

Atoms and Elements — Keeping Track of Particles

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 atomic mass of an atom 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.

Part A

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

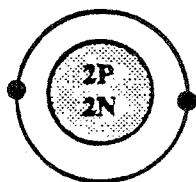
TABLE 1 - Atomic Data for Selected Elements

| Element | Symbol | Number of Protons | Number of Neutrons | Number of Electrons | Atomic Number | Atomic Mass |
|-----------|--------|-------------------|--------------------|---------------------|---------------|-------------|
| 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 |
| Potassium | K | 19 | 20 | 19 | | |
| Magnesium | Mg | | | | 12 | 24 |
| Gold | Au | 79 | | | | 197 |
| Silver | Ag | | 61 | 47 | | |

PART B

Study the diagram of a model of a helium atom below. Use your knowledge of atomic number, atomic mass, and the model atom to identify and complete the models.

FIGURE 1

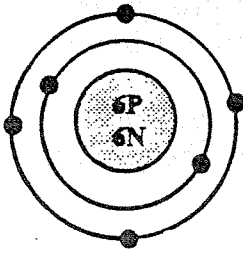


Helium Atom

Atomic Number _____

Atomic Mass _____

FIGURE 2

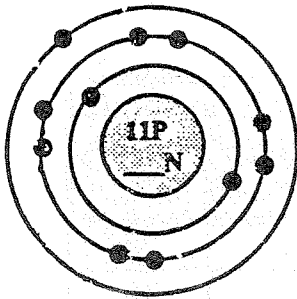


_____ Atom

Atomic Number _____

Atomic Mass _____

FIGURE 3



_____ Atom

Atomic Number _____

Atomic Mass _____

PART C

In the space below, diagram the nucleus of each of the elements listed in Table 1. Be sure to list the number of protons and neutrons in each nucleus.