

Chemistry: Chemical Bonding Activity

When atoms bond together to form ionic compounds, they will not combine with just any other atom. For example, two atoms that will never form an ionic bond are a sodium atom (Na) and a potassium atom (K). This is because both Na^{1+} and K^{1+} are cations, or positively-charged ions. In order for two atoms to form an ionic bond, one must be a cation (+ charge) and the other must be an anion (- charge). Remember, **opposite charges attract** each other and **similar charges repel** each other. **Formula Mass** is calculated by adding the masses of all atoms in the molecule. To name an ionic compound write the name of the first element/ion (the positive one), write the root word of the second element/ion (the negative one) and add the suffix -ide. Example Potassium & Bromine combine to form Potassium Bromide.

| Element Name | Ion Name | Ion Symbol | Anion/Cation | How Many? | Chemical Formula, Formula Mass, & Name |
|--------------|----------|------------|--------------|-----------|--|
| Potassium | | | | | |
| Bromine | | | | | |

| Element Name | Ion Name | Ion Symbol | Anion/Cation | How Many? | Chemical Formula, Formula Mass, & Name |
|--------------|----------|------------|--------------|-----------|--|
| Potassium | | | | | |
| Oxygen | | | | | |

| Element Name | Ion Name | Ion Symbol | Anion/Cation | How Many? | Chemical Formula, Formula Mass, & Name |
|--------------|----------|------------|--------------|-----------|--|
| Magnesium | | | | | |
| Bromine | | | | | |

| Element Name | Ion Name | Ion Symbol | Anion/Cation | How Many? | Chemical Formula, Formula Mass, & Name |
|--------------|----------|------------|--------------|-----------|--|
| Aluminum | | | | | |
| Nitrogen | | | | | |

| Element Name | Ion Name | Ion Symbol | Anion/Cation | How Many? | Chemical Formula, Formula Mass, & Name |
|--------------|----------|------------|--------------|-----------|--|
| Lead (IV) | | | | | |
| Nitrogen | | | | | |

| Element Name | Ion Name | Ion Symbol | Anion/Cation | How Many? | Chemical Formula, Formula Mass, & Name |
|--------------|-----------|------------|--------------|-----------|--|
| Copper (II) | | | | | |
| | Hydroxide | | | | |

| Ion Name | Ion Symbol | Anion/Cation | How Many? | Chemical Formula, Formula Mass, & Name |
|--------------|------------|--------------|-----------|--|
| Ammonium Ion | | | | |
| Nitrate Ion | | | | |

| Element Name | Ion Name | Ion Symbol | Anion/Cation | How Many? | Chemical Formula, Formula Mass, & Name |
|--------------|---------------|------------|--------------|-----------|--|
| Calcium | | | | | |
| | Phosphate Ion | | | | |

| Ion Name | Ion Symbol | Anion/Cation | How Many? | Chemical Formula, Formula Mass, & Name |
|---------------|------------|--------------|-----------|--|
| Ammonium Ion | | | | |
| Phosphate Ion | | | | |

| Element Name | Ion Name | Ion Symbol | Anion/Cation | How Many? | Chemical Formula, Formula Mass, & Name |
|--------------|----------|------------|--------------|-----------|--|
| Aluminum | | | | | |
| Oxygen | | | | | |

Questions

- What was the overall charge on all of the molecules (formula units) that you constructed?
- Compare your pieces with the Periodic Table and answer these questions.
 - Do nonmetals form anions or cations?
 - Do metals form anions or cations?
 - What is the charge for all of the elements in Group 1?
 - What is the charge for all of the elements in Group 2?
 - What is the charge for all of the elements in Group 17?
 - Do cation pieces fit with other cation pieces?
 - Do anion pieces fit with other anion pieces?
- What type of elements (metals, metalloids, or nonmetals) form ionic bonds with metals?
- What type of elements (metals, metalloids, or nonmetals) form ionic bonds with nonmetals?
- Write the chemical formula that results when the following pairs of ions combine to form an ionic bond.
 - Sr^{2+} and O^{2-}
 - Mn^{4+} and O^{2-}
 - Li^{1+} and Cl^{1-}
 - Cs^{1+} and S^{2-}

Chemical Bonding Activity – (cations)





