**Name: Period: Seat#:**

**Worksheet #1**

**Directions:**

This worksheet is not intended to be done in one night! You will have a couple days to work on it. Do some each night! The intention of this assignment is to make sure that you are *really* “solid” in your formulas so that you are not slowed down as we proceed into the new AP Chem material. This is the equivalent of learning your alphabet so you can write a five page essay in a timed write setting. If you don’t know your alphabet you can’t write words, sentences, paragraphs, or your five page essay!

**In each blank:**

1. Write the balanced chemical equation for the dissolution in water of this ionic compound
2. Highlight or circle the side that is predominant in a 1 M solution (use solubility rules!). If the reactant is not soluble (or somewhat soluble) then you would highlight the reactant side. If the reactant is soluble then highlight the product side.
3. If compound is a metal oxide or metal hydride, write the appropriate reaction with water, not a dissociation.

MO + H2O 🡪 M(OH) MH + H2O(l) 🡪 M(OH) + H2(g)

1. Here is a link to the solubility rules 🡪

 <https://tinyurl.com/yau4dlfx>

|  |
| --- |
| 1. Zinc iodide
 |
| 1. Potassium phosphate
 |
| 1. Magnesium nitrate

Mg(NO3)2 (s) 🡪 Mg2+ (aq) + 2NO3- (aq) |
| 1. Lithium hydride
 |
| 1. Calcium carbonate
 |
| 1. Manganese (II) sulfide
 |
| 1. Manganese (IV) hydride
 |
| 1. Aluminum oxide
 |
| 1. Sodium cyanide
 |
| 1. Manganese (II) sulfate
 |
| 1. Ammonium sulfide
 |
| 1. Copper (III) oxide
 |
| 1. Iron (II) chloride
 |
| 1. Barium oxide
 |
| 1. Calcium phosphate
 |
| 1. Mercury (II) chloride
 |
| 1. Calcium hydroxide
 |
| 1. Sodium chromate
 |
| 1. Aluminum nitrate
 |
| 1. Potassium bromate
 |
| 1. Cesium oxide
 |
| 1. Cobalt (II) chloride
 |
| 1. Zinc sulfide
 |
| 1. Iron (II) nitrate
 |
| 1. Sodium hypochlorite
 |

**Extras to Practice** – You can (and will) be assigned some of these occasionally. They can (and will) show up on homework, pop quizzes, quizzes, tests, and the AP test.

|  |  |  |
| --- | --- | --- |
| 1. Lithium nitride
2. Barium chloride
3. Zinc hydroxide
4. Nickel (II) nitrate
5. Potassium dihydrogen phosphate
6. Magnesium oxide
7. Lithium oxide
8. Silver chloride
9. Barium acetate
10. Sodium bromide
11. Sodium phosphate
12. Calcium chloride
13. Calcium oxide
14. Strontium nitrate
15. Calcium sulfite
16. Sodium hydrogen carbonate
17. Sodium dichromate
18. Potassium iodate
19. Calcium fluoride
20. Sodium fluoride
21. Iron (III) nitrate
22. Lead (II) acetate
23. Aluminum sulfate
24. Potassium dichromate
25. Sodium sulfate
26. Lithium hydrogen carbonate
27. Sodium hydroxide
28. Sodium permanganate
29. Sodium sulfite
30. Zinc carbonate
31. Calcium acetate
 | 1. Calcium hydroxide
2. Iron (II) oxide
3. Nickel (II) chloride
4. Cobalt (II) nitrate
5. Ammonium nitrate
6. Lead (II) carbonate
7. Barium nitrate
8. Nickel (II) sulfate
9. Copper (II) chloride
10. Tin (II) nitrate
11. Potassium hydrogen carbonate
12. Strontium oxide
13. Potassium dihydrogen phosphate
14. Iron (II) sulfite
15. Copper (II) oxide
16. Sodium hydride
17. Potassium sulfate
18. Hydrogen chloride
19. Nickel (II) bromide
20. Strontium chloride
21. Magnesium iodide
22. Sodium acetate
23. Hydrogen iodide
24. Potassium carbonate
25. Iron (III) chloride
26. Sodium iodide
27. Lead (II) nitrite
28. Hydrogen sulfide
29. Potassium hydroxide
30. Silver nitrate
 | 1. Lithium bromide
2. Potassium sulfite
3. Potassium permanganate
4. Ammonium thiocyanate
5. Sodium oxalate
6. Sodium sulfide
7. Lithium carbonate
8. Sodium chloride
9. Potassium oxide
10. Copper (II) sulfate
11. Copper (II) sulfide
12. Magnesium carbonate
13. Potassium bromide
14. Hydrogen peroxide
15. Potassium thiocyanate
16. Manganese (IV) oxide
17. Copper (II) nitrate
18. Sodium chromate
19. Iron (III) oxide
20. Ammonium carbonate
21. Barium hydroxide
22. Ammonium sulfate
23. Ammonium chloride
24. Potassium chlorate
25. Sodium oxide
26. Potassium iodide
27. Tin (II) chloride
28. Aluminum hydroxide
29. Iron (III) sulfate
30. Zinc nitrate
 |



