

Name: _____

Block: _____

Atomic Mass Activity

The purpose of this activity is to explore atomic mass. You will use the following representations for sub-atomic particles:

- **Protons:** dark-colored marbles
- **Neutrons:** light-colored marbles
- **Electrons:** paper circles

1. Find the average mass of your marbles (protons & neutrons) by weighing all of them to the nearest 0.1 g on a balance, and dividing by the number of marbles.

Total mass: _____ g # Marbles: _____ Ave. mass: _____ g

What is the name of the unit of measurement that your average mass of a marble represents?

2. Find the element **carbon** (C) on the periodic table. Its atomic number is 6, which means that it has six protons. Place 6 protons (dark-colored marbles) in your cup.
3. Add six neutrons (light-colored marbles) and six electrons (paper circles) and measure the mass on your balance.

Mass of carbon with 6 protons, 6 neutrons, & 6 electrons: _____ g

4. Divide the mass by your average mass from step #1.

“Atomic mass” of carbon with 6 protons, 6 neutrons, & 6 electrons: _____ amu

5. Write the chemical symbol for carbon with 6 protons, 6 neutrons, & 6 electrons:

6. Add one more neutron. You now have carbon with 6 protons, 7 neutrons, and 6 electrons.

Actual Mass: _____ g Atomic mass: _____ amu Chem. symbol: _____

7. Add four more electrons.

Actual Mass: _____ g Atomic mass: _____ amu Chem. symbol: _____

8. Repeat this process for each of the following elements:

(a) Nitrogen with 7 protons, 7 neutrons and 7 electrons

Actual mass: _____ g Atomic mass: _____ amu Chem. symbol: _____

(b) Nitrogen with 7 protons, 7 neutrons and 10 electrons

Actual mass: _____ g Atomic mass: _____ amu Chem. symbol: _____

(c) Nitrogen with 7 protons, 8 neutrons, and 7 electrons

Actual mass: _____ g Atomic mass: _____ amu Chem. symbol: _____

(d) Nitrogen with 7 protons, 9 neutrons, and 10 electrons

Actual mass: _____ g Atomic mass: _____ amu Chem. symbol: _____

(e) Lithium with 3 protons, 3 neutrons, and 3 electrons

Actual mass: _____ g Atomic mass: _____ amu Chem. symbol: _____

(f) Lithium with 3 protons, 4 neutrons, and 2 electrons

Actual mass: _____ g Atomic mass: _____ amu Chem. symbol: _____

(g) Hydrogen with 1 proton, no neutrons, and 1 electron

Actual mass: _____ g Atomic mass: _____ amu Chem. symbol: _____

(h) Hydrogen with 1 proton, 2 neutrons, and 1 electron

Actual mass: _____ g Atomic mass: _____ amu Chem. symbol: _____

(i) helium with 2 protons, 1 neutron, and 2 electrons

Actual mass: _____ g Atomic mass: _____ amu Chem. symbol: _____

(j) helium with 2 protons, 2 neutrons, and 2 electrons

Actual mass: _____ g Atomic mass: _____ amu Chem. symbol: _____