Binary Molecular Nomenclature

Rules for Binary Molecular Compounds	Prefixes
1. The naming system is for compounds composed of two nonmetallic elements. 2. The first element keeps its name a. The first element gets a prefix if it has a subscript in the formula 3. The second element gets the *–ide* suffix (ending) a. The second element ALWAYS gets a prefix	1 – mono 2 – di 3 – tri 4 – tetra 5 – penta 6 – hexa

Compound Name	***Compound Formula***
Carbon dioxide	
Carbon monoxide	
Diphosphorus pentoxide	
Dinitrogen monoxide	
Silicon dioxide	
Carbon tetrabromide	
Sulfur dioxide	
Phosphorus pentabromide	
Iodine trichloride	
Nitrogen triiodide	
Dinitrogen trioxide	

Compound Formula	***Compound Name***
N_2O_4	
SO_3	
NO	
NO_2	
As_2O_5	
PCl_3	
CCl_4	
H_2O	
SeF_6	

For answers to this worksheet, Click Here

Type I Binary Compounds contain Group I, II, and III metals with non-metal ions. Show the correct name for the following compounds.

Give correct names for these Type I binary compounds

KCl	MgO
K_2O	$AlCl_3$
CaO	BaS
$MgCl_2$	Al_2S_3
NaH	SrF_2
ZnS	MgI_2
RbBr	CaSe
Al_2O_3	$BaBr_2$
Na_3N	CsCl
Ca_2C	Mg_3P_2
KI	$CaCl_2$

Give correct formulas for these Type I binary compounds

calcium iodide	magnesium phosphide
calcium hydride	sodium chloride
magnesium fluoride	barium oxide
cadmium bromide	aluminum arsenide
sodium nitride	calcium sulfide
rubidium oxide	potassium selenide
barium nitride	sodium iodide
lithium chloride	lithium sulfide
silver sulfide	calcium carbide
aluminum nitride	sodium hydride
cesium fluoride	magnesium nitride

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Practice Problems (Answer using the Stock system.)

Write the correct name for:

1) CuS copper (II) sulfide

2) $PbBr_4$

3) Pb_3N_2

4) Fe_2O_3

5) FeI_2

6) Sn_3P_4

7) Cu_2S

8) $SnCl_2$

9) HgO

10) Hg_2F_2

Answers to Set One

11) $CuCl_2$

12) $CuBr$

13) PbO

14) Fe_2S_3

15) $PbCl_2$

16) SnO

17) Cu_2O

18) PbO_2

19) FeO

20) SnO_2

Answers to Set Two

21) Hg_2O

22) Hg_2I_2

23) $AuCl_3$

24) MnO

25) $CrCl_3$

26) CoO

27) Mn_2O_3

28) Co_2S_3

29) AuF

30) $CrBr_2$

Answers to Set Three

Practice Problems (Answer using the Stock system.)

Write the correct formula for:

