

# Bonding Review

Name \_\_\_\_\_  
Per. \_\_\_\_\_

1. Which part of the atom is responsible for chemical bonding?  
\_\_\_\_\_
2. What are valence electrons (be specific)?  
\_\_\_\_\_
3. How many valence electrons do most atoms need to have a complete outer shell and be happy? \_\_\_\_\_
4. Which two elements only need two valence electrons to be happy?  
\_\_\_\_\_
5. Why do the elements you named in #4 only need two valence electrons?  
\_\_\_\_\_
6. How many valence electrons do elements in Group 1, the Alkali Metals, have?  
\_\_\_\_\_
7. How many valence electrons do elements in Group 2, the Alkaline Earth Metals, have?  
\_\_\_\_\_
8. What is an ion?  
\_\_\_\_\_
9. If an element gives away an electron, will it form a positive ion or a negative ion?  
\_\_\_\_\_
10. If an element gains an electron, will it form a positive ion or a negative ion?  
\_\_\_\_\_
11. What is the difference in a cation and an anion?  
\_\_\_\_\_
12. How do ionic bonds form?  
\_\_\_\_\_
13. How do covalent bonds form?  
\_\_\_\_\_
14. Bond the following atoms. Determine if they are ionic or covalent, circle your choice. Show the valence electrons and how they are either shared between the atoms or how they are transferred between atoms. Then write the chemical formula in the space provided.

Ionic or covalent	Ionic or covalent
C                      Cl	Mg                      Cl
Formula _____	Formula _____

15. How would you determine if a compound is covalent? \_\_\_\_\_
16. How would you determine if a compound is ionic?  
\_\_\_\_\_
17. What 2 things are found in the nucleus of the atom? \_\_\_\_\_ and  
\_\_\_\_\_
18. Where is a "Group" Found on the periodic table?
19. Where is a "Period" found on the periodic table?
20. Group 1 on the Periodic table is called \_\_\_\_\_
21. Group 2 on the periodic table is called \_\_\_\_\_
22. Where are noble gases found on the periodic table and how do they satisfy the octet rule?
23. Where is the general location of nonmetals on the periodic table?
24. What are some examples of metalloids?
25. Where are halogens found on the periodic table?
26. Where are transition metals found on the periodic table?
27. What do the charges on each element of a compound have to be for it to be considered neutral?
28. Which type of bond (covalent or ionic) has a lower melting point?
29. Elements on the periodic table are arranged how?
30. What is the difference between an endothermic and exothermic reaction?
31. What are polyatomic ions?
32. What is a base?
33. What is an acid?
34. Give an example of a base.
35. Give an example of an acid.
36. On a pH scale, what is considered an acid?
37. On a pH scale, what is considered a base?
38. In the following formula,  $C_{12}H_{22}O_{11}$ , how many atoms of carbon make up the molecule?
39. What do acids form in solution?
40. What do bases form in solution?

$\text{NH}_4^+$  = ammonium ion

## Polyatomic Ions

$\text{OH}^-$  = hydroxide ion

$\text{NO}_2^-$  = nitrite ion

$\text{C}_2\text{H}_3\text{O}_2^-$  = acetate ion

$\text{CN}^-$  = cyanide ion

$\text{NO}_3^-$  = nitrate ion

$\text{PO}_4^{3-}$  = phosphate ion

$\text{CrO}_4^{2-}$  = chromate ion

$\text{SO}_4^{2-}$  = sulfate ion

$\text{MnO}_4^-$  = permanganate ion

$\text{Cr}_2\text{O}_7^{2-}$  = dichromate ion

$\text{SO}_3^{2-}$  = sulfite ion

$\text{CO}_3^{2-}$  = carbonate ion

$\text{HCO}_3^-$  = hydrogen carbonate ion or bicarbonate ion

Name the following ionic compounds:

- 1) NaBr \_\_\_\_\_
- 2)  $\text{Sc}(\text{OH})_3$  \_\_\_\_\_
- 3)  $\text{V}_2(\text{SO}_4)_3$  \_\_\_\_\_
- 4)  $\text{NH}_4\text{F}$  \_\_\_\_\_
- 5)  $\text{CaCO}_3$  \_\_\_\_\_
- 6)  $\text{NiPO}_4$  \_\_\_\_\_
- 7)  $\text{Li}_2\text{SO}_3$  \_\_\_\_\_
- 8)  $\text{Zn}_3\text{P}_2$  \_\_\_\_\_
- 9)  $\text{Sr}(\text{C}_2\text{H}_3\text{O}_2)_2$  \_\_\_\_\_
- 10)  $\text{Cu}_2\text{O}$  \_\_\_\_\_
- 11)  $\text{Ag}_3\text{PO}_4$  \_\_\_\_\_
- 12)  $\text{YClO}_3$  \_\_\_\_\_
- 13)  $\text{SnS}_2$  \_\_\_\_\_
- 14)  $\text{Ti}(\text{CN})_4$  \_\_\_\_\_
- 15)  $\text{KMnO}_4$  \_\_\_\_\_
- 16)  $\text{Pb}_3\text{N}_2$  \_\_\_\_\_
- 17)  $\text{CoCO}_3$  \_\_\_\_\_

- 18)  $\text{CdSO}_3$  \_\_\_\_\_  
19)  $\text{Cu}(\text{NO}_2)_2$  \_\_\_\_\_  
20)  $\text{Fe}(\text{HCO}_3)_2$  \_\_\_\_\_

Write the formulas for the following ionic compounds:

- 21) lithium acetate \_\_\_\_\_  
22) iron (II) phosphate \_\_\_\_\_  
23) titanium (II) selenide \_\_\_\_\_  
24) calcium bromide \_\_\_\_\_  
25) gallium chloride \_\_\_\_\_  
26) sodium hydride \_\_\_\_\_  
27) beryllium hydroxide \_\_\_\_\_  
28) zinc carbonate \_\_\_\_\_  
29) manganese (VII) arsenide \_\_\_\_\_  
30) copper (II) chlorate \_\_\_\_\_  
31) cobalt (III) chromate \_\_\_\_\_  
32) ammonium oxide \_\_\_\_\_  
33) potassium hydroxide \_\_\_\_\_

### Covalent Compounds

Name the following molecular compounds:

$\text{SO}_3$  = \_\_\_\_\_       $\text{SiBr}_4$  = \_\_\_\_\_

$\text{XeF}_6$  = \_\_\_\_\_       $\text{ClF}_3$  = \_\_\_\_\_

$\text{N}_2\text{O}_4$  = \_\_\_\_\_       $\text{Cl}_2\text{O}_7$  = \_\_\_\_\_

$\text{PCl}_5$  = \_\_\_\_\_       $\text{P}_4\text{O}_{10}$  = \_\_\_\_\_