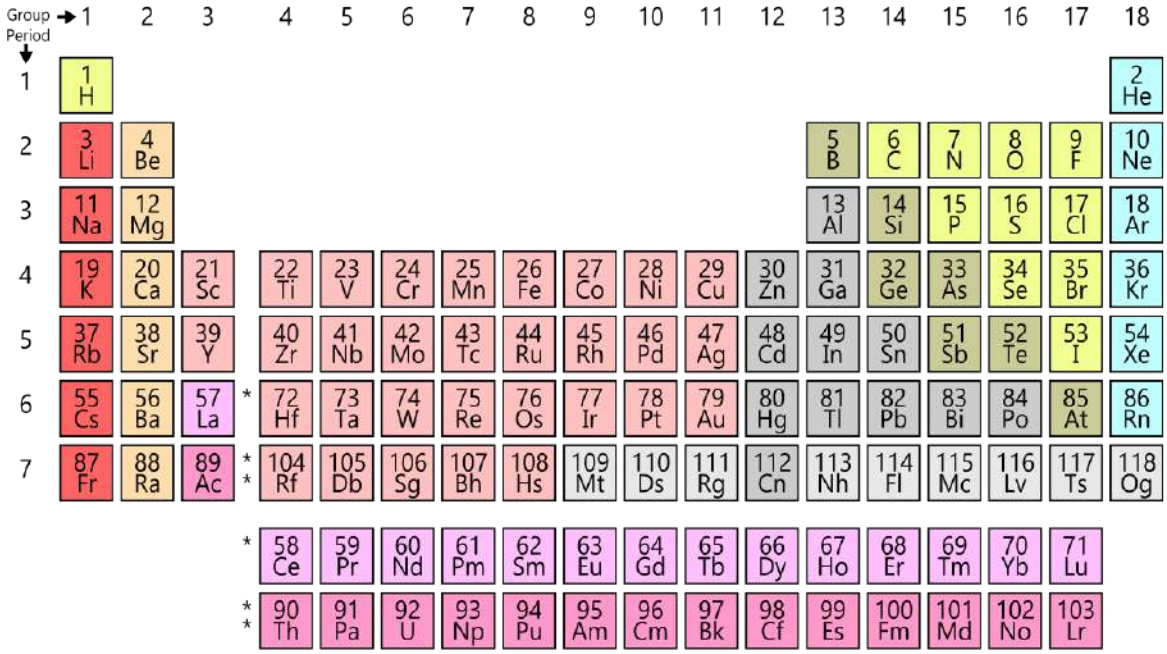
Bonding and Chemical Reaction SG Name: _____

1. Write the ion charges ABOVE each family.
2. Write the valence electrons (1-8) BELOW each family. Don't forget He.



3. Where do you find the valence electrons in an atom?

4. What do the valence electrons determine about an atom?

5. What is an electron dot diagram?

6. Draw one for the following elements:

Na Cl Mg He Xe

7. Atoms form chemical bonds in order to become _____.

8. In an ionic bond, atoms share or transfer electrons? Circle answer
9. Ionic bonds occur between _____ and _____?
10. What type of elements lose electrons in an ionic bond? _____
11. What type of elements gain electrons in an ionic bond? _____

12. The following questions will be about Ca + S

Write the number of valence electrons for Ca _____ Write Ca as an ion____
Write the number of valence electrons for S ____ Write S as an ion ____

When Ca bonds it _____ 2 _____ to become stable at a lower energy level because it's a _____ and because it has 2 _____ electrons.

When S bonds it _____ 2 _____ to become stable at its current energy level because it's a _____. Also, it has 6 _____ electrons and gains _____ electrons from Ca to make _____ valence electrons.

When they bond the positive and negative charges cancel and the compound becomes _____. Written as _____.