**Acid Naming**

Acid naming is not always taught in all Honors Chem classes. If you need a tutorial on naming acids please
see a brief overview here, or use Google…you have a world of info at your fingertips! Get used to using it! ☺ <https://tinyurl.com/yd3zrord>

|  |  |  |
| --- | --- | --- |
| 1. Hydrofluoric acid
 | 1. Phosphoric acid
 | 1. Sulfuric aicd
 |
| 1. Nitric acid
 | 1. Hydrobromic acid
 | 1. Oxalic acid
 |
| 1. Formic acid
 | 1. Nitrous acid
 | 1. Hydroiodic acid
 |
| 1. Acetic acid
 | 1. Hydrochloric acid
 | 1. Find one more acid not on this list, name it and write the formula.
 |

**Organic Compound Formulas**

Naming organic compounds gets really tricky, really fast. We will not be covering much of this topic, but you should look up these commonly seen organic compounds on Google, so you start to notice some patterns. Try to look for the formula as well as the shape. The shape of the molecules may have some patterns to them. What do you notice about the prefix and the suffix of the compounds? Are there patterns? Noticing patterns like this can speed things up for you a lot during the year – it is a skill you should practice!

|  |  |  |
| --- | --- | --- |
| 1. Ethanoic acid
 | 1. Ethanol
 | 1. Methanoic acid
 |
| 1. Hexane
 | 1. Butanol
 | 1. Propane
 |
| 1. 1-propanol
 | 1. Ethanol
 | 1. Ethane
 |
| 1. Methane
 | 1. Propene
 | 1. Benzene
 |
| 1. Propanoic acid
 | 1. Dimethyl ether
 | 1. Ethyne (acetylene)
 |

**Molecular Compounds**

It is VERY important to know how to draw good Lewis Structures! It is one of the most frequently missed Honors Chem topics not because it is inherently difficult, but because people wont follow the steps! PLEASE use my method for drawing Lewis Structures because it will work every time! There is an overview of the steps below, but if you need more review please consider watching my YouTube lectures on this topic. Links are below.



|  |  |  |
| --- | --- | --- |
| **Part A**<https://youtu.be/on_-k2-jvns>  | **Part B**<https://youtu.be/HeX66BXt2-w>  | **Part C**<https://youtu.be/KBP_sUPYK3E>  |

Write the formula for the molecular compounds below, count the number of valence electrons the molecule has, and then draw a valid Lewis Structure. Make sure to use lines for bonds, and leave lone pairs as dots.

|  |  |  |
| --- | --- | --- |
| 1. Phosphorus trihydride

*Formula # of ve-* PH3 8 | 1. Boron trifluoride

*Formula # of ve-* | 1. Sulfur dioxide

*Formula # of ve-* |
| 1. Sulfur trioxide

*Formula # of ve-* | 1. Ammonia

*Formula # of ve-* | 1. Dinitrogen pentoxide

*Formula # of ve-* |
| 1. Carbon disulfide

*Formula # of ve-* | 1. Carbon dioxide

*Formula # of ve-* | 1. Phosphorus pentachloride

*Formula # of ve-* |
| 1. Dinitrogen trioxide

*Formula # of ve-* | 1. Boron trichloride

*Formula # of ve-* | 1. Carbon monoxide

*Formula # of ve-* |

**Strong and Weak Acids and Bases**

Write the name. Write if it is a strong or weak acid. Write how it would be
written in a 1.0 M solution. List of strong acids and bases is on the back of
your common ion list. They need to get memorized ASAP!
S/W A/B List <https://tinyurl.com/yd9w685k> S/W A/B List Quizlet
Quizlet: <https://tinyurl.com/yat3x6tg>

|  |  |  |  |
| --- | --- | --- | --- |
| **Acid** | **Name** | **Strong/Weak?** | **How Written in 1.0 M** |
| 1. HF
 | Hydrofluoric acid | W | HF (aq) |
| 1. HCl
 | Hydrochloric acid | S | H+ (aq) + Cl- (aq) |
| 1. HBr
 |  |  |  |
| 1. H2S
 |  |  |  |
| 1. HClO4
 |  |  |  |
| 1. HClO3
 |  |  |  |
| 1. HClO2
 |  |  |  |
| 1. HClO
 |  |  |  |
| 1. HNO3
 |  |  |  |
| 1. HNO2
 |  |  |  |
| 1. H2SO4
 |  |  |  |
| 1. H2SO3
 |  |  |  |
| 1. H2CO3
 |  |  |  |
| 1. H3PO4
 |  |  |  |
| 1. H2C2O4
 |  |  |  |
| 1. CH3COOH
 |  |  |  |

