

## LAB: Constructing Bohr Models and Determining Trends

### BACKGROUND

Bohr diagrams are used to illustrate the probable location of electrons in atoms. The rows on the periodic table are called periods. The columns are called families.

### Procedure:

1. Cut out the attached element cards.
2. Draw the Bohr models for each element on the back of each card.
3. Arrange the cards so they resemble the periodic table. I will check it in class.

**Questions:** (As you answer the questions about the Bohr diagrams, look at the number of electrons in the outer energy level and the number of energy levels in the atom.)

1. Turn the following cards over to view the Bohr-Rutherford diagrams: H, Li, Na, K.
  - a) In what way is each Bohr diagram similar? \_\_\_\_\_
  - b) In what way is each Bohr diagram different? \_\_\_\_\_
2. Turn the following cards over to view the Bohr-Rutherford diagrams: Be, Mg, Ca.
  - a) In what way is each Bohr diagram similar? \_\_\_\_\_
  - b) In what way is each Bohr diagram different? \_\_\_\_\_
3. Turn the following pairs of cards over to view the Bohr-Rutherford diagrams: (B, Al) (C, Si) (N, P) (O, S) (F, Cl)
  - a) In what way is the Bohr diagram for each pair similar? \_\_\_\_\_
  - b) In what way is the Bohr diagram for each pair different? \_\_\_\_\_
4. In general what can be said about every element in the same **family(group)** of the periodic table?  
\_\_\_\_\_
5. Turn the following cards over to view the Bohr-Rutherford diagrams: He, Ne, Ar.
  - a) In what way is each Bohr diagram similar? \_\_\_\_\_
  - b) In what way is each Bohr diagram different? \_\_\_\_\_
6. Turn the following cards over to view the Bohr-Rutherford diagrams: H, He.
  - a) In what way is each Bohr diagram similar? \_\_\_\_\_
  - b) In what way is each Bohr diagram different? \_\_\_\_\_

7. Turn the following cards over to view the Bohr-Rutherford diagrams: Li, Be, B, C, N, O, F, Ne.

a) In what way is each Bohr diagram similar? \_\_\_\_\_

b) In what way is each Bohr diagram different? \_\_\_\_\_

9. Turn the following cards over to view the Bohr-Rutherford diagrams: Na, Mg, Al, Si, P, S, Cl, Ar.

a) In what way is each Bohr diagram similar? \_\_\_\_\_

b) In what way is each Bohr diagram different? \_\_\_\_\_

11. In general what can we say about all elements in the same period of the **periodic** table?

---

1 1.0079 H Hydrogen	2 4.0026 He Helium	3 6.941 Li Lithium
5 10.811 B Boron	6 12.011 C Carbon	7 14.007 N Nitrogen
9 18.988 F Fluorine	10 20.180 Ne Neon	11 22.990 Na Sodium
13 26.982 Al Aluminum	14 28.086 Si Silicon	15 30.974 P Phosphorus

17 35.435 Cl Chlorine	18 39.948 Ar Argon	19 39.098 K Potassium
4 9.0122 Be Beryllium	8 15.994 O Oxygen	12 24.305 Mg Magnesium
16 32.067 S Sulfur	20 40.078 Ca Calcium	