

Practice: Name the following compounds.

- | | | | | |
|--------------------------------|------------------|----|---|-------------------|
| 1. HI(aq) | hydroiodic acid | TA | 4. H(C ₂ H ₃ O ₂)(aq) | acetic acid |
| 2. HBr(aq) | hydrobromic acid | | 5. HF(aq) | hydrofluoric acid |
| TA 3. H(ClO ₃)(aq) | chloric acid | TA | 6. H(NO ₂)(aq) | nitrous acid |

Practice: Write the formula for the following compounds.

- | | | | | | | | |
|--------------------------|-----------------------|-----------------------------------|------|--------------------|-------------------------|-----------------------------------|------|
| 1. Sulfurous acid | sulfite ²⁻ | H ₂ (SO ₃) | (aq) | 4. Nitric acid | nitrate ⁻ | H(NO ₃) | (aq) |
| BA 2. Hydrochloric acid | | HCl | (aq) | 5. Phosphoric acid | phosphate ³⁻ | H ₃ (PO ₄) | (aq) |
| BA 3. Hydrosulfuric acid | | H ₂ S | (aq) | 6. Chlorous acid | chlorite ⁻ | H(ClO ₂) | (aq) |

Acids

all acids must contain hydrogen - acid strength is measured by the

* must be in water -
aqueous (aq)

amount of hydrogen present - pH

$$pH = -\log [H^+]$$

Two types - Binary (2 elements)

Ternary (3 or more elements) (also called oxyacids)

Binary = hydrogen + non metal

name = hydro + nonmetal (ic) acid

HCl(aq) hydrochloric acid

hydrosulfuric acid H₂S(aq)



Acid Disease

ate ic

ite ous

Ternary = hydrogen + polyatomic ion

name = focus only on polyatomic ion

if -ate → ic
-ite → ous
-ide → ic } acid

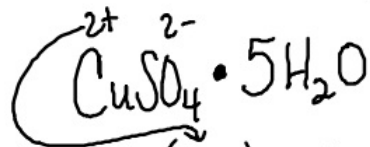
HClO₃(aq) chloric acid

HClO₂(aq) chlorous acid

sulfuric acid H₂SO₄(aq)
(sulfate)²⁻

Sulfurous acid H₂SO₃(aq)

Hydrate - name metallic compound as you normally would
then add prefix + hydrate



copper (II) sulfate pentahydrate

Practice

1. $\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$ sodium carbonate decahydrate
2. $\text{BaCl}_2 \cdot 2\text{H}_2\text{O}$ barium chloride dihydrate
3. $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ copper(II) sulfate pentahydrate

Practice:

1. magnesium sulfate ²⁺ ²⁻ heptahydrate $\text{Mg}(\text{SO}_4) \cdot 7\text{H}_2\text{O}$
2. iron(III) nitrate ³⁺ ¹⁻ trihydrate $\text{Fe}(\text{NO}_3)_3 \cdot 3\text{H}_2\text{O}$

53. Lead (II) sulfide _____

58. Iron (III) nitrate _____

54. Tin (II) bromide _____

59. Copper (II) iodide _____

Write the name for the following covalent compounds.

- | | | | |
|----------------------------|---------------------------------|-----------------------------|-------------------------------|
| 60. NO | <u>nitrogen monoxide</u> | 65. N_2O_3 | <u>dinitrogen trioxide</u> |
| 61. P_2O_5 | <u>diphosphorus pentoxide</u> | 66. S_2Br_2 | <u>disulfur dibromide</u> |
| 62. PCl_5 | <u>phosphorus pentachloride</u> | 67. CS_2 | <u>carbon disulfide</u> |
| 63. IF_7 | <u>iodine heptafluoride</u> | 68. ClF_5 | <u>chlorine pentafluoride</u> |
| 64. CBr_4 | <u>carbon tetrabromide</u> | 69. SO_3 | <u>sulfur trioxide</u> |

Write the formula for the following covalent compounds.

