

## 2 • Atoms and Elements

### Parts of Atoms:

Most people already know that the atom is made up of three main parts, the \_\_\_\_\_ and \_\_\_\_\_ in the **nucleus** and the \_\_\_\_\_ somewhere outside of the **nucleus**.

Let's summarize:

	proton	neutron	electron
symbol			
charge			
location			
mass			
size (see below)			

Let's make this more visual using information from the Chart of Fundamental Particles.

If the proton were 10 cm in diameter... the size of an orange, how big would everything be?

object	actual size	model size	model
proton	$10^{-15}$ m	10 cm	orange
neutron	$10^{-15}$ m		
electron	$10^{-18}$ m		
atom	$10^{-10}$ m		

The atom is often represented as a miniature \_\_\_\_\_ . Draw it:

The **mass** of the atom is due to the \_\_\_\_\_

The **size** of the atom is due to the \_\_\_\_\_

### ATOMIC STRUCTURE

#### How Many Particles in Each Atom?

The particle that defines the identity of an atom is the \_\_\_\_\_ . (shown on the periodic table)

Every hydrogen atom has \_\_\_ proton.

Every magnesium atom has \_\_\_ protons.

Any atom that has 23 protons is \_\_\_\_\_.

Any atom that has 92 protons is \_\_\_\_\_.

The mass of an atom is mostly from the \_\_\_\_\_ and \_\_\_\_\_.

Find O on the periodic table. It's mass is \_\_\_\_\_ amu.

It has \_\_\_ protons. It must have \_\_\_ neutrons.

Electrically neutral atoms (as opposed to ions) have one electron for every proton.

Fill in this chart for these neutral atoms:

Atom	Mass	protons	neutrons	electrons
He				
Si				
Be				
H				
Rn				
Ar				
F				
Pb				

If the mass is not close to a whole number, it is because the atom has several \_\_\_\_\_.

These are atoms with the same number of \_\_\_\_\_ but different numbers of \_\_\_\_\_.

Chlorine has two isotopes: Cl-35 ( \_\_\_ p+ & \_\_\_ n°) and Cl-37 ( \_\_\_ p+ & \_\_\_ n°).