## Period Table Worksheet 1

1. While doing a research project, you noted the following information about five elements.

Element A:

is a solid;

conducts electricity;

has 2 electrons in its outermost shell;

metal

metalleid

metal

non-metal

non-metal.

has a low density.

Element B:

. is not malleable

does not conduct electricity;

has 7 electrons in its outermost shell;

is light green in colour.

Element C:

has all its outer orbits full

does not form compounds with other elements;

is in a gaseous state;

has a very low boiling point.

Element D:

is a poor conductor of heat;

is very hard;

in non-ductile and non-malleable;

conducts electricity.

Element E:

is ductile and malleable;

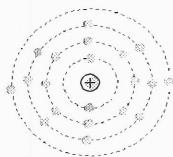
is a solid;

is a good conductor of heat and electricity;

has a high melting point.

Classify the elements above as metals, non-metals or metalloids.

2. The simplified atomic model of an element is shown below.



What are, respectively, the Group and the Period of the Periodic Table to which the element belongs?

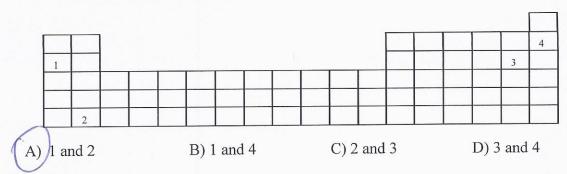
(A)) IIA and 4

B) II A and 3

C) IV A and 2

D) IV A and 3

3. Which of the elements in the table below possess the properties of shininess, electrical conductivity and malleability?



- 4. In a laboratory, a scientist noted the following facts about an element:
  - 1. It is a solid.
  - 2. It is a poor conductor of heat and electricity
  - 3. The nucleus of the atom of this element contains less than 18 protons.
  - 4. The outermost electron shell contains 5 electrons. What is this element? phos phorus
- 5. Which of the following atomic models represent elements from the halogen family?

1. • 1) 
$$7e -$$
3. • 1)  $2e -$ )  $8e -$ )  $7e -$ 
2. • 1)  $2e -$ )  $8e -$ )  $7e -$ 
4. • 1)  $2e -$ )  $8e -$ )  $1e -$ 
A) 1 and 2
B) 3 and 4
C) 2 and 3
D) 1 and 4

6. After a forest fire, we collected the ashes that were left on the ground. An analysis of these ashes enabled us to determine their composition. The table below lists the different elements that were found.

NAME OF ELEMENT	CHEMICAL SYMBOL
Calcium	Ca
Chloride	Cl
Iron	Fe
Magnesium	Mg
Phosphorus	P
Potassium	K
Silicon	Si
Sodium	Na
Sulphur	S

a) Choose two elements that are found in the same period in the periodic table of the elements. Explain your choice by using scientific concepts.

Na + Mg - both we 3 orbits K + Ca - both use 4 orbits b) Choose two elements that are found in the same group in the periodic table of the elements. Explain why these elements have the same chemical reactivity using the Rutherford-Bohr model. Na + K - both have | ve
The following sentence by choosing the correct response. Fluorine, chlorine, bromine and iodine belong to the halogen family; they are all used for.

A) Lightning (B) Disinfecting (C) Communication (D) Heating

8. Below is a partial representation of the Periodic Table

						5				
							14			
							32	33		
								51	52	
									84	

Using the table above, which of the following statements best describes the location of metals, non-metals and metalloids?

A) The non-metals are situated in the seven boxes identified. The metals occupy the region to the right of these boxes and the metalloids the region to the left.

B) The metals are situated in the seven boxes identified. The metalloids occupy the region to the right of these boxes and the non- metals the region to the left

The metalloids are situated in the seven boxes identified. The non-metals occupy the region to the right of these boxes and the metals the region to the left.

D) The metalloids are situated in the seven boxes identified. The metals occupy the region to the right of these boxes and the non-metals the region to the left.

- 9. Listed below are the characteristics of an element from the periodic table.
  - It is a nonmetal.
  - Its outermost energy level has seven electrons.

