**Review for Ionic Bonding Test**

1. What are the subatomic particles involved in chemical bonding? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. The chemical properties of elements are the result of the number of what kind of electrons?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Where are valence electrons found? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. List the number of valence electrons for each group number:
   1. 1 \_\_\_\_\_ c. 13 \_\_\_\_\_ e. 16 \_\_\_\_\_
   2. 2 \_\_\_\_\_ d. 15 \_\_\_\_\_ f. 17 \_\_\_\_\_
5. List the number of valence electrons for each of the following elements:
   1. Ca \_\_\_\_\_ b. O \_\_\_\_\_ c. Be \_\_\_\_\_ d. Ar \_\_\_\_\_
6. What is the name of the rule that says, “a valence shell is full when it contains 8 electrons?” \_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_
7. Having a full valence shell makes an atom \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (stable, unstable)
8. What is ionization energy?
9. Which category of atoms will have a lower ionization energy \_\_\_\_\_\_\_\_\_\_\_ metals or nonmetals?
10. Fill in the following table:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Name of Ion | Lose (Give) or Gain (Take) Valence Electrons | Charge on Ion | Group Numbers of Elements that become this Ion Type | What category of elements form this Ion Metals or Nonmetals | |
| Cation |  |  |  |  |
|  |  | **(-)** |  |  |

1. Fill in the following table:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Element | Group # | # Valence Electrons | Draw Lewis Dot Structure | Is this element a cation, anion or neither? |
| Li |  |  |  |  |
| N |  |  |  |  |
| Kr |  |  |  |  |

1. What is the definition of Ionic Bond?
2. If Ca wants to give away its 2 VE name one group number that would want to take (gain) them. \_\_\_\_\_\_\_\_\_\_\_\_
3. In the Octet Rule what is the number of VE that most elements want? \_\_\_\_\_\_\_\_\_
4. If an element is a metal will it gain (take) or lose (give) its Valence Electrons to a nonmetal? \_\_\_\_\_\_\_\_\_\_\_\_\_
5. How many electrons does a full valence shell have? \_\_\_\_\_\_\_\_
6. Circle the following atoms that are more likely to **lose (give)** valence electrons: K O Ar Ca
7. Circle the following atoms that are more likely to **gain (take)** valence electrons: Na Br P Xe
8. Fill in the following table:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Cation Lewis Dot | Anion Lewis Dot | After electron transfer Lewis Dot | Ion Symbols | Final Formula | Name |
| Na | Cl |  |  |  |  |
| K | S |  |  |  |  |
| Ba | F |  |  |  |  |

1. What is the structure of an ionic compound?
2. What type of crystal is sodium chloride? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Are ionic compounds brittle or malleable (bendable?)
4. What kind of temperature is needed to melt a solid ionic compound (high or low?)
5. What happens to the ions when an ionic compound is dissolved in water?
6. Does an ionic compound dissolved in water conduct electricity? Yes or No
7. If an ion has +5 protons and -18 electrons what is its oxidation number? \_\_\_\_\_\_\_\_
   1. What is this element? \_\_\_\_\_\_\_\_\_\_\_
   2. What is its ion symbol \_\_\_\_\_\_\_\_\_\_\_
8. If an ion has +19 protons and -18 electrons what is its oxidation number? \_\_\_\_\_\_\_\_
   1. What is this element? \_\_\_\_\_\_\_\_\_\_\_\_
   2. What is its ion symbol? \_\_\_\_\_\_\_\_\_\_\_
9. Fill in the following table:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Metal** | **Nonmetal** | **Metal**  **Ion Symbol** | **Nonmetal**  **Ion Symbol** | **Chemical**  **Formula** | **Name** |
| K | S |  |  |  |  |
| Na | P |  |  |  |  |
| Al | O |  |  |  |  |
| Be | F |  |  |  |  |
| Ca | Cl |  |  |  |  |
| Li | I |  |  |  |  |
| Mg | N |  |  |  |  |