

Name: _____

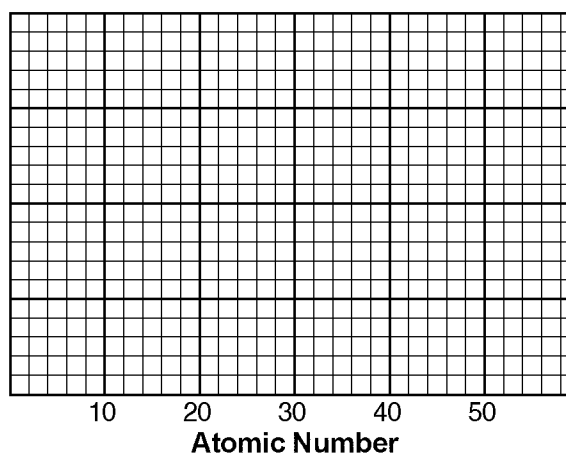
Regents Chemistry Chapter 4 Pre-Test

- 1) Which element has chemical properties that are *most* similar to the chemical properties of sodium?
A) Se B) Cl C) Mg D) K
- 2) Which list of elements contains two metalloids?
A) Po, Sb, I, Xe B) As, Bi, Br, Kr C) Si, P, S, Cl D) Si, Ge, Po, Pb
- 3) Which of the following elements has the *highest* electronegativity?
A) Ca B) Al C) K D) H
- 4) Which element is a noble gas?
A) manganese B) chlorine C) krypton D) antimony
- 5) After a neutral sulfur atom gains two electrons, what is the resulting charge of the ion?
- 6) Which is a property of *most* nonmetallic solids?
A) high thermal conductivity C) malleability
B) brittleness D) high electrical conductivity
- 7) As each successive element in Group 15 of the Periodic Table is considered in order of increasing atomic number, the atomic radius
A) remains the same B) decreases C) increases
- 8) Which list of elements is arranged in order of increasing atomic radii?
A) Sr, Ca, Mg, Be B) Li, Be, B, C C) F, Cl, Br, I D) Sc, Ti, V, Cr
- 9) Which set of symbols represents atoms with valence electrons in the same electron shell?
A) O, S, Te B) Mn, Hg, Cu C) Ba, Br, Bi D) Sr, Sn, I

10)

Atomic Number	Element	First Ionization Energy (kJ/mol)
2	He	
10	Ne	
18	Ar	
36	Kr	
54	Xe	

First Ionization Energy (kJ/mol)



- (a) Complete the data table above for the following Group 18 elements: He, Ne, Ar, Kr, Xe
- (b) Using information from the data table, construct a line graph on the grid above following the directions below.
- Mark an appropriate scale on the axis labeled "First Ionization Energy (kJ/mol)".
 - Plot the data from the data table above. Circle each point and connect the points.
- EXAMPLE:**
- (d) Using the graph above, describe the trend in first ionization energy of Group 18 elements as the atomic number increases.

- 11) Which of the following Group 2 elements has the *lowest* first ionization energy?
- A) Mg B) Ca C) Ba D) Be
- 12) Which of the following ions has the *smallest* radius?
- A) Rb^+ B) K^+ C) F^- D) Cl^-
- 13) The elements in the Periodic Table are arranged in order of increasing
- A) atomic radius B) neutron number C) atomic number D) mass number
- 14) The high electrical conductivity of metals is primarily due to
- A) high electronegativities C) high ionization energies
- B) filled energy levels D) mobile electrons
- 15) When an atom of phosphorus becomes a phosphide ion (P^{3-}), the radius
- A) remains the same B) increases C) decreases
- 16) As the elements in Period 2 of the Periodic Table are considered in succession from left to right, there is a decrease in atomic radius with increasing atomic number. This may *best* be explained by the fact that the
- A) number of protons increases, and the number of shells of electrons increases
- B) number of protons decreases, and the number of shells of electrons increases
- C) number of protons increases, and the number of shells of electrons remains the same
- D) number of protons decreases, and the number of shells of electrons remains the same

- 17) One electron is removed from both an Na atom and a K atom, producing two ions. Using principles of atomic structure, explain why the Na ion is much smaller than the K ion. [*Discuss both ions in your answer.*]
- 18) In which group of the Periodic Table do most of the elements exhibit *both* positive and negative oxidation states?
 A) 12 B) 17 C) 7 D) 2
- 19) As a neutral sulfur atom gains two electrons, what happens to the radius of the atom?
- 20) The amount of energy required to remove the outermost electron from a gaseous atom in the ground state is known as
 A) electronegativity C) first ionization energy
 B) activation energy D) conductivity
- 21) Compared to the radius of a chlorine atom, the radius of a chloride ion is
 A) larger because chlorine loses an electron C) smaller because chlorine gains an electron
 B) larger because chlorine gains an electron D) smaller because chlorine loses an electron
- 22) The data table below shows elements Xx, Yy, and Zz from the same group on the Periodic Table.

Element	Atomic Mass (atomic mass unit)	Atomic Radius (pm)
Xx	69.7	141
Yy	114.8	?
Zz	204.4	171

What is the most likely atomic radius of element Yy?

- A) 185 pm B) 166 pm C) 127 pm D) 103 pm
- 23) The element in Period 4 and Group 1 of the Periodic Table would be classified as a
 A) noble gas B) metalloid C) nonmetal D) metal
- 24) Which of these elements is the *best* conductor of electricity?
 A) N B) Ni C) S D) Br
- 25) Which element is a brittle, nonconducting solid at 25°C?
 A) Al B) Bi C) Br D) S
- 26) Which of the following Group 15 elements has the *greatest* metallic character?
 A) bismuth B) nitrogen C) phosphorus D) antimony

Word Bank: The terms listed below may be of assistance when answering the following questions.

Halogens Transition metals Alkaline Earth Metals Noble Gases	Actinide Series Lanthanide Series Alkali Metals
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27) The element lithium is a member of which family?

28) The element strontium is a member of which family?

29) The most UNREACTIVE elements on the table belong to which family?

a. Why are they unreactive?

30) Chlorine and fluorine are members of which family?

31) Which family is the most reactive metal family on the table?

32) Hydrogen is NOT a metal, yet it is found in group I. Why?

33) There are (7) elements on the table that are found in a pair. They are called the diatomic

seven. Iodine (I₂) is an example. Name the other six using their elemental symbols.

a. _____

b. _____

c. _____

d. _____

e. _____

f. _____

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Transition metals
Alkaline Earth Metals
Noble Gases

Actinide Series
Lanthanide Series
Alkali Metals

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a. _____

b. _____

c. _____

d. _____

e. _____

f. _____

