

Identify the following elements as metals, nonmetals, or metalloids?

- |           |              |
|-----------|--------------|
| A. Sodium | E. Germanium |
| B. Carbon | F. Uranium   |
| C. Boron  | G. Fluorine  |
| D. Gold   | H. Neon      |

Identify the block in which each of the following elements is found:

- |              |             |
|--------------|-------------|
| A. Potassium | a) Chromium |
| B. Aluminum  | b) Thorium  |
| C. Copper    | c) Lead     |
| D. Helium    | d) Neon     |

Predict the ion formed by each of the following elements?

- |               |              |
|---------------|--------------|
| A. Krypton    | E. Magnesium |
| B. Silicon    | F. Chlorine  |
| C. Aluminum   | G. Cesium    |
| D. Phosphorus | H. Sulfur    |

Complete the table below.

Element	Period Number	Group Number	Group Name	Symbol
a. [He]2s <sup>2</sup>				
b. [Ne]3s <sup>2</sup> 3p <sup>3</sup>				
c. [Ne]3s <sup>2</sup> 3p <sup>4</sup>				
d. [Ar]4s <sup>1</sup>				
e. [Ar]4s <sup>2</sup> 3d <sup>10</sup> 4p <sup>5</sup>				

Complete the table below for the sets of elements provided.

Atom	Larger Atomic Radius	Greater Ionization Energy	Lower Electronegativity
a. Li, K, Na			
b. C, F			
c. Mg, Ca			
d. N, O, S			

Describe how the electron configuration of an element is related to its location on the periodic table.

Rank the following in order of increasing radius, given their positions in the periodic table: S, Sb and Cl.

A certain element belongs to the *p*-block. It exhibits only moderate conductivity, is a solid at room temperature, and is not malleable or ductile. Further, it contains *4d* electrons, but not *5d* electrons. It is also known not to have chemical properties similar to those of nitrogen. Identify the element and explain your reasoning.

Answer each of the following using your knowledge of chemistry and the periodic table.

The elements in this group have a charge of +2 when forming ionic compounds.

The elements in this group are almost completely nonreactive.

The elements in this group are all diatomic.

The elements in this group are called alkali metals.

These elements are found in group VIIA of the periodic table.

Identify the following elements as metals, nonmetals, or metalloids?

- A. Sodium **metal**
- B. Carbon **nonmetal**
- C. Boron **metalloid**
- D. Gold **metal**
- E. Germanium **metalloid**
- F. Uranium **metal**
- G. Fluorine **nonmetal**
- H. Neon **nonmetal**

Identify the block in which each of the following elements is found:

- A. Potassium **s block**
- B. Aluminum **p block**
- C. Copper **d block**
- D. Helium **s block**
- a) Chromium **d block**
- b) Thorium **f block**
- c) Lead **p block**
- d) Neon **p block**

Predict the ion formed by each of the following elements? **Based on # valence e<sup>-</sup>**

- A. Krypton **0**
- B. Silicon **+4**
- C. Aluminum **+3**
- D. Phosphorus **-3**
- E. Magnesium **+2**
- F. Chlorine **-1**
- G. Cesium **+1**
- H. Sulfur **-2**

Neg. ions result from gaining e<sup>-</sup>

Complete the table below.

Element	Period Number	Group Number	Group Name	Symbol
a. [He]2s <sup>2</sup>	<b>2</b>	<b>2</b>	<b>alkaline earth</b>	<b>Be</b>
b. [Ne]3s <sup>2</sup> 3p <sup>5</sup>	<b>3</b>	<b>15</b>	<b>nitrogen group</b>	<b>P</b>
c. [Ne]3s <sup>2</sup> 3p <sup>6</sup>	<b>3</b>	<b>18</b>	<b>Noble gas</b>	<b>Ar</b>
d. [Ar]4s <sup>1</sup>	<b>4</b>	<b>1</b>	<b>Alkali metals</b>	<b>K</b>
e. [Ar]4s <sup>2</sup> 3d <sup>10</sup> 4p <sup>5</sup>	<b>4</b>	<b>17</b>	<b>halogens</b>	<b>Br</b>

Complete the table below for the sets of elements provided.

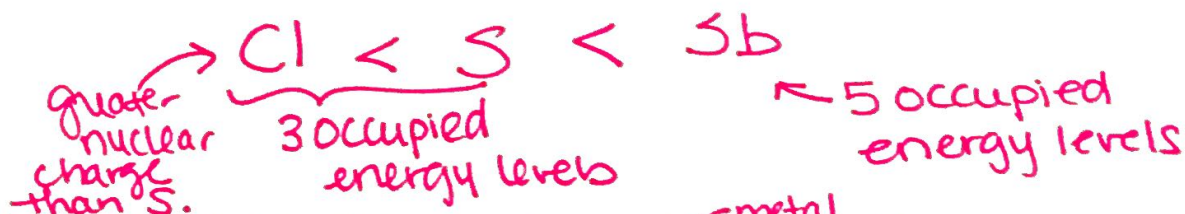
Atom	Larger Atomic Radius	Greater Ionization Energy	Lower Electronegativity
a. Li, K, Na	<b>Li &lt; Na &lt; K</b>	<b>K &lt; Na &lt; Li</b>	<b>Li &gt; Na &gt; K</b>
b. C, F	<b>F &lt; C</b>	<b>C &lt; F</b>	<b>F &gt; C</b>
c. Mg, Ca	<b>Mg &lt; Ca</b>	<b>Ca &lt; Mg</b>	<b>Mg &lt; Ca</b>
d. N, O, S	<b>O &lt; N &lt; S</b>	<b>S &lt; N &lt; O</b>	<b>S &lt; N &lt; O</b>

Describe how the electron configuration of an element is related to its location on the periodic table.

The outermost occupied energy level indicates the period while the # of valence  $e^-$  indicates the group.

\* Valence  $e^-$  only work for Representative element

Rank the following in order of increasing radius, given their positions in the periodic table: S, Sb and Cl.



A certain element belongs to the  $p$ -block. It exhibits only moderate conductivity, is a solid at room temperature, and is not malleable or ductile. Further, it contains 4d electrons, but not 5d electrons. It is also known not to have chemical properties similar to those of nitrogen. Identify the element and explain your reasoning.

metal

nonmetal

in period 5

Same group

group 15 (same valence  $e^-$ )  
Period 5 (full 4d)

(Sb) metalloid

Answer each of the following using your knowledge of chemistry and the periodic table.

The elements in this group have a charge of +2 when forming ionic compounds. alkaline earth (2)

The elements in this group are almost completely nonreactive. noble gas (18)

The elements in this group are all diatomic. halogens (17)

The elements in this group are called alkali metals. group 1

These elements are found in group VIIA of the periodic table. halogens (17)