

Periodic Table Basics - Answer Key

1. How many elements in your table were:

(a) solids: **10** (b) liquids **0** (c) gases **8**

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

Helium(He), Neon(Ne) and Argon(Ar) all had complete outer shells.

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

They are all located in the last column.

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

Hydrogen (H), Lithium (Li) and Sodium (Na) have only one valence electron.

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

They are all in the first column

6. What do you notice about the number of valence electrons as you move from left to right across a period (or row) in the periodic table? (Example: Na » Ar)

The number of valence electrons increases by one for each column you move right.

7. What do you notice about the number of valence electrons as you move down a group or column in the periodic table? (Example: H » Na)

The number of valence electrons stays the same as you move down a group.

8. What do you notice about the number of energy levels or shells as you move down a group or column in the periodic table? (Example: H » Na)

The number of shells increases by one.

9. What do you notice about the melting points as you move from left to right across a period (or row) in the periodic table? (Example: Li » Ne)

The melting point of metals increases as you move from left to right.

10. What do you notice about the boiling points as you move from left to right across a period (or row) in the periodic table? (Example: Li » Ne)

The boiling point of metals increases as you move from left to right.

11. Each column or group in the periodic table is called a family. Elements are organized into families according to their physical and chemical properties. Identify the elements that belong to each family based on the number of valence electrons. Give the name and symbol for each element.

HINT: You will only use the elements you colored in Step 7!

Alkali Metals - 1 valence electron - **Lithium (Li) and Sodium (Na)**

Alkaline Earth Metals - 2 valence electrons **Beryllium (Be) and Magnesium (Mg)**

Boron Family - 3 valence electrons **Boron (B) and Aluminum (Al)**

Carbon Family - 4 valence electrons **Carbon (C) and Silicon (Si)**

Nitrogen Family - 5 valence electrons **Nitrogen (N) and Phosphorus (P)**

Oxygen Family - 6 valence electrons **Oxygen (O) and Sulfur (S)**

Halogens - 7 valence electrons **Fluorine (F) and Chlorine (Cl)**

Noble Gases - Complete outermost shell **Helium (He), Neon (Ne) and Argon (Ar)**

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

They are all in the same column.

13. How would you classify hydrogen? Give at least one reason.

You could classify hydrogen as an alkali metal because it has only one valence electron.

Challenge: 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 periodic table in your textbook.

Barium = **2** Lead = **4** Xenon = **8** Potassium = **1**