

There is more than one way to draw an atom. Here is one way.

1. Begin by drawing a circle. The circle stands for the nucleus. (See Figure A on the next page.)

2. Write the number of protons and neutrons inside this nucleus circle. Do it this way:

The symbol for a proton is  $p^+$ .

If there are 8 protons, write  $8p^+$ .

The symbol for a neutron is  $n^0$ .

If there are 9 neutrons, write  $9n^0$ .

(See Figure B on the next page.)

3. Use circles or parts of circles for the electron shells. (Figure C on the next page shows two shells.)

4. An electron is shown as a small filled-in circle on the shell.

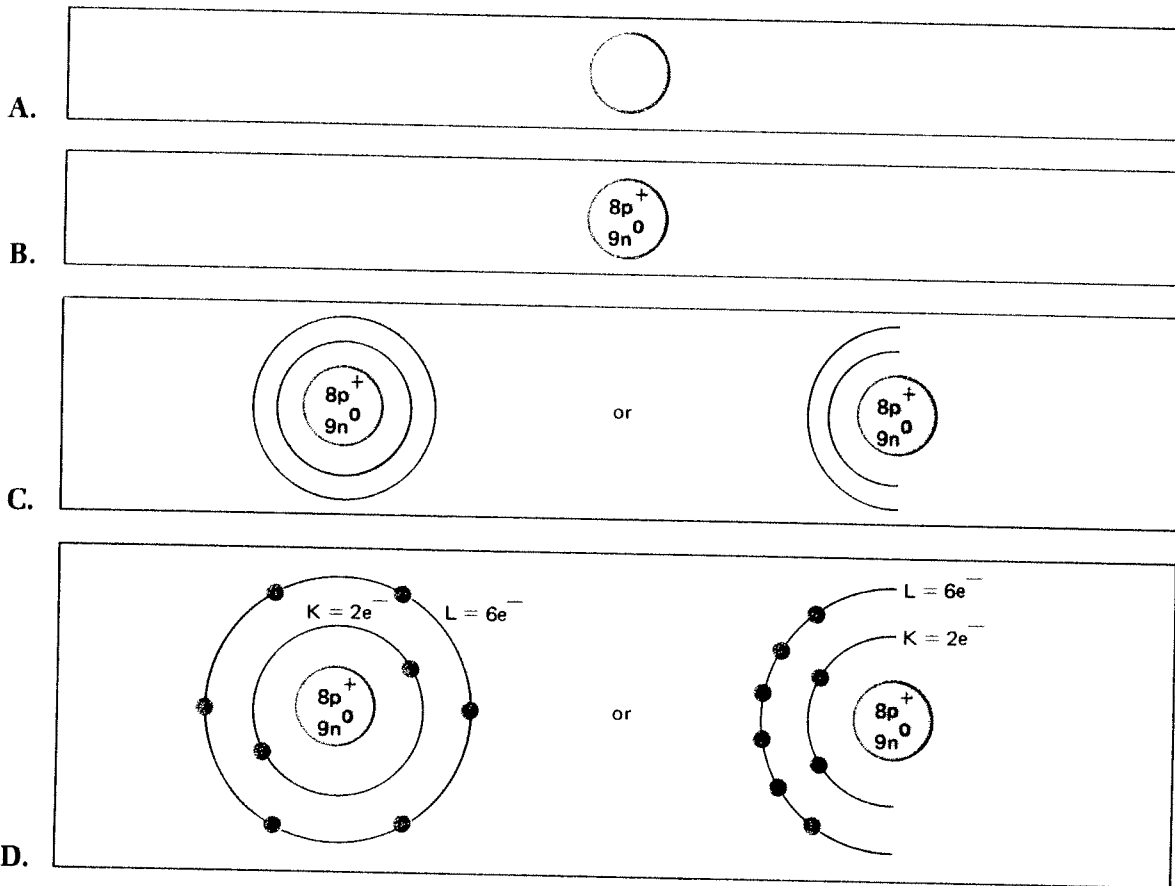
The symbol for an electron is  $e^-$ .

The shell letter and the number of electrons is often shown. [See Figure D on the next page.]

A "K" shell with 2 electrons is shown as  $K = 2e^-$ .

An "L" shell with 6 electrons is shown as  $L = 6e^-$ .

This is not a picture likeness of an atom. It is simply a way of drawing it. Scientists use this method often. They also have other ways of drawing atoms.



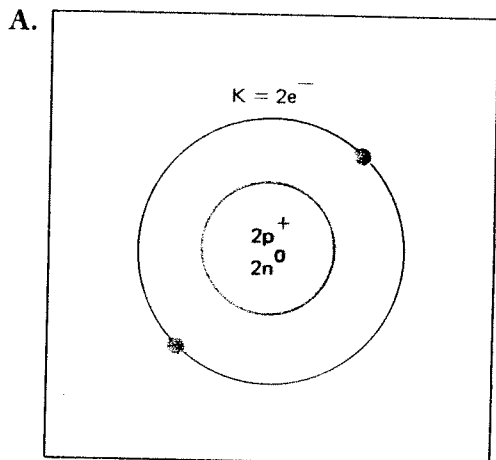
## HOW TO DRAW ATOMS

To learn how to draw atoms, study each of the following. Answer the questions with each picture.

