

Atomic Structure and Properties  
1.8 Valence Electrons and Ionic Bonding  
Worksheet

- 1) Write ionic formulas for the following compounds:
- |                            |                        |
|----------------------------|------------------------|
| a. Sodium Acetate          | h. Silver Chloride     |
| b. Tin (II) Chloride       | i. Nickel (II) Bromide |
| c. Calcium Hydroxide       | j. Lead (II) Nitrate   |
| d. Zinc Sulfate            | k. Sodium Iodide       |
| e. Ammonium Sulfate        | l. Lithium Fluoride    |
| f. Manganese (II) Chloride | m. Potassium Sulfide   |
| g. Copper (I) Nitrate      | o. Aluminum Oxide      |
- 2) Do metals gain or lose electrons in order to acquire a full octet?
- 3) Do non-metals gain or lose electrons in order to acquire a full octet?
- 4) What charge do Group 2A elements acquire as ions?
- 5) What charge do Group 7A elements acquire as ions?
- 6) What charge do Group 1A elements acquire as ions?
- 7) What charge do Group 6A elements acquire as ions?
- 8) What charge do Group 3A elements acquire as ions?
- 9) What charge do Group 4A elements acquire as ions?
- 10) What possible charge(s) can lead acquire as an ion?
- 11) What possible charge(s) can iron acquire as an ion?
- 12) Is energy released or absorbed when neutral sodium atoms react with chlorine gas to form solid sodium chloride, NaCl?
- 13) The following questions pertain to ionic compounds of  $Mg^{2+}$ .
- Write the ionic formula for every compound that can be formed between magnesium and an element from Group 7A.
  - Provide an explanation for the ratio of bonding for the compounds of  $Mg^{2+}$  in part (a).
  - Will the ratio of cation to anion be the same or different for when other Group 2A cations form ionic compounds with the anions of Group 7A? Justify your answer.