Name _____ Date: _____

Chemistry 11 - Review Unit 8

1. Give the contribution to Chemistry by each of the following people in one sentence each:

   Mendeleev

   Rutherford

   Dalton

   Thomson

   Bohr

2. Fill in the following table.

Symbol	*Mass #*	*Atomic #*	*Protons*	*Neutrons*	*Electrons*
	66	30			30
			46	60	46
	88	38			36
		41		52	41
$^{56}_{25}Mn$					

3. Calculate the average atomic mass, given the following data for the naturally occurring isotopes.

   a. $^{63}Cu = 69.09\%$, $^{65}Cu = 30.91\%$

   b. $^{191}Ir = 37.5\%$, $^{193}Ir = 62.5\%$

   c. $^{20}Ne = 90.92\%$, $^{21}Ne = 0.257\%$, $^{22}Ne = 8.82\%$

4. Write electron configurations for the following using complete notation:

   a. Be

   b. S

   c. Mo^{2+}

   d. Br^{1-}

5. Write electron configurations for the following using core notation:

   a. Sc

   b. Ag

   c. Pt

   d. Ni^{1+}

   e. Al^{3+}

   f. Zn^{2+}

6. a. What are valence electrons?

   b. What is the difference between valence electrons and the valence of an atom?

   c. How many valence electrons do the following have?

   (1) Ca (2) Se (3) O^{2-}

7. How is the modern periodic table organized? Who developed it?

8. What is a period? A family or group??

9. Know the location of: representative elements, transition metals, alkaline metals, alkaline earth metals, halogens, noble gasses, lanthanides, actinides.

10. Describe the properties of metals and their location on the periodic table.

11. Describe the properties of non-metals and their location on the periodic table

12. What is a semiconductor? List all the semiconductors.

13. What is meant by **ionization energy**?

14. What happens to ionization energy as you move down a vertical column? _____
    Explain why this happens

15. What happens to ionization energy as you move across a period from left to right?____
    Explain why this happens.

16. What happens to atomic radius as you move down a column? _____
    Explain why this happens

17. What happens to the atomic radius as you move across a period from left to right?____
    Explain why this happens.

18. What is meant by **electronegativity**?

19. What happens to electronegativity as you move down a vertical column? _____
    Explain why this happens

20. What happens to electronegativity as you move across a period from left to right?____
    Explain why this happens.

21. Consider two atoms: Mg and Cl
    a. Which has the larger atomic radius?
    b. Which has the larger ionization energy?
    c. Which has the larger electronegativity
    d. How many valence electrons does Cl have?
    e. What is the valence of Cl?

22. What kinds of atoms are involved in ionic bonding? What holds ions together in the ionic bond?

23. Which member of each of the following pairs would you expect to have the higher melting point. Explain why for each pair.
    a. NaCl or KBr
    b. BeO or LiF
    c. KF or CsI
    d. CaS or KCl

24. Describe the size of negative ions compared to the neutral atom of the same kind. Explain why there is this difference.

25. Describe the size of positive ions compared to the neutral atom of the same kind. Explain why there is this difference.

26. What kinds of ions are involved in covalent bonds? Why?

27. What is a dipole?

28. What are London forces? How strong are they? When are they important?

29. What is meant by a **polar covalent** bond?

30. What does it mean to say a molecule is polar?

31. For hydrogen bonding to be present, what type of atoms must be involved?

32. Explain the term "like dissolves like."

33. For each of the following draw the Lewis structure, determine the bond angles, polarity and molecular shape.
    a. CF_4

    b. CO_3^{2-}