

Name \_\_\_\_\_

## Made to Order

Imagine that you are a new worker at the Elements-4-U Company, which makes elements. Your job is to build the atomic nucleus for each element ordered by your customers. You were hired because you know about the makeup of a nucleus and also because you understand how isotopes of an element are different from each other. Now it's time to get to work!

### Materials

Bag of Protons \_\_\_\_\_

Bag of Neutrons \_\_\_\_\_

Bag of Electrons \_\_\_\_\_

### Procedure

1. On your paper plate, draw a small circle in the center to represent the nucleus of the atom. Then draw two circles outside the nucleus to represent electron energy levels.
2. Your first task is to build the Hydrogen-1 (H-1) atom. Place one proton in the nucleus and one electron on the first electron energy level. Congratulations, you have just built your first atom. Fill in column 1 of the table. Show your teacher for her initials.
3. Now continue to build the atoms listed in the table. Remember to have your teacher observe each model and initial your table before you go on to the next. Second reminder, electron energy level 1 can hold up to 2 electrons. Electron energy levels 2 can hold up to 8 electrons.
4. Complete the data table.

	1 Hydrogen 1	1 Hydrogen 2	8 Oxygen 16	6 Carbon 12	6 Carbon 14	7 Nitrogen 14
Atomic Number						
Mass Number						
Number of Protons						
Number of Neutrons						
Number of Electrons						
Teacher's Initials						

5. Once you have built all the required atoms, answer the following questions.

- What is the relationship between the number of protons and the atomic number?
- If you know the atomic number and the mass number of an isotope, how could you figure out the number of neutrons in its nucleus?
- Look up uranium on the periodic table, inside the back cover of your text.
  - What is the atomic number of uranium?
  - How many neutrons does the isotope uranium-235 have?