

### Practice Celebration 3

#### Atomic Models, Atomic Structure, Atomic Mass, Electron Configuration, Spectra, & the Gold Foil Experiment

Fill in this chart completely, write chemical symbol, mass (round to a whole number), the atomic number, electron configuration, number of protons, neutrons and electrons.

name	symbol	atomic mass	atomic #	electron configuration	#p <sup>+</sup>	#n <sup>0</sup>	#e <sup>-</sup>
calcium							
titanium							
bromine							
nitrogen							
carbon							
sulfur							

1. Explain in complete sentences how the atomic mass for mercury is 200.59 amu while at the same time every single atom of mercury in the universe has a whole number of protons and neutrons.
2. Element Pl (for plum pudding) has three isotopes, who have masses of 120, 121 and 124 amu. The most common is Pl-121 making up 85% of all this element. P-120 makes up 12% of all this element. What is the average atomic mass for Pl?
3. Antimony has an electron configuration of 2-8-18-18-5. How many orbitals of electrons does it have? How many electrons are in its highest energy level? How many in its lowest energy level?
4. Rutherford's gold foil experiment proved that atoms were made mostly of \_\_\_\_\_. It also proved that the nucleus had a \_\_\_\_ charge. He shot \_\_\_\_\_ particles at the gold foil. These are easily described as \_\_\_\_\_ nuclei, or \_\_\_\_\_ atoms without the electrons. They are produced by the \_\_\_\_\_ of \_\_\_\_\_ material found inside the lead box.

5. When all the electrons of an atom are "where they belong" or in their lowest energy levels, the atom is said to be in the \_\_\_\_\_. When energy is absorbed and electrons jump up to higher energy orbitals, the atom is said to be in an \_\_\_\_\_.
6. When these electrons jump "down" to the normal orbitals, they release energy that can be seen sometimes as \_\_\_\_\_. This is also known as \_\_\_\_\_.
7. What are the differences between atomic mass and atomic numbers?
8. Atoms that are chemically identical but have different masses are called \_\_\_\_\_.
9. Platinum-195 is a type of atom. The number 195 is this atom's \_\_\_\_\_.
10. K-39 has a nucleus. What is the charge of its nucleus? \_\_\_\_\_
11. Barium has more than 40 different isotopes. What is the atomic number for barium? Does the atomic number change with different isotopes? What stays the same for every isotope of barium?
12. What are the three basic sub-atomic particles that make up all known atoms?