

# REINFORCEMENT

## Atoms

Each element is made of just one kind of atom. The number of protons in the atoms of an element is unique to that element. The number of protons in an atom is called the **atomic number**.

The mass of an atom depends on the number of its protons and neutrons. The **mass number** is the sum of the protons and neutrons in the nucleus. The mass of an electron is so small that it is usually omitted in mass determinations.

*Use the definitions of atomic number and mass number to help you fill in the blanks in the table below.*

Element	Symbol	Number of protons	Number of neutrons	Number of electrons	Atomic number	Mass number
Oxygen	O	8		8		16
Silicon	Si	14	14			28
Aluminum	Al		14	13	13	
Iron	Fe				26	56
Calcium	Ca	20		20		
Sodium	Na				11	23
Copper	Cu	29	35	29		
Magnesium	Mg				12	24
Gold	Au	79				197
Silver	Ag		61	47		

*Use your knowledge of atomic number and mass number to complete the atomic models of helium and sodium.*

**Helium**

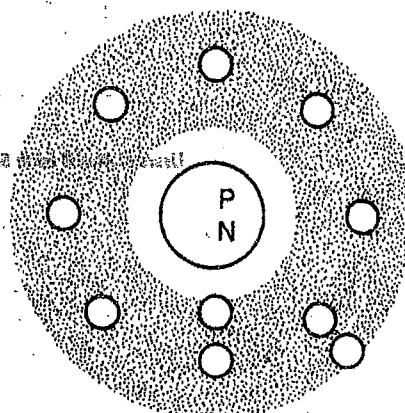
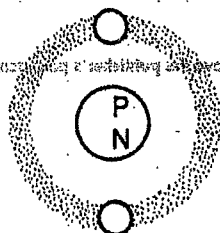
Atomic number 2

Mass number 4

**Sodium**

Atomic number 11

Mass number 23



**ENRICHMENT****Atoms****ATOM MODELS**

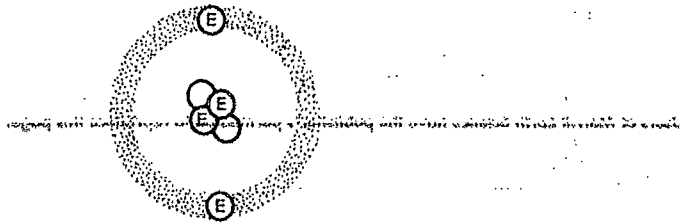
As you know, atoms are made up of protons and neutrons in a nucleus and electrons in a cloud around the nucleus. The electrons in the cloud are arranged in shells around the nucleus. The shell closest to the nucleus holds up to two electrons. The next shell holds up to eight electrons, and the next shell also holds up to eight electrons. You can draw models of atoms showing the neutrons and protons in the nucleus and the electrons within the shells in the electron cloud. A model of the helium atoms is shown. The model has two protons and two neutrons in its nucleus and two electrons in the shell around the nucleus. *Based on the model shown and the information given, draw models of the oxygen, sodium, and carbon atoms.*

**Helium**

2 protons  
2 neutrons  
2 electrons

**Sodium**

11 protons  
12 neutrons  
11 electrons

**Oxygen**

8 protons  
8 neutrons  
8 electrons

**Carbon**

6 protons  
6 neutrons  
6 electrons