

## Periodic Table Worksheet

Name: \_\_\_\_\_

Text References: pg. 138 – 141; 570 – 575

- The horizontal series labelled with numbers are called \_\_\_\_\_.
- Look at the diagram on page 141 of your textbook. Look closely at the atomic structure of elements that are in each period. What do you notice about the elements in period 1?

Period 2? \_\_\_\_\_

Period 3? \_\_\_\_\_

- The vertical series labelled with numbers (or roman numerals) are called \_\_\_\_\_.
- Look again at the diagram in your text on page 141. Look closely at the electron arrangement of the elements that are in Group 1. What do you notice?

Group 2? \_\_\_\_\_

What, in general, do the elements in the same group have in common?

- Using any three colours, shade the metals, metalloids and non-metals on your Periodic Table. Create a suitable legend in the lower left corner of the table.
- List the characteristics of metals: (text pg.140)
- List the characteristics of metalloids:
- List the characteristics of non-metals:
- Classify the following as metals, metalloids or non-metals:

Calcium	_____	Carbon	_____
Silicon	_____	Potassium	_____
Manganese	_____	Aluminum	_____

On your periodic table, label Group 1 the "Alkali Metals". List the elements that are Alkali Metals: \_\_\_\_\_

What characterizes Alkali Metals? (see info. on back)

- On your periodic table, label Group 17 the "Halogens". List the elements that are Halogens: \_\_\_\_\_

What characterizes Halogens?

- On your periodic table, label Group 18 the "Noble Gases". List the elements that are Noble Gases: \_\_\_\_\_

What characterizes Noble Gases?

**Characteristics of Some Interesting Groups**

At the left-hand and right-hand sides of the periodic table, you will find groups that demonstrate the periodic feature of the table in a striking way. The alkali metals (Group 1) react rapidly when exposed to air and water. For example, sodium (Na) reacts with water to produce hydrogen, and, as you know, hydrogen is extremely flammable. This reaction is so intense that the hydrogen can explode. Sodium is usually stored in kerosene to keep the water vapour in the air away from it, because it is so violently reactive.

Locate sodium on your simplified periodic table, and notice the other elements in this group. It may surprise you to find hydrogen, a gas, in the same group as solid metals. The reason has to do with atomic structure, as you will learn in Chapter 8. You know already that hydrogen is extremely reactive (like the other elements in Group 1). In fact, it is so reactive that it cannot exist in nature as an atom, but exists as a diatomic molecule.

The alkali metals are the most reactive metals. The halogens, which were mentioned earlier, are the most reactive non-metals. Notice the position of the halogens near the right-hand side of the periodic table (Group 17). Fluorine (F) is so reactive that it will etch glass, and indeed it is used (with great care) to decorate glass panels and sculptures. Chlorine (Cl) causes serious respiratory problems if it is inhaled, and bromine (Br) causes very serious and painful skin burns. Amazingly sodium (a highly reactive alkali metal that can damage human tissue) reacts with chlorine (a highly reactive halogen that will also damage human tissue) to produce sodium chloride, which we consume in our food every day. What a chemical change! You will learn why such changes occur as you continue with this unit.

At the extreme right-hand side of the periodic table is Group 18, the noble gases. (This group was entirely missing from Mendeleev's table.) They were called "noble" because they are chemically calm. Calmness was thought to be a characteristic of people of the noble classes in historic times. As you will learn in Chapter 7, the noble gases can be excited by electricity to produce interesting colours in discharge tubes, but they are not changed *chemically* when they do so.