

Introduction to the Periodic Table Worksheet

Name: Key

1. Provide 4 characteristics (physical/chemical) in which **metals** and **non-metals** differ.

Metals
Malleable
Ductile
Lustre
Elec. conductivity

Non-metals
non-malleable
non-ductile
little lustre
Low elec. conductivity

2. Name the only element that is a non-metal but has some chemical properties identical to a metal.

Hydrogen

3. Select the more 'metallic' element from each of the following sets:

- i. Argon and Arsenic As
- ii. Gold and Silver Au
- iii. Silicon, Sulfur, and Nitrogen Si
- iv. Lead, Mercury, and Tin Hg
- v. Phosphorus, Fluorine, and Potassium K

4. Identify the element that fits each of the following parameters:

Family (Group)	Period	Element
Halogen	3	<u>Cl</u>
Alkali Metal	5	<u>Rb</u>
Carbon Group	6	<u>Pb</u>
Noble Gas	2	<u>Ne</u>
Oxygen Group	3	<u>S</u>
Alkaline Earth Group	6	<u>Ba</u>
Nitrogen Group	3	<u>P</u>
Group 17	2	<u>F</u>
Group 2	4	<u>Ca</u>
Group 13	3	<u>Al</u>

5. For each of the following, provide the name of the element if the symbol is given or give the symbol if the name is given:

- i. Sodium Na
- iii. K Potassium
- v. Thallium Tl
- vii. Hg Mercury

- ii. Cadmium Cd
- iv. Be Beryllium
- vi. Arsenic As
- viii. Mo Molybdenum

ix. Silicon Si
xi. Kr Krypton
xiii. Fluorine F
xv. Cr Chromium
xvii. Sulfur S
xix. Cs Cesium

x. Platinum Pt
xii. Cu Copper
xiv. Tungsten W
xvi. Pb Lead
xviii. Astatine At
xx. B Boron

6. List the seven elements that form diatomic molecules:

Hydrogen, Nitrogen, Oxygen, Fluorine,
Chlorine, Bromine, and Iodine.

7. Why do metals tend to have *positive* combining capacities?

Metals tend to give-up electrons to form compounds

Why do non-metals tend to have *negative* combining capacities?

Non-metals tend to gain electrons to form compounds

8. List the combining capacity/capacities of each of the following elements:

K +1

Al +3

S -2

Sn +2, +4

F -1

Ca +2

I -1

Fe +2, +3

Sr +2

C ±4

Cs +1

H +1

O -2

Ag +1

Pb +2, +4

Mg +2

Cu +1, +2

Ne 0

Na +1

N -3

P -3

Si ±4

Zn +2

As -3

9. Use the following definitions to answer the questions that are subsequent to them (these definitions ARE testable):

Monoatomic Species – made up of only ONE atom.

Diatomic Species – made up of TWO atoms (which may or may not be the same atom).

Triatomic Species – made up of THREE atoms.

Polyatomic Species – made up of many atoms (“poly-“ means ≥ 1).

Classify each of the following species using one or more of the above terms:

i. Ne Monoatomic

v. H₂O Triatomic / Polyatomic

ii. H₃PO₄ Polyatomic

vi. Br₂ Diatomic / polyatomic

iii. NO Diatomic / Polyatomic

vii. Cl⁻ monoatomic

iv. NO₃⁻ Polyatomic

viii. I₃⁻ Triatomic / polyatomic