- | | | | |
|------------------------------|-----------------------------------|---------------------------|-----------------------------------|
| 70. Sulfur trioxide | <u>SO₃</u> | 75. Sulfur hexafluoride | <u>SF₆</u> |
| 71. Phosphorous trioxide | <u>PO₃</u> | 76. Carbon disulfide | <u>CS₂</u> |
| 72. Dinitrogen pentoxide | <u>N₂O₅</u> | 77. Dinitrogen trioxide | <u>N₂O₃</u> |
| 73. Oxygen dibromide | <u>OBr₂</u> | 78. Phosphorous pentoxide | <u>PO₅</u> |
| 74. Tetrasulfur tetranitride | <u>S₄N₄</u> | 79. Carbon dioxide | <u>CO₂</u> |

Write the names of the following acids.

- | | | | |
|---|-------|---|-------|
| 80. HCl(aq) | _____ | 85. HNO ₂ (aq) | _____ |
| 81. H ₂ SO ₄ (aq) | _____ | 86. H ₂ CO ₃ (aq) | _____ |
| 82. HClO ₂ (aq) | _____ | 87. H ₃ PO ₅ (aq) | _____ |
| 83. HBr(aq) | _____ | 88. H ₃ PO ₄ (aq) | _____ |
| 84. H ₂ S(aq) | _____ | 89. HI(aq) | _____ |

Write the formula for the following acids.

- | | | | |
|-----------------------|-------|------------------------|-------|
| 90. Nitric acid | _____ | 95. Hydrosulfuric acid | _____ |
| 91. Hydrofluoric acid | _____ | 96. Sulfurous acid | _____ |
| 92. Hypochlorous acid | _____ | 97. Cyanic acid | _____ |
| 94. Acetic acid | _____ | 98. Perchloric acid | _____ |

Write the name of the following hydrates.

- | | |
|---|-------|
| 99. MgSO ₄ • 7 H ₂ O | _____ |
| 100. Ba(OH) ₂ • 8 H ₂ O | _____ |
| 101. CaCl ₂ • 2 H ₂ O | _____ |

Write the formula for the following hydrates.

- | | |
|---|-------|
| 102. Sodium sulfate decahydrate | _____ |
| 103. Potassium aluminum sulfate dodecahydrate | _____ |
| 104. Sodium tetraborate decahydrate | _____ |

Acids

Compounds that contain hydrogen and are dissolved in H₂O (aqueous - aq)

Strength of acids are determined by the concentration of hydrogen = pH

$$\text{pH} = -\log [\text{H}^+]$$

Naming - two types of acids

Binary = 2 elements
(hydrogen + nonmetal)

Ternary = 3 or more elements
(hydrogen + polyatomic ion)

Binary = hydro + name of nonmetal ending in "ic" + acid



HCl(aq) hydrochloric acid

H₂C(aq) hydrocarbonic acid

Ternary = take name of polyatomic ion only

Change ending as follows:

~~Hydro~~
acid disease
ateic
iteous disease

-ate → ic acid

-ite → ous acid

-ide → ic acid

H₂SO₄(aq) sulfuric acid

H₂SO₃(aq) sulfurous acid

Formula Writing - based on charges - followed by (aq)

¹⁺ ³⁻
hydrophosphoric acid H₃P (aq)

¹⁺ ¹⁻
(BA) nitric acid HNO₃ (aq)
(TA)

nitrous acid HNO₂ (aq)
(TA) nitrite

Hydrocarbons:

Carbon + hydrogen

names are based on 2 things:

Prefix = # of carbon

meth = 1 C

eth = 2 C

prop = 3 C

but = 4 C

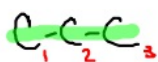
ending = type of bonds between Carbon

Alkane = all single C-C bonds = saturated w/ maximum # of hydrogen
 C_nH_{2n+2} (-ane)

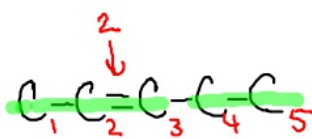
Alkene = at least one double bond C=C = unsaturated
 C_nH_{2n} (-ene)

Alkyne = at least one triple bond C≡C = unsaturated
 C_nH_{2n-2} (-yne)

Practice



propane



2-pentene

3-heptyne

