1. What is meant by the term chemical family?
2. How can you tell if two elements belong to the same chemical family?
3. On the periodic table, what is a period?
4. How many electrons are in the valence shell of:  
   Na = \_\_\_\_\_\_\_\_\_\_\_\_\_\_ Cl = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Ne = \_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. A full valence shell is called a \_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
6. The members of which family have full valence electrons?
7. In an atom, which has more volume, the nucleus or the electron cloud?
8. Which has more mass, the nucleus or the electron cloud?
9. Nitrogen, phosphorous, arsenic, antimony and bismuth all belong to the same chemical family. Which member is probably the best conductor of electricity? Explain your answer.
10. Fill in the following table:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Element Name | Element  symbol | Group #  & Family | protons | neutrons | electrons | valence electrons | Ion Charge |
| Lithium | Li | Group 1 Alkali Metals | 3 | 4 | 3 | 1 | +1 |
| Neon |  |  |  |  |  |  |  |
| Cesium |  |  |  |  |  |  |  |
| Magnesium |  |  |  |  |  |  |  |
| Fluorine |  |  |  |  |  |  |  |
| Hydrogen |  |  |  |  |  |  |  |
| Oxygen |  |  |  |  |  |  |  |
| Iodine |  |  |  |  |  |  |  |
| Carbon |  |  |  |  |  |  |  |

1. Draw Bohr Models and Lewis Diagrams for the following elements and use them to predict the ion charge.

|  |  |  |  |
| --- | --- | --- | --- |
| Element | Bohr Model | Lewis Diagram | Ion Charge |
| Sodium (Na) |  |  |  |
| Boron (B) |  |  |  |
| Phosphorous (P) |  |  |  |
| Beryllium (Be) |  |  |  |
| Argon (Ar) |  |  |  |
| Fluorine (F) |  |  |  |

1. Draw Bohr Models and Lewis Diagrams for the following ions.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Element | Bohr Model | Lewis Diagram |  | Element | Bohr Model | Lewis Diagram |
| Na+ |  |  |  | P-3 |  |  |
| B+3 |  |  |  | O-2 |  |  |

1. Find three differences between ionic bonding and covalent bonding.

|  |  |
| --- | --- |
| IONIC BONDING | COVALENT BONDING |
|  |  |
|  |  |
|  |  |

1. What is a diatomic molecule?
2. List all the diatomic molecules you have learned.
3. Why doesn’t electron transfer take place in diatomic molecules?
4. State whether the following compounds are ionic or covalent and then draw Bohr Models and Lewis Diagrams for them.

|  |  |  |  |
| --- | --- | --- | --- |
| Element | Ionic / Covalent | Bohr Model | Lewis Diagram |
| NaCl |  |  |  |
| CF4 |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Element | Ionic / Covalent | Bohr Model | Lewis Diagram |
| Li2O |  |  |  |
| CO2 |  |  |  |

1. Circle the ionic compounds below and underline the covalent ones:

Cs3N C3N4 SrAt2 BaO NH3 Ca(OH)2

1. Write names for the following ionic compounds. Remember, the rules are different for ionic and covalent compounds. Before you can name a compound, you have to decide whether it is ionic or covalent
   1. As2O3 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   2. CBr2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   3. H2S \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   4. NO2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   5. N2O4 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   6. CuCl2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   7. Al(OH)3 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   8. CO \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   9. PF5 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   10. MgS \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   11. Fe2O3 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   12. NH4Cl \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Give the formulas for the following compounds:
   1. silicon disulphide \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   2. oxygen gas \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   3. hydrogen sulphate \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   4. carbon dioxide \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   5. silver oxide \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   6. mercury I phosphide \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   7. iron II nitrate \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   8. phosphorus pentachloride \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   9. ammonium phosphate \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   10. carbon tetrahydride \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   11. bromine liquid \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   12. magnesium hydroxide \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_