Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ U2L4 Notes

WHAT IS MATTER MADE OF?

* The Greek philosopher Democritus thought \_\_\_\_\_\_\_\_\_\_ could be divided into smaller and smaller \_\_\_\_\_\_\_\_\_ he called *atomos.*
* In 1803, John Dalton proposed that all substances are made of \_\_\_\_\_\_\_\_\_ that cannot be divided.
* In 1897, J. J. Thomson performed experiments that detected smaller \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ within atoms.
* In the early 1900s, Ernest Rutherford and James Chadwick revealed the nature of the \_\_\_\_\_\_\_\_\_\_\_ center of an atom.
* Today we have the \_\_\_\_\_\_\_\_\_\_\_\_\_ cloud model.

WHAT ARE ATOMS?

* An **atom** is the smallest particle into which an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ can be divided and still be the same \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* In 1808, John Dalton published an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ theory that said all atoms of a particular element are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* Dalton also said that atoms of an element \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ from atoms of \_\_\_\_\_\_\_\_\_\_\_\_\_ elements.

WHAT ARE THE PARTS OF AN ATOM?

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are made of *protons, neutrons,* and *electrons.*
* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** are positively charged particles.
* The \_\_\_\_\_\_\_\_\_ of a proton is given in the atomic mass unit (u). One proton has a mass of \_\_ u.
* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** are particles that have no electrical charge.
* In most atoms, there are at least as many neutrons as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* The mass of a neutron is slightly \_\_\_\_\_\_\_\_\_\_\_ than a proton but is still considered to be 1 u.
* The **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** is the at the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the atom and contains the protons and neutrons.
* The overall charge of the nucleus is equal to the number of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in the nucleus.
* The nucleus is \_\_\_\_\_\_\_\_\_\_\_\_ but very dense.
* **Electrons** are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ charged particles.
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ move around the nucleus very quickly in a region called the **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ cloud**.
* Electrons are very \_\_\_\_\_\_\_\_\_\_\_\_\_ compared to protons and neutrons.
* Why is the exact location of an electron hard to identify?
* The number of \_\_\_\_\_\_\_\_\_\_\_\_\_\_ and electrons in an atom are the same, so the charges are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* An atom can gain or \_\_\_\_\_\_\_\_\_\_ electrons to become an *\_\_\_\_\_\_\_\_\_\_,* which has a net positive or negative charge.

HOW CAN WE DESCRIBE ATOMS?

* Different \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of protons, neutrons, and electrons produce atoms with different \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* The number of each kind of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ within an atom determines its unique properties.
* The number of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ distinguishes the atoms of one element from the atoms of another.
* The number of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in the nucleus of an atom is the **atomic number** of that atom.
* Atoms of an element have the same number of protons, but the number of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ may differ.
* *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_* are atoms of the same element that have different numbers of neutrons.
* The total number of protons and neutrons in an atom’s nucleus is its **\_\_\_\_\_\_\_\_\_\_\_ number**.