

# Rules for Building Atoms

How do we determine the number of subatomic particles?  
Here are the rules... Follow them and you will not go wrong.

## To determine protons:

- ☺ Atomic # = Number of Protons

## To determine electrons:

- ☺ Atoms are neutral in charge, therefore, the number of protons is equal to the number of electrons.

## To determine neutrons:

- ☺ Be careful!!! This is the tricky one. Isotopes have the same number of protons but different numbers of neutrons. In this case we need to determine the number of neutrons for the most common isotope.
- ☺ You first take the atomic mass from the periodic table. Recall that atomic mass is the average mass of an atom based on the proportion (fraction) of the different isotopes that exist for that element.
- ☺ Round the atomic mass to its nearest whole number.
- ☺ The number of neutrons is equal to the rounded atomic mass minus the number of protons.

## Drawing Orbitals:

- ☺ Electrons are drawn in shells around the nucleus of the atom.
- ☺ The innermost shell can only hold up to 2 electrons.
- ☺ All the other shells can hold up to 8 electrons.
- ☺ Electrons are negatively charged and therefore repel each other in their orbits. Draw the electrons in an orbit as far apart from each other as you can.

**Hydrogen**

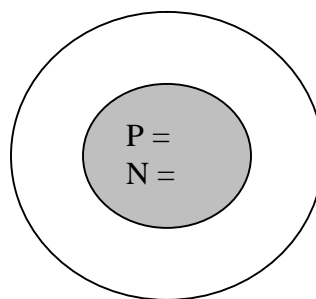
Atomic Number: 1

Atomic Mass: 1.00

Number of Protons: \_\_\_\_\_

Number of Neutrons: \_\_\_\_\_

Number of Electrons: \_\_\_\_\_



**Helium**

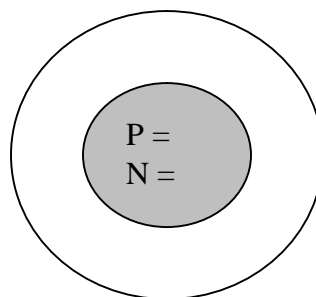
Atomic Number: 2

Atomic Mass: 4.00

Number of Protons: \_\_\_\_\_

Number of Neutrons: \_\_\_\_\_

Number of Electrons: \_\_\_\_\_



**Nitrogen**

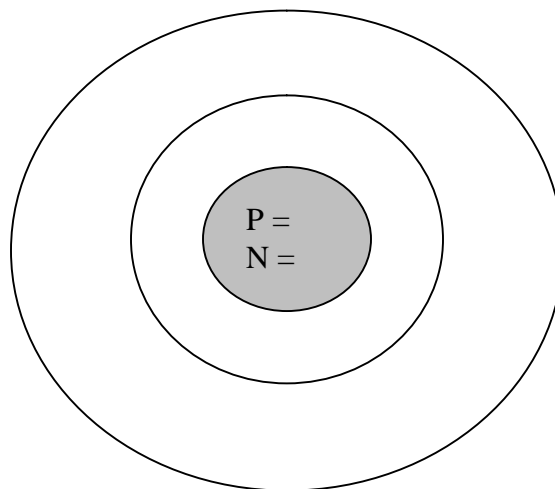
Atomic Number: 7

Atomic Mass: 14.01

Number of Protons: \_\_\_\_\_

Number of Neutrons: \_\_\_\_\_

Number of Electrons: \_\_\_\_\_



**Magnesium**

Atomic Number: 12

Atomic Mass: 24.31

Number of Protons: \_\_\_\_\_

Number of Neutrons: \_\_\_\_\_

Number of Electrons: \_\_\_\_\_

