Unit 2 Review Worksheet - Accel Name: _____Pd.:____

History of the Periodic Table

1. Columns are known as _____ and horizontal rows are known as _____ on the periodic table.
2. Describe the general characteristics and location of the following.
   - Metals
   - Nonmetals
   - Metalloids

Classifying Elements by Electron Configuration

3. Electrons in the highest energy level are called _____ electrons.
4. Each element in group 1A has _____ valence electron. This is why they have the same chemical behavior.
5. Each element in group 3A or 13 has _____ valence electrons.
6. Each _____ on the periodic table has its own unique number of valence electrons.
7. Noble gases (group 8A or 18) have _____ valence electrons.
   * *Remember – this is why they are unreactive. Their outer energy levels (s & p) are full.*

Valence Electrons and Periods

8. An element's period or row (s or p block elements) on the periodic table indicates the _____ _____ of the element's valence electrons.
9. For example, gallium is found in period _____ and its valence electrons are in the _____ energy level.
10. What is a spectrum?

11. What are the 3 types of spectra?

The s-, p-, d-, and f-block Elements

12. The s-block elements include groups _____.
    a. Why are they called the s-block elements? _____
13. The p-block elements include groups _____.
    a. Why are they called the p-block elements? _____
    b. Why is the p-block 6 elements wide? _____
14. The d-block contains the _____ elements, which include groups _____.
    a. The d-block is _____ elements wide because the 5 d orbitals, each holding 2 electrons, hold 10 total electrons.
15. The f-block contains the _____ elements, which are found _____.
    a. The f-block spans _____ elements because that's how many electrons the 7 "f" orbitals can hold.

Periodic Trends

16. Define the following:
    a. atomic radius:
    b. ionic radius:
    c. ionization energy:
    d. electronegativity:
17. As you move from left to right across a period,
    a. atomic radius _____.
    b. ionic radius _____.
    c. ionization energy _____.
    d. electronegativity _____.
18. As you move down a group (top to bottom),
    a. atomic radius _____.
    b. ionic radius _____.
    c. ionization energy _____.
    d. electronegativity _____.
19. _____ is the most electronegative element and _____ is the least electronegative.
20. _____ are not assigned electronegativity values.

*For the following, circle the element in **each pair** that answers the question.*

21. Which of the following elements has the ***largest*** atomic radius?
    a. Na or Mg b. Na or Rb c. Na or S
22. Which of the following elements has the ***smallest*** ionic radius?
    a. Li^+ or Li b. Li^+ or Be^{2+} c. Li^+ or K^+
23. Which of the following elements has the ***largest*** ionization energy?
    a. Cl or Al b. Cl or Ar c. Cl or I
24. Which of the following elements has the ***smallest*** electronegativity?
    a. N or P b. N or O c. N or B
25. Which of the following elements are more likely to form a ***positive*** ion?
    a. K or Br b. K or Cs c. K or Li
26. Groups _____ are known as the representative elements because…
27. The valence electrons of representative elements are in the ____ and ____ orbitals.

Hydrogen

28. Hydrogen is placed in group 1A because it has _____ valence electron.

Alkali Metals

29. Located in group _____.
30. Form _____ (charge) ions.

Alkaline Earth Metals

31. Located in group _____.
32. Form _____ (charge) ions.

p-block Elements

33. groups _____ - _____.

Halogens

34. Halogens tend to gain or share 1 electron because they have _____ valence electrons.
35. Form _____ (charge) ions.

Noble Gases

36. Located in group _____.

Electron Configurations

37. **Describe the current model of the atom. (you can use a picture)**
38. Elements that have electrons that differ from the number of protons are called _____.
39. **How many valence electrons are in the following atoms:**
    a. Al _____ b. P _____ c. Mg _____
40. **How do the electron configurations for the following elements end?**
    d. K _____ e. N _____ f. Kr _____
41. **Complete the table:**

Element	Ground State Electron Configuration	Orbital Notation	Electron Dot
beryllium			
krypton			
vanadium			
zinc			
radium		XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	

42. **What shapes are s and p orbitals?**

43. Write the ground state electron configuration for the following atoms and ions:
    a. Mg^{+2}:
    b. Ne
    c. Cs^{+}:
    d. Ge:

44. Write the noble gas configuration for the following atoms or ions:
    a. Ti^{+2}: b. I^{-}: c. C:
45. Identify all the elements present in Unknown A. _____