Name _____

BD8 Ch. 12 Structure of the Atom Notes Worksheet

Subatomic Particles

J. J. Thomson found the _____, the first _____ particle to be identified.

Subatomic particles are particles smaller than an _____. Today, more than _____ kinds of subatomic particles have been identified.

The three main subatomic particles are the _____, the _____, and the _____.

	Location	Mass	Charge
Proton			
Neutron			
Electron			

The Nucleus

The nucleus is the _____ of the atom. It contains _____% of the mass of the atom. However, it's about 100,000 times _____ than the entire atom.

The size of a nucleus in an atom is comparable to the size of a _____ in a football stadium.

All protons are _____, no matter in which element they are found.

Mass

This unit used to measure subatomic particles is called an _____, or amu.

It would take 600,000,000,000,000,000,000,000 protons to equal a mass of _____ (about the mass of a paperclip).

Name _____

Neutrons

All neutrons are _____.

Elements are substances made up of identical _____. Atoms of different elements are each different from each other.

If all protons are identical, and all neutrons are identical, what makes atoms different from one another?

The number of _____ in the nucleus is what determines what the element is.

Atomic Number

The number of protons in the nucleus of an atom is called the _____.

The atomic number identifies the _____.

Isotopes

The atomic number of an element will never _____, which means that there is always the same number of _____ in the nucleus of every atom of that element.

Atoms of the same element can have different numbers of _____.

_____ are atoms of the same element that have the same number of protons, but different numbers of neutrons.

Mass Number

All atoms have a mass number.

The mass number of an atom is the sum of the _____ and _____ in its nucleus.

To tell one isotope from another, the mass number is given with the element's name. (Example: uranium-235 and uranium-238)

Uranium's atomic number is 92, so how can you tell what number of neutrons each isotope contains? Uranium-235 _____ Uranium-238 _____

Name _____

Atomic Mass

The atomic mass of an element is the _____ mass of all the isotopes of the element as they occur in nature. This is why the atomic mass of an element isn't usually a whole number.

Problem: The atomic mass of carbon is 12.011. One isotope of carbon is carbon-14. Using the atomic mass of carbon, how can you tell which occurs more often in nature: carbon-12, or carbon-14? _____

Electrons

In an uncharged atom the number of _____ = the number of protons. This makes the atom neutral.

Electrons _____ move in fixed paths around the nucleus.
The whole space that electrons occupy is what scientists think of as the atom.
The electron _____ is a space in which electrons are likely to be found.
The location of an electron in the cloud depends on how much _____ the electron has.
According to modern atomic theory, electrons are arranged in _____.

Energy levels represent the most likely locations in the electron cloud in which an electron can be found.

Electrons with the lowest energy are found in the energy level _____ to the nucleus, and electrons with higher energy are found in energy levels _____ from the nucleus.

Each energy level within an atom can hold only a certain number of electrons.

In fact, the _____ arrangement of its atoms is what gives an element its chemical properties.

The ability of an element to bond is determined by the arrangement of the electrons in the _____ energy level of its atoms.

The existence of _____, _____, and _____ proves that atoms are not unbreakable.