1. Remember **P E N**

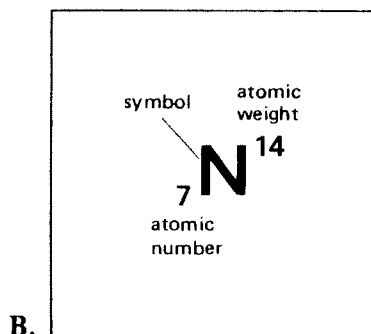
Helium (He)  
 Atomic number = 2  
 Atomic weight = 4  
 Total number of electrons = 2

$$K = 2e^-$$



1. How many *electrons* does a helium atom have? \_\_\_\_\_
2. How many *electron shells* does a helium atom have? \_\_\_\_\_
3. How many *electrons* are in the "K" shell?  
\_\_\_\_\_
4. Is the "K" shell full? \_\_\_\_\_

II. Sometimes the information needed for drawing an atom is given like this.  ${}_7\text{N}^{14}$ .



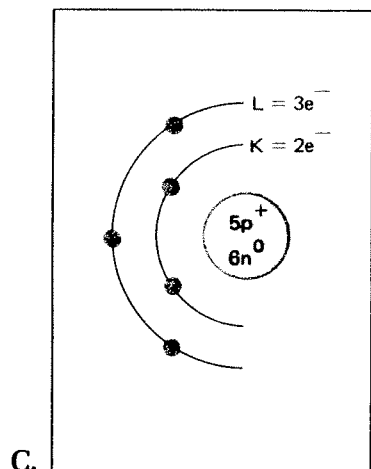
- The symbol is in the middle.
- The number on the left is the atomic number.
- The number on the right is the atomic weight.

Boron



Total number of electrons = 5  
 $\begin{array}{c} \diagup \quad \diagdown \\ \text{K} = 2e^- \quad \text{L} = 3e^- \end{array}$

Example

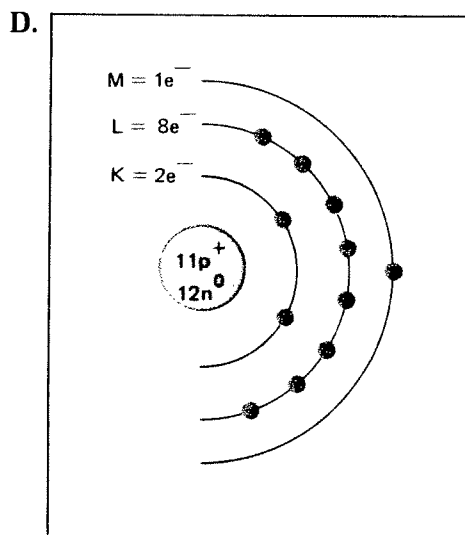


1. How many *electrons* does a boron atom have? \_\_\_\_\_
2. How many *electron shells* does a boron atom have? \_\_\_\_\_
3. How many electrons are in the “K” shell? \_\_\_\_\_
4. Is the “K” shell full? \_\_\_\_\_
5. How many electrons are in the “L” shell? \_\_\_\_\_
6. Is the “L” shell full? \_\_\_\_\_

III. Sodium (Na)  
 Atomic number = 11  
 Atomic weight = 23  
 Total number of electrons = 11

$\begin{array}{c} \diagup \quad \diagdown \quad \diagdown \\ \text{K} = 2e^- \quad \text{L} = 8e^- \quad \text{M} = 1e^- \end{array}$

1. How many *electrons* does a sodium atom have? \_\_\_\_\_
2. How many *electron shells* does a sodium atom have? \_\_\_\_\_
3. Which shells are complete? \_\_\_\_\_



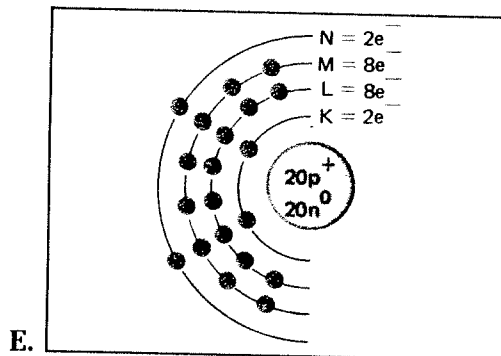
IV.



Total number of electrons = 20

$\text{K} = 2e^- \quad \text{L} = 8e^- \quad \text{M} = 8e^- \quad \text{N} = 2e^-$

1. How many *electrons* does this atom have? \_\_\_\_\_
2. How many *electron shells* does this atom have? \_\_\_\_\_
3. Which shells are full? \_\_\_\_\_
4. Which shell is not full? \_\_\_\_\_
5. What is the name of this element? \_\_\_\_\_



### DRAW THE ATOM

Use the information below to draw an atom of each of the listed elements. First, use the given information about each atom to fill in the blanks. Then draw the atom in the space on the right.

Remember: atomic weight = protons + neutrons  
and

P	rotons =
E	lectrons =
N	umber (atomic)

1. Carbon (C)  
atomic number = 6  
atomic weight = 12

protons = \_\_\_\_\_

neutrons = \_\_\_\_\_

electrons = \_\_\_\_\_

2.  ${}_{4}\text{Be}^9$

atomic number = \_\_\_\_\_

atomic weight = \_\_\_\_\_

neutrons = \_\_\_\_\_

electrons = \_\_\_\_\_

What is the name of this element?

\_\_\_\_\_

3.  ${}_{14}\text{Si}^{28}$

atomic number = \_\_\_\_\_

atomic weight = \_\_\_\_\_

protons = \_\_\_\_\_

neutrons = \_\_\_\_\_

electrons = \_\_\_\_\_

What is the name of this element?

\_\_\_\_\_

---

4. Neon (N)

atomic number = 10

atomic weight = 20

protons = \_\_\_\_\_

neutrons = \_\_\_\_\_

electrons = \_\_\_\_\_

---

5.  ${}_{17}\text{Cl}^{35}$

atomic number = \_\_\_\_\_

atomic weight = \_\_\_\_\_

protons = \_\_\_\_\_

neutrons = \_\_\_\_\_

electrons = \_\_\_\_\_

What is the name of this element?

\_\_\_\_\_

---