

Lab: Periodic Table Basics



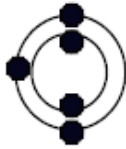

Materials: Large piece of paper (11x17), scissors, colored pencils, glue, periodic table, cut-out page

Step 1: Complete the squares for each element by adding the atomic number, name, and atomic mass.

Write the atomic number at the top of the square.

Write the element's name under the symbol.

Write the atomic mass at the bottom of the square.

<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p style="text-align: center; margin: 0;">5</p> <p style="text-align: center; margin: 0; font-size: 1.5em;">B</p> <p style="text-align: center; margin: 0;">Boron</p> <p style="text-align: center; margin: 0;">10.81</p> </div>	<p style="margin: 0;">P = $\frac{5}{\quad}$</p> <p style="margin: 0;">N = $\frac{6}{\quad}$</p> <p style="margin: 0;">E = $\frac{5}{\quad}$</p>
<p>Bohr Diagram:</p> 	
<p>Lewis structure:</p> 	

Step 2: Determine the number of protons, neutrons, and electrons in each element.

Step 3: Create a Bohr diagram for each element.

Step 4: Draw the Lewis Structure for each element.

Step 5: Use the following colors to shade in the square for each element. You should ONLY color in the small square in the upper left-hand corner and not the entire card.

Green = Li & Na

Pink = O & S

Blue = Be & Mg

Purple = F & Cl

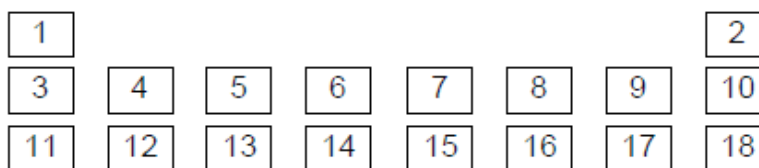
Orange = B & Al

Red = C & Si

Tan = N & P

Yellow = He, Ne, & Ar

Step 6: Cut the cards apart and arrange according to atomic number in the pattern shown below. Once you have the cards arranged in the correct order, glue them to a large sheet of construction paper.



Step 7: Answer the questions on the back of this worksheet using the information on your Periodic Table.

Use the periodic table you made to answer the following questions:



1. Which elements had complete outer shells? Give the name and symbol for each.

2. What do you notice about the location of the elements in #1?

3. Which elements had only one valence electron?

4. What do you notice about the location of the elements in #3?

5. What do you notice about the number of valence electrons as you move from left to right across a row or period in the periodic table? (Na → Mg → Al → Si → P → S → Cl → Ar)

6. What do you notice about the number of energy levels or shells as you move down a group or column in the periodic table? (H → Li → Na)

7. Elements are organized into families according to their physical and chemical properties. Identify the elements that you used in Step 5 that belong to each family based on the number of valence electrons. Give the name and symbol for each element.

Alkali Metals - 1 valence electron _____ & _____

Alkaline Earth Metals - 2 valence electrons _____ & _____

Boron Family - 3 valence electrons _____ & _____

Carbon Family - 4 valence electrons _____ & _____

Nitrogen Family - 5 valence electrons _____ & _____

Oxygen Family - 6 valence electrons _____ & _____

Halides - 7 valence electrons _____ & _____

Noble Gases - Complete outermost shell

_____, _____, & _____

8. What do you notice about the location of the elements in each family?

9. How would you classify hydrogen? Why?

10. Predict the number of valence electrons for each element based on its location in the Periodic Table of Elements. You will need to use the table in your textbook.

Barium = _____ Lead = _____ Xenon = _____ Potassium = _____