton (1803)***

Dalton’s Postulates:

* Atoms can’t be subdivided (False)
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Atoms aren’t \_\_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in chemical reactions
* All molecules of the same compound have the same composition
* Atoms combine in definite proportions to form compounds

***JJ Thompson (1897)***

* Discovered \_\_\_\_\_\_\_\_\_\_\_\_ charged particles with the cathode ray tube (electrons).
* Measured the charge to mass ratio of the electron
* Knew there had to be other \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in atoms (because of the mass).

Cathode Ray Tube: Passing an electric current through the cathode makes a beam appear to move from the negative to the positive end. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are negatively charged and are attracted to a positive magnetic source.

***Ernest Rutherford (1911 &1918)***

* Atom is mostly \_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_ with a small, positive dense mass at center (\_\_\_\_\_\_\_\_\_\_\_\_\_\_) – 1911
* Rutherford is generally credited with the discovery of the \_\_\_\_\_\_\_\_\_\_\_\_, though he was not able to isolate it from the \_\_\_\_\_\_\_\_\_\_\_\_\_ within the nucleus.

Rutherford's 'gold foil' experiment performed by Hans Geiger and Ernest Marsden using positively charged alpha particles:

* Most alpha particles passed \_\_\_\_\_\_\_\_ the gold foil suggesting that an atom is largely empty space.
* Some alpha particles were deflected significantly suggesting that the \_\_\_\_\_\_\_\_\_\_ charge of an atom must be concentrated in a very small sphere.

A very small number of alpha particles actually bounced back.

***Neils Bohr (1913)***

* Niels Bohr stated that electrons move in different \_\_\_\_\_\_\_\_\_\_\_, or energy levels, around the nucleus like planets orbit the sun.
* An electron can \_\_\_\_\_\_\_\_\_\_\_\_ energy and move to a higher energy orbit of larger radius. (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ electrons)
* An excited electron can fall back to its original orbit by emitting energy as radiation.
* Electrons can only exist in certain discrete \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ levels.

***James Chadwick (1935)***

* Chadwick discovered the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ which is a particle with no charge that is also located in the nucleus.
* Bombarded beryllium with \_\_\_\_\_\_\_\_\_\_ particles and discovered Rutherford's missing neutral particles.
* Shared Nobel Prize for the discovery of the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Frédéric *Joliot and Irène Joliot-Curie (1935)***

Frédéric Joliot and Irène Joliot-Curie worked on the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of nuclei in 1934, which was an essential step in the discovery of the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

