**Ions and Ionic Compounds Revision**

**Ions** are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ atoms. The number of \_\_\_\_\_\_\_\_\_\_\_\_\_ is different to the number of protons. Ions that gain electrons and charged \_\_\_\_\_\_\_\_\_\_\_\_\_ and ions that lose electrons are charged \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Polyatomic Ions** are made up of \_\_\_\_\_\_\_\_\_\_(poly) atoms. Some common polyatomic ions and their valencies include:

Hydroxide \_\_\_\_\_\_\_\_\_\_

Nitrate\_\_\_\_\_\_\_\_\_\_\_\_

Carbonate \_\_\_\_\_\_\_\_\_\_

Sulfate \_\_\_\_\_\_\_\_\_\_\_\_

Ammonia \_\_\_\_\_\_\_\_\_\_\_

**Ionic Compounds** are made up of \_\_\_\_\_\_\_\_\_\_\_\_. \_\_\_\_\_\_\_\_\_\_\_\_\_ charged metal ions and \_\_\_\_\_\_\_\_\_\_\_\_\_ charged non – metal ions.

![C:\Users\e4075616\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\PTV99225\MC900311198[1].wmf]()**From the list below, circle the ions** (as well as polyatomic ions)**:**

OH- H Mg Mg2+ CaO Ca(OH)2 PbO S S2-

**Categorise the list above under the following headings:**

|  |  |  |
| --- | --- | --- |
| **Element** | **Ion** (Inc. Polyatomic Ions) | **Compounds**  |
|  |  |  |

Remember the rules:

1. Positive ion always goes \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. First ion is named as if it was an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Elements forming negative ions end in \_\_\_\_\_\_\_\_\_\_
4. Small subscript numbers after the symbol represent the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of ions/atoms
5. If there is more than one polyatomic ions we need to remember to use \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Write the formula for the following ionic compounds:**

1. Calcium Oxide \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Magnesium Carbonate \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Calcium Sulfide \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. Aluminium Sulfate \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. Lead (III) Oxide \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
6. Sodium Nitrate \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

![C:\Users\e4075616\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\KC1XROM8\MC900349125[1].wmf]()**Write the name of the following compounds:**

1. PbO \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Zn(NO3)2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Na2CO3 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. Ag2O \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. Al2O3 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
6. (NH4)2O \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Writing and Naming Formula**

**![C:\Users\e4075616\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\C5ZEU6FW\MC900370554[1].wmf]()Let’s start with naming formula!**

**Rules for naming a formula:**

1. **The first ion (positive) is names as if it was an element**
2. **The second ion (negative) will end in ‘ide’**

Hint: Don’t forget the names of your polyatomic ions

**MgO**

**Step one:** Single out the ions present

**Mg2+** and **O2-**

**Step two:** What are the names of these ions?

**Magnesium** and **Oxide**

**Step three**: Add these together

**Magnesium Oxide**

**(NH4)2O**

**Step one:** Single out the ions present

**NH4+** and **O2-**

**Step two:** What are the names of these ions?

**Ammonium** and **Oxide**

**Step three**: Add these together

**Ammonium Oxide**

**Now you try:**

**Na2CO3**

**Step one:** Single out the ions present

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Step two:** What are the names of these ions?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Step three**: Add these together

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**NaNO3**

**Step one:** Single out the ions present

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Step two:** What are the names of these ions?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Step three**: Add these together

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**MgCO3**

**Step one:** Single out the ions present

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Step two:** What are the names of these ions?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Step three**: Add these together

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**PbO**

**Step one:** Single out the ions present

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Step two:** What are the names of these ions?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Step three**: Add these together

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**![C:\Users\e4075616\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\FBTI4Y85\MC900339878[1].wmf]()Now let’s try to write the formula**

**Rules for naming a formula:**

1. **The small subscript numbers after the symbol represent the number of atoms or ions on the compound**
2. **Polyatomic ions remain grouped in a formula.** E.g. CO3
3. **If There is more than one polyatomic ion brackets are used**

Hint: Don’t forget the names of your polyatomic ions

**Calcium Oxide**

**Step one:** Write the symbol and valency of each part of the compound

**Ca2+** and  **O2-**

**Step two:** Write the symbol and the subscript representing how many of each ion are present

**Ca** and **O**

(Note: Both have a combining power (valency) of 2 so they balance each other out)

**Step three**: Add these together

**CaO**

**Silver Oxide**

**Step one:** Write the symbol and valency of each part of the compound

**Ag+** and **O2-**

**Step two:** Write the symbol and the subscript representing how many of each ion are present

**Ag2** and **O**

(Note: Ag has a valency of + so we need 2 of these for every Oxide)

**Step three**: Add these together

**Ag2O**

**Working out step 2…..**

Remember the cross over (swapping) method!

**Ca2+ OH-**

**Ca(OH)2**

**Al3+ O2-**

**Al2O3**

**Calcium Hydroxide**

**Step one:** Write the symbol and valency of each part of the compound

**Ca2+** and **OH-**

**Step two:** Write the symbol and the subscript representing how many of each ion are present

**Ca** and **OH2**

(Note: Ca has a valency of 2+ so we need 1 of these for every 2 hydroxide)

**Step three**: Add these together

**Ca(OH)2**

(Note: Brackets for the polyatomic ion)