**Net Ionic Equations** - Write, balance, and indicate phases. Write the molecular equation and the net ionic. You will need to use your solubility rules to decide if something is soluble and therefore aqueous and breaks into ions, or if it is insoluble so it is a solid and does not get broken apart into ions. The solubility rules are linked on the front page of this worksheet!

|  |
| --- |
| 1. Solutions of zinc sulfate and sodium phosphate are mixed
 |
| *Molecular:* 3ZnSO4 (aq) + 2Na3PO4 (aq) 🡪 Zn3(PO4)2 (s) + 3Na2SO4 (aq) |
| *Net Ionic:* 3Zn2+ (aq) + 2(PO4)3- (aq) 🡪 Zn3(PO4)2 (s) |
| 1. A solution of sodium sulfide is added to a solution of zinc nitrate
 |
| *Molecular:* |
| *Net Ionic:*  |
| 1. Solutions of silver nitrate and lithium bromide are mixed
 |
| *Molecular:* |
| *Net Ionic:*  |
| 1. Solutions of sodium iodide and lead (II) nitrate are mixed
 |
| *Molecular:* |
| *Net Ionic:* |
| 1. Solutions of silver nitrate and sodium chromate are mixed
 |
| *Molecular:* |
| *Net Ionic:*  |
| 1. A solution of copper (II) sulfate is added to a solution of sodium hydroxide.
 |
| *Molecular:* |
| *Net Ionic:*  |
| 1. Sodium hydroxide solution is added to a solution of magnesium nitrate.
 |
| *Molecular:* |
| *Net Ionic:*  |
| 1. Solutions of potassium phosphate and zinc nitrate are mixed.
 |
| *Molecular:* |
| *Net Ionic:*  |
| 1. Solutions of manganese (II) sulfate and ammonium sulfide are mixed.
 |
| *Molecular:* |
| *Net Ionic:*  |
| 1. A solution of nickel (II) chloride is added to a solution of sodium sulfide.
 |
| *Molecular:* |
| *Net Ionic:*  |

**Extras to Practice** – You can (and will) be assigned some of these occasionally. They can (and will) show up on homework, pop quizzes, quizzes, tests, and the AP test.

|  |
| --- |
| 1. Solutions of cobalt (II) nitrate and sodium hydroxide are mixed.
 |
| 1. A solution of copper (II) chloride is added to a solution of sodium sulfide.
 |
| 1. Solutions of strontium nitrate and sodium sulfate are mixed.
 |
| 1. Solutions of sodium chromate and lead (II) nitrate are mixed.
 |
| 1. A solution of sodium iodide is added to a solution of lead (II) acetate.
 |
| 1. Solutions of lead (II) nitrate and potassium sulfate are mixed.
 |
| 1. A solution of sodium phosphate is mixed with a solution of calcium acetate.
 |
| 1. A solution of sodium phosphate is added to a solution of aluminum nitrate.
 |
| 1. Solutions of silver nitrate and sodium chloride are combined.
 |
| 1. A solution of calcium hydroxide and sodium chloride are combined.
 |

**Extra Review**

Everyone has had a summer off from chemistry, sometimes even more if you skipped a year
between Honors Chem and AP Chem. Everyone can benefit from some extra review. Only you
know which topics were hardest for you last year – spend some time looking through the materials
on theHonors Chemistry Tab of my class website. <http://mychemistryclass.net/honorschem.html>

1st Semester Chapters

1. Chemistry Basics
2. Atomic Structure
3. Electrons
4. Periodic Table
5. Bonding and Structure
6. Reactions
7. Stoichiometry

2nd Semester Chapters

1. Advanced Chemical Ratios
2. Gas Laws
3. Thermochemistry
4. Solutions
5. Kinetics
6. Equilibrium
7. Acids and Bases

**You can even watch all my Honors Chem lecture videos on my YouTube Channel!

<https://tinyurl.com/5fa5bkh5>