• It is used to purify and disinfect water.

To which group in the periodic table does this element belong?

- A) Alkali metals
- B) Alkaline earth metals
- (C) Halogens
- D) Inert gas

10. The organization of the Periodic Table can be explained in terms of electron arrangements. Which of these explanations is correct?

A) An element that immediately precedes a noble gas always has its last electron in a new energy level. This means that the element is in a new Period.

An element that immediately follows a noble gas always has its last electron in a new energy level. This means that the element is in a new Period

- C) An element that immediately follows a noble gas always has its last electron in the same energy level as the preceding noble gas. This means that the element is in a new Period
- D) An element that immediately follows a noble gas always has its last electron in a new energy level. This means that the element is in the same Period.
  - 11. Give the name of each element described below.
  - 1. The element has electrons in two energy levels (shells) and the outer level is full.
  - 2. The element has electrons in three energy levels (shells) and it has two valence electrons.
- 3. The element has an atomic number of 14.
  4. The element reacts vigorously with water and the electric charge of its nucleus is +19.
- 12. Five elements are identified in the following periodic table.

I A								V I I I 18
	II A		III A 13	IV A 14	V A 15	VIA 16	VII A 17	
		T					9 F 19.00	10 Ne 20.18
11 Na 22.99		<del> </del>			15 P 30.97			
	20 Ca 40.08							

Match each of the five elements with one of the characteristics listed below

- Its third energy level contains 5 valence electrons.
- It is a gas that does not react with metals or nonmetals. Ne 2.
- It is an element whose chemical reactions are similar to those of potassium. No.
- It is one of the most corrosive gases.
- It is an alkaline earth metal that is a component of bones and teeth. 5.
- 13. The following diagram shows the Rutherford-Bohr model of an atom.

O 2e 8e 2e

Using the periodic table answer the following questions:

b) To what period does this element

a) To what group does this element belong? belong? Calkaline Parth metal (2)

14. The following table gives some information about four elements (E<sub>1</sub>, E<sub>2</sub>, E<sub>3</sub> and E<sub>4</sub>).

Element	Protons	Electrons	
E <sub>1</sub>	19		K
E <sub>2</sub>		18	a
$E_3$	12		
E <sub>4</sub>		9	F

Which of these elements is an alkaline earth metal?

A) Element E<sub>1</sub> B) Element E<sub>2</sub>

(C) Element E<sub>3</sub>

D) Element E<sub>4</sub>

15. The chemical symbols of four elements are given in the table below. Fill the table.

ELEMENT	Number of Valence Electrons	CHEMICAL FAMILY NAME		
Br	7	halogen		
Ca	2	alkaline earth		
Na	1	alkali		
Ne	8	noble or enert		

16. The table below gives the chemical symbols of four elements and provides space to indicate the following characteristics: the number of valence electrons, the number of energy levels, chemical reactivity (none, low or high) and the family number. Using the periodic table, fill in the blank boxes in the table.

Element Symbol	Number of Valence Electrons	Number of Energy Levels	Chemical Reactivity	Family Number
Li	1		high	
C		2		1V(4)
Cl	7	3		
Ne			rone	VIII (8)

17. The table below provides certain information about the symbol, the electron configuration, the name of the chemical family and the period number of four elements in the periodic table.

Symbol	Electron configuration	Name of the chemical family	Period number
Mg	0)2)8)2	allidere earth	
1	0)2)7	Alkali metals	2
B	• )2e )3e		エ
110	• )2e <sup>-</sup>	Noble.	

Using the above information and the periodic table, fill in the empty boxes in the table

- 18. The following are statements about certain elements in the periodic table. Which statement is true?
  - A) Nitrogen (N) is a noble gas located in period 5.
  - B) Bromine (Br) is a halogen located in period 4.
  - C) Hydrogen (H) is an alkali metal located in period 1
  - D) Magnesium (Mg) is an alkaline earth metal located in period 2.
- 19. An element in the halogen family has four electron shells. What is the name of this chemical element?A) BerylliumB) BromineC) IodineD) Potassium