Complete the bond below:

Electron Dot Diagrams – use arrows to show electron movement	Write as ions Include electrons around S	Write final compound

13. In metallic bond, electrons are _____ across many atoms, called the “sea of electrons”. They occur between metals and _____.
14. In a covalent bond, atoms share or transfer electrons? Circle answer
15. Covalent bonds occur between _____ and _____

16. Covalently bond Cl & Cl – show all three steps

17. A covalent bond that results in EQUAL sharing is a _____ bond? An example would be when F and F bond OR when H and F bond? Circle answer
18. A covalent bond that results in UNEQUAL sharing is called a _____ bond. An example would be when F and F bond OR when H and F bond? Circle answer
19. The atom that has a stronger pull will have a slightly negative OR a slightly positive charge? Circle answer
20. The atom that has a weaker pull will have a slightly negative OR a slightly positive charge? Circle answer
21. How will you know which atom will have the stronger pull on the electrons? _____
22. Complete a bond with H and F. Show all three steps and include the charges in step 2.

23. An example of a polar molecule we worked with is _____ (H_2O).

24. In each water molecule hydrogen is slightly _____ and oxygen is slightly _____ because oxygen pulls more _____ on the shared electrons.
25. These charges cause the hydrogen of one water molecule to be attracted to an _____ of another water molecule. A _____ bond connects oxygen and hydrogen. One important result of this bonding is the _____ surface tension of water that creates _____, the ability of water molecules to _____ together.
26. Draw two water molecules (show the charges and the H bond – see your diagram on your notes)

27. Ions bond together and form _____ compounds. They have _____ melting points and when dissolved in water they can _____ electricity.
28. A molecule has 2 or more atoms that are COVALENTLY bonded together. Molecular compounds usually have _____ melting points than ionic compounds. They also can form _____ or even _____ bonds.
29. A polymer is made of many _____. Give an example of a polymer: _____

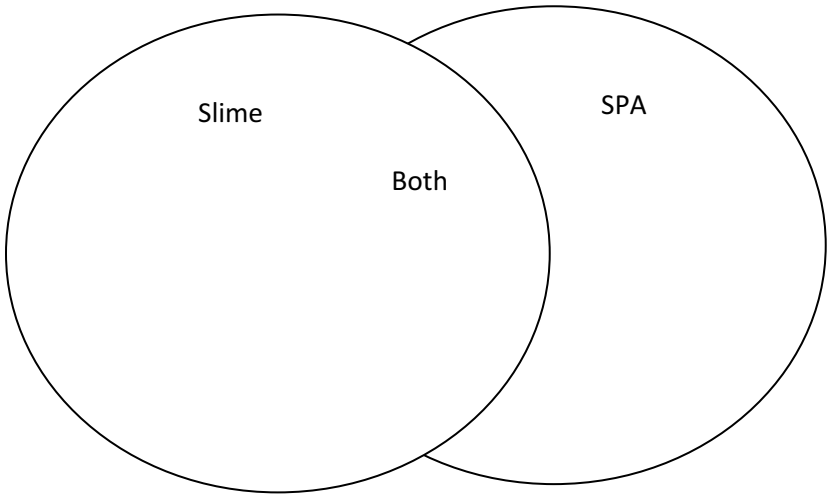
30. List two ways you know a chemical reaction has taken place: _____ & _____

31. List 2 physical changes _____ & _____

32. A chemical change always results in a ____ _____.
33. Exothermic reactions _____ heat. Write the basic equation to represent one:

34. Endothermic reactions _____heat. Write the basic equation to represent one:

35. Balanced chemical equations represent the Law of _____, which says _____. The man given credit for this law is _____. (last name)
36. In a balanced equation, the number of atoms is _____ on both sides. This is how we prove the Law of _____ of _____.
37. Compare and contrast and Slime and Sodium Polyacrylate: Put 3 items in each part of the Venn



Balance the following equations. Circle the reactants and put a rectangle around the product(s) for each equation.

1. $Zn + HCl \longrightarrow H_2 + ZnCl_2$

Zn	Zn
H	H
Cl	Cl

2. $CH_4 + H_2O \longrightarrow CO + H_2$

3. $Mg + O_2 \longrightarrow MgO$

Mg is a metal or nonmetal (circle answer)

O is a metal or nonmetal (circle answer)

The bond between them is ionic or covalent. (Circle answer)