

Periodic Table Basics

Step 1: Complete the card for each element.

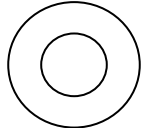
Complete the top section for each element by adding the element's ① atomic number, ② name, and ③ atomic mass.

④ Determine the number of protons, neutrons, and electrons in each element.

⑤ Darken the correct circle to show if the element is a solid (S), liquid (L), or gas (G) at room temperature.

⑥ Create a Bohr diagram for each element.

⑦ Draw the Lewis Structure for each element.

① _____
B
② _____
③ _____
④ P = ____ N = ____ E = ____
⑤ <input type="radio"/> Solid <input type="radio"/> Liquid <input type="radio"/> Gas
⑥  B ⑦

Step 2: Use colored pencils to shade in the card for each element. Hydrogen is not colored!

Green = Li & Na

Pink = O & S

Blue = Be & Mg

Purple = F & Cl

Orange = B & Al

Red = C & Si

Tan = N & P
(Light brown)

Yellow = He, Ne, & Ar

Step 3: Cut the cards apart and arrange according to atomic number in the pattern shown below on a large sheet of construction paper.

Periodic Table Basics							
1							2
3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18

Step 4: After you have the cards arranged in the correct order, glue them to the paper. Add a title at the top of the page along with your names.

Step 5: Answer the questions on the back of this worksheet using the information on your Periodic Table. Each person in your group must complete the worksheet!

Periodic Table Basics

Name _____

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

What do you notice about the location of these elements?

2. Which elements had only one valence electron? Give the name and symbol for each.

What do you notice about location of these elements?

3. 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)

4. 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)

5. Write the name of each family at the top of the columns on your periodic table using the following information.

Alkali Metals - 1 valence electron

Nitrogen Family - 5 valence electrons

Alkaline Earth Metals - 2 valence electrons

Oxygen Family - 6 valence electrons

Boron Family - 3 valence electrons

Halides - 7 valence electrons

Carbon Family - 4 valence electrons

Noble Gases - Complete outer shells

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

7. In what family would you classify hydrogen? Explain your choice.

8. In what family would each of these elements be classified?

Radium - _____

Tin - _____

Iodine - _____

Cesium - _____

9. 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 = _____

Bismuth = _____

Potassium = _____

Periodic Table Basics

Answer Key

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

Helium He Neon Ne Argon Ar

What do you notice about the location of these elements?

They are all located in the same column at the far right edge of the periodic table.

2. Which elements had only one valence electron? Give the name and symbol for each.

Hydrogen H Lithium Li Sodium Na

What do you notice about location of these elements?

They are all located in the same column at the far left edge of the periodic table.

3. 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)

The number of valence electrons increases by one as you move across the table from left to right.

4. 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)

The number of energy levels increases by one as you move down the rows.

5. Write the name of each family at the top of the columns on your periodic table using the following information.

Alkali Metals - 1 valence electron

Nitrogen Family - 5 valence electrons

Alkaline Earth Metals - 2 valence electrons

Oxygen Family - 6 valence electrons

Boron Family - 3 valence electrons

Halides - 7 valence electrons

Carbon Family - 4 valence electrons

Noble Gases - Complete outer shells

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

The elements in each family are located in same column.

7. In what family would you classify hydrogen? Explain your choice.

Alkali Metals – Hydrogen has only one valence electron so it could be classified with the alkali metals.

OR

Halides – Hydrogen only needs one more valence electron to fill its outer shell so it could be classified with the halides.

8. In what family would each of these elements be classified?

Radium – **Alkaline Earth Metal**

Tin – **Carbon Family**

Iodine – **Halide**

Cesium – **Alkali Metal**

9. 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 = 2

Lead = 4

Bismuth = 5

Potassium = 1