

## Atomic Theory Notes

A model uses familiar ideas to explain \_\_\_\_\_ observed in nature.

A model can be \_\_\_\_\_ as new information is collected.

The atomic model has changed throughout the centuries, starting in 400 BC, when it looked like a \_\_\_\_\_

### Democritus

This is the \_\_\_\_\_ philosopher Democritus who began the search for a description of matter more than \_\_\_\_\_ years ago.

He asked: Could matter be divided into smaller and smaller pieces forever, or \_\_\_\_\_?  
\_\_\_\_\_?

His theory: Matter could not be divided into smaller and smaller pieces forever, \_\_\_\_\_.

This piece would be \_\_\_\_\_. He named the smallest piece of matter “\_\_\_\_\_,” meaning “\_\_\_\_\_.”

To Democritus, atoms were \_\_\_\_\_, \_\_\_\_\_ that were all made of the same material but were \_\_\_\_\_ shapes and sizes.

### Dalton

In the early 1800s, the \_\_\_\_\_ Chemist John Dalton performed a number of experiments that eventually led to the acceptance of the idea of \_\_\_\_\_.

He deduced that all \_\_\_\_\_ are composed of atoms. Atoms are indivisible and indestructible particles. Atoms of the \_\_\_\_\_ element are exactly alike. Atoms of \_\_\_\_\_ elements are different.

\_\_\_\_\_ are formed by the joining of atoms of two or more elements.

*This theory became one of the \_\_\_\_\_.*

Thomson

In 1897, the \_\_\_\_\_ scientist J.J. Thomson provided the first hint that an atom is made of even \_\_\_\_\_ particles.

He proposed a model of the atom that is sometimes called the “\_\_\_\_\_” model, where atoms were made from a \_\_\_\_\_ charged substance with \_\_\_\_\_ charged electrons scattered about, like raisins in a pudding.

Thomson studied the passage of an electric current through a gas, causing it to give off rays of \_\_\_\_\_ charged articles.

This surprised Thomson, because the atoms of the gas were \_\_\_\_\_. Where had the negative charges come from?

Rutherford

In 1908, the \_\_\_\_\_ physicist Ernest Rutherford was hard at work on an experiment that seemed to have little to do with unraveling the mysteries of the atomic structure.

Rutherford’s experiment involved firing a stream of tiny \_\_\_\_\_ particles at a thin sheet of gold foil (2000 atoms thick)

Most of the positively charged “bullets” passed right through the gold atoms in the sheet of gold foil \_\_\_\_\_ at all.

Some of the positively charged “bullets,” however, did \_\_\_\_\_ from the gold sheet as if they had \_\_\_\_\_.

He knew that positive charges repel positive charges.

This could only mean that the gold atoms in the sheet were mostly \_\_\_\_\_, and not a pudding filled with a positively charged material.

Rutherford concluded that an atom had a small, dense, \_\_\_\_\_ charged center and called it the “\_\_\_\_\_”

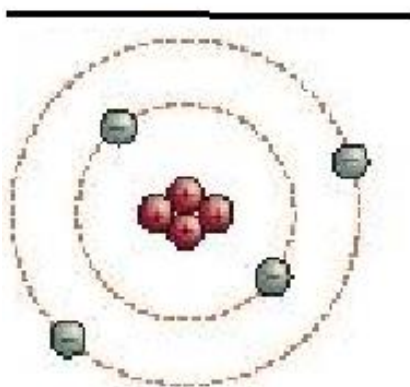
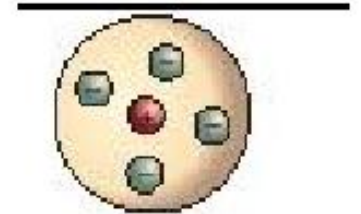
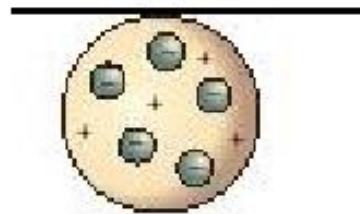
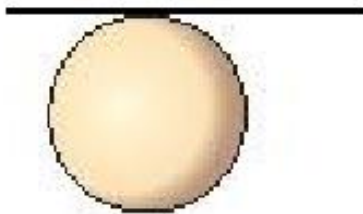
The nucleus is \_\_\_\_\_ compared to the atom as a whole.

Rutherford reasoned that all of an atom’s positively charged particles were \_\_\_\_\_. The negatively charged particles were \_\_\_\_\_ around the atom’s edge.

Bohr

In 1913, the \_\_\_\_\_ scientist Niels Bohr proposed an improvement. In his model, he placed each electron in a specific energy level.

According to Bohr’s atomic model, electrons move in definite \_\_\_\_\_ around the nucleus, much like \_\_\_\_\_ circle the sun. These orbits, or energy levels, are located at \_\_\_\_\_ from the nucleus.



Modern - wave theory

