

**Chemistry Common Assessment #2 Study Guide**
**Name:** \_\_\_\_\_

- \_\_\_\_\_ is equal the number of protons in an atom. It is found at the top of the periodic squares.
- \_\_\_\_\_ is the average mass of all the isotopes for an element. It's found at the bottom of the squares.
- \_\_\_\_\_ is the sum of the protons and neutrons of an atom.
- \_\_\_\_\_ are forms of the same element, but different numbers of neutrons.
- \_\_\_\_\_ are atoms that have gained or lost electrons.
- \_\_\_\_\_ Vertical columns on the periodic table. All elements in these columns have similar properties.
- \_\_\_\_\_ Horizontal rows on the periodic table. All elements in these rows have same # of energy levels.
- \_\_\_\_\_ the number of electrons gained or lost in order to become stable
- \_\_\_\_\_ is the term for the outermost electrons of an atom.
- \_\_\_\_\_ type of bonding where electrons are transferred. Formed between a metal and nonmetal .
- \_\_\_\_\_ type of bonding where electrons are shared. Formed between two nonmetals.
- \_\_\_\_\_ are to the left of the staircase and have \_\_\_\_\_ oxidation #'s, this means they \_\_\_\_\_ electrons.
- \_\_\_\_\_ are to the right of the staircase and have \_\_\_\_\_ oxidation #'s, this means they \_\_\_\_\_ electrons.
- \_\_\_\_\_ are the elements that touch the staircase. They have properties of both metals and nonmetals.
- \_\_\_\_\_ the sum of the oxidation numbers in an ionic bond.
- Fill in the following chart

NAME	SYMBOL	ATOMIC #	MASS #	PROTONS	ELECTRONS	NEUTRONS	CHARGE
	$^{59}_{28}\text{Ni}$		59				0
		38			40		
			33	15			-3
		16				17	-2
	$^{56}_{25}\text{Mn}^{+1}$						
				42	40	50	

- The amount of energy it takes to remove a valence electron is called \_\_\_\_\_ Energy.
- The tendency for the nucleus of one atom to attract electrons of another atom into a chemical bond is \_\_\_\_\_.
- The size of an atom is referred to as it's \_\_\_\_\_.
- Why is the electronegativity of bromine more than gallium?
- Why is the ionization energy of potassium much lower than that of iron?

22. Rank Sodium, Lithium and Potassium from lowest to highest electronegativity:

23. Rank Sulfur, Phosphorus, and Chlorine from smallest to largest in size:

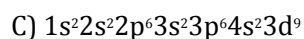
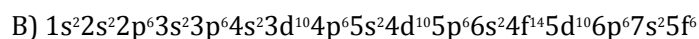
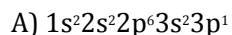
24. Rank Silicon, Carbon, and Tin from lowest to highest ionization energy:

25. Which element from the Halogen family would have the greatest shielding effect? Why?

26. Explain the process of light emission.

27. What are the relationships between wavelength, frequency, and energy of a wave?

28. Which element is represented by the following electron configurations?



29. Write the complete configuration for the following:

\_\_\_\_\_

the following elements:

A) Silver

B) Antimony

C) Phosphorous

30. Write the noble gas configuration (shorthand configuration) for

A) Magnesium

B) Bromine

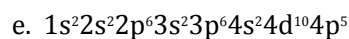
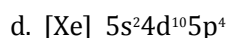
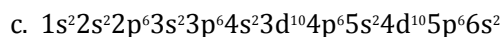
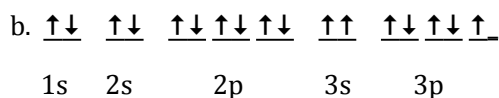
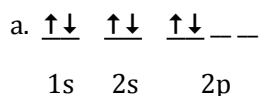
C) Gold

31. (HONORS ONLY) Calculate the wavelength of red light with a wavelength of 450 Hz.

32. (HONORS ONLY) An element emits a spectral line with a wavelength of  $5.18 \times 10^{-7}$  m. Determine the frequency of the wave.

33. (HONORS ONLY) Determine the energy of the wave in question 32.

34. Identify if the diagram or configuration is incorrect. If it is incorrect, explain why. If it is correct, identify the element.



35. Name the following compounds:

A)  $\text{CaBr}_2 =$  \_\_\_\_\_

B)  $\text{NiP} =$  \_\_\_\_\_

C)  $\text{N}_3\text{O}_7 =$  \_\_\_\_\_

D)  $\text{AlF}_3 =$  \_\_\_\_\_

E)  $\text{H}_2\text{S} =$  \_\_\_\_\_

F)  $\text{CuBr}_2 =$  \_\_\_\_\_

G)  $\text{KNO}_3 =$  \_\_\_\_\_

H)  $\text{CCl}_4 =$  \_\_\_\_\_

I)  $\text{S}_2\text{F}_3 =$  \_\_\_\_\_

J)  $\text{H}_2\text{SO}_4 =$  \_\_\_\_\_

K)  $\text{ZnI}_3 =$  \_\_\_\_\_

L)  $\text{H}_2\text{PO}_3 =$  \_\_\_\_\_

36. Write the correct formulas for the following compounds:

A) Lithium Sulfite = \_\_\_\_\_

B) Iron (II) Phosphide = \_\_\_\_\_

C) Tetrasulfur Pentafluoride = \_\_\_\_\_

D) Phosphoric Acid = \_\_\_\_\_

E) Barium Nitride = \_\_\_\_\_

F) Hydronitric Acid = \_\_\_\_\_

G) Copper (III) Iodide = \_\_\_\_\_

H) Aluminum Phosphate = \_\_\_\_\_

I) Calcium Oxide = \_\_\_\_\_

J) Barium Oxide = \_\_\_\_\_

K) Gallium Hydroxide = \_\_\_\_\_

L) Silicon Heptabromide = \_\_\_\_\_

<b>Chemical Formula</b>	<b>Lewis Dot Structure</b>	<b><u>Polar or Nonpolar Bonds</u></b>	<b><u>Polar or Nonpolar molecule</u></b>	<b><u>VSEPR Shape and bond angle</u></b>	<b>(HONORS) Strongest Intermolecular Force Present</b>
37. <b><math>\text{CO}_2</math></b>					
38. <b><math>\text{NF}_3</math></b>					
39. <b><math>\text{SiF}_2</math></b>					
40. <b><math>\text{CBr}_4</math></b>					

41. Explain which intermolecular force would act between molecules of  $\text{NH}_3$  and draw a picture to support your answer. State whether you would expect this compound to have a relatively low or relatively high boiling point in comparison to other types of molecules *and why*.
46. List all three types of radiation (including symbols) from strongest to weakest.
47. Write the nuclear reaction for the alpha decay of Radon-224
48. Write the nuclear reaction for the beta decay of Hydrogen-3.
49. Carbon has a half life of 250 years. How much of a sample will be left after 500 years?
50. Ac-222 has a half life of 29 hours. If you start with a 82.0 gram sample, how much remains Ac-222 after 87 hours?
51. List at least 5 uses for nuclear chemistry in the world.
52. What are 3 differences between fission and fusion (i.e. atoms involved, conditions for, fuels)