**A New Language**

**Chemical Names and Symbols**

**Purpose**

To learn the language of chemical symbols and chemical names.

**Part 1: Observations**

Look at each vial and fill in the data in the table.

|  |  |  |  |
| --- | --- | --- | --- |
| **Vial** | **Name** | **Chemical Formula** | **Description** |
| 1 |  |  |  |
| 2 | copper (II) nitrate |  |  |
| 3 |  |  |  |
| 4 |  |  |  |
| 5 |  | NaNO3 (s) |  |
| 6 |  |  |  |
| 7 |  |  |  |
| 8 |  |  |  |
| 9 | nitric acid |  |  |
| 10 |  |  | brown powder |
| 11 |  | NaOH (aq) |  |
| 12 |  |  |  |
| 13 |  |  |  |
| 14 |  |  | clear, colorless solution |
| 15 | zinc sulfate |  |  |
| 16 |  |  |  |
| 17 |  | Cu(NO3)2 (aq) |  |

**Part 2: Cracking the Code**

**1.** Examine the contents of the vials and their labels. Write down at least six patterns you notice.

**2.** Note how many of each element would be found in one particle of the following compounds:

**a.** sugar (C12H22O11) **b.** salt (NaCl) **c.** baking soda (NaHCO3)

**3.** These symbols represent elements. Identify each element.

**a.** Cu **b.** H **c.** Zn

**4.** Translate these element names into their symbols.

**a.** sulfate **b.** nitrate **c.** hydroxide

**5.** Compounds are substances that are made up of more than one element. In your data table, place a C next to the number of each vial that contains a compound.

**6.** What do you think (*s*), (*l*), and (*g*) stand for?

**7.** How would you write the chemical formula for ice?

**8.** What do all the substances labeled (*aq*) have in common?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| http://www.iaomt.org/testfoundation/images/image56.gif  **1. sodium nitrate, NaNO3 (aq)** | http://www.asia.ru/images/target/photo/51716725/Copper_Nitrate.jpg  **2. copper (II) nitrate,**  **Cu(NO3)2 (s)** | http://image.made-in-china.com/2f0j00nvPEUpYrhjoJ/Copper-Hydroxide.jpg  **3. copper (II) hydroxide, Cu(OH)2 (s)** | http://www.directlinemedical.com/product_images/s/368/18492_xl__64673_zoom.jpg  **4. hydrogen, H2 (g)** | http://blog.caloricious.com/wp-content/uploads/2011/05/sodium-nitrate_10628959_250x250-250x250.jpg  **5. sodium nitrate, NaNO3 (s)** |
| http://sodium-hydroxide.info/images/appearance.jpg  **6. sodium hydroxide,**  **NaOH (s)** | http://www.iaomt.org/testfoundation/images/image56.gif  **7. sulfuric acid,**  **H2SO4 (aq)** | http://2.bp.blogspot.com/_8ZhGYdd4xZA/TG4rdfNkqaI/AAAAAAAAAjU/gK-VKgaeuqc/s1600/4.jpg  **8. zinc, Zn (s)** | http://www.iaomt.org/testfoundation/images/image56.gif  **9. nitric acid,**  **HNO3 (aq)** | http://www.howacoglass.com/images/copper_powder2.JPG**10. copper, Cu (s)** |
| http://www.iaomt.org/testfoundation/images/image56.gif  **11. sodium hydroxide, NaOH (aq)** | http://tyxychem.com/UploadFiles/image/1(4).jpg  **12. copper (II) oxide, CuO (s)** | http://www.paulslab.com/img/che/copper-sulfate-1-250.jpg  **13. copper (II) sulfate, CuSO4 (s)** | http://www.iaomt.org/testfoundation/images/image56.gif  **14. water, H2O (l)** | http://www.iaomt.org/testfoundation/images/image56.gif  **15. zinc sulfate,**  **ZnSO4 (aq)** |
| **16. copper (II) sulfate, CuSO4 (aq)** | **17. copper (II) nitrate, Cu(NO3)2 (aq)** |  |  |  |