Fe^{2+} $Cl^- Cl^-$

1) iron(II) chloride $FeCl_2$

2) copper(I) sulfide

3) lead(IV) iodide

4) tin(II) fluoride

5) mercury(I) bromide

6) tin(II) oxide

7) chromium(III) oxide

8) gold(I) iodide

9) manganese(II) nitride

10) cobalt(III) phosphide

Special words about mercury

Answers to Set One

11) iron(III) chloride

12) copper(II) sulfide

13) lead(II) bromide

14) tin(IV) iodide

15) mercury(II) fluoride

16) tin(IV) oxide

17) manganese(III) chloride

18) chromium(II) nitride

19) gold(III) oxide

20) cobalt(II) phosphide

Answers to Set Two

21) tin(II) sulfide

22) mercury(I) sulfide

23) gold(III) bromide

24) manganese(II) oxide

25) chromium(II) chloride

26) lead(IV) nitride

27) cobalt(III) oxide

28) copper(II) iodide

29) tin(IV) fluoride

30) iron(II) phosphide

Answers to Set Three

Inorganic Nomenclature Worksheet

1. ammonium sulfide
2. sodium nitrate
3. cupric bromide
4. aluminum sulfate
5. potassium nitrate
6. ferrous carbonate
7. lead(II) phosphate
8. diphosphorus pentoxide
9. cupric hydroxide
10. calcium fluoride
11. nickel nitrate
12. silver cyanide
13. ammonium sulfite
14. zinc sulfate
15. tin(II) chloride
16. antimony(III) chloride
17. silver sulfide
18. magnesium hydroxide
19. ammonium carbonate
20. nickel acetate
21. sodium chromate
22. chromic bisulfate
23. potassium permanganate
24. silver perchlorate
25. potassium phosphate
26. nickel iodide
27. mercurous oxide
28. lead(II) chlorite
29. hydrogen iodide
30. iron(II) bisulfite
31. magnesium nitrate
32. iron(III) chromate
33. iron(II) chromate
34. copper(II) hydroxide
35. cuprous carbonate
36. chromic acetate
37. calcium chlorate
38. ammonium oxide
39. aluminum perchlorate
40. zinc bicarbonate
41. sodium phosphate
42. silver hypochlorite
43. ammonium phosphate
44. ferrous chlorite
45. potassium sulfide
46. tin(IV) bromide
47. lithium chromate
48. magnesium bisulfate
49. ferrous phosphate
50. calcium sulfate dihydrate
51. aluminum acetate
52. calcium chloride dihydrate
53. barium chromate
54. cobaltic chloride
55. barium chloride dihydrate
56. sulfurous acid
57. potassium hydroxide
58. zinc bisulfite
59. sodium sulfite
60. cobaltous sulfate
61. ferric oxide
62. silver phosphate
63. sodium hypochlorite
64. ammonium chromate
65. barium carbonate
66. calcium iodide
67. cupric sulfate
68. cuprous chloride
69. ferric carbonate
70. zinc phosphate
71. sodium nitrite
72. silver oxide
73. nickel bromide
74. magnesium oxide
75. mercuric perchlorate
76. lithium hypochlorite
77. oxygen difluoride
78. cobalt(II) hydrogen sulfate
79. acetic acid (see #128)
80. barium hypochlorite
81. ammonium hydroxide
82. cobalt(II) iodide
83. chromium(II) bicarbonate
84. sodium hydroxide
85. silver nitrate
86. mercury(II) nitrate
87. hydrochloric acid
88. aluminum bisulfite
89. cobalt(III) hydrogen sulfate
90. ferric hydrogen carbonate
91. phosphorus pentabromide
92. nickel chloride hexahydrate
93. ammonium aluminum sulfate
94. iron(III) hydrogen carbonate
95. mercury(I) hydrogen phosphate
96. plumbic hydrogen carbonate
97. mercuric hydrogen carbonate
98. mercurous hydrogen phosphate
99. copper(II) sulfate pentahydrate
100. chromic dihydrogen phosphate
101. sodium acetate
102. zinc sulfite
103. silver bicarbonate
104. potassium iodide
105. lead(IV) chlorite
106. mercurous chromate
107. lead(II) nitrite
108. potassium dichromate
109. magnesium carbonate
110. calcium bicarbonate
111. aluminum hydroxide
112. cobaltous oxide
113. ferric permanganate
114. ammonium chromate
115. nitrogen triiodide
116. sulfur trioxide
117. ammonium dichromate
118. iron(III) bicarbonate
119. ammonium perchlorate
120. cobaltic acetate
121. cobaltous hydroxide
122. iron(II) chromate
123. ferric bromide
124. zinc sulfate
125. boron phosphide
126. ferric bicarbonate
127. cupric bisulfate
128. acetic acid (diff. from 79)
129. barium bisulfite
130. nitric acid
131. calcium sulfide
132. copper(I) bisulfate
133. zinc permanganate
134. ferric carbonate
135. hydrobromic acid
136. hydrocyanic acid
137. hydrogen cyanide
138. sulfuric acid
139. copper(I) sulfate
140. chromium(III) oxide
141. aluminum oxide
142. cobaltous bisulfate
143. barium carbonate
144. mercuric chloride
145. ferrous chromate
146. cupric hydroxide
147. perchloric acid
148. ferric phosphate
149. lead(II) oxide
150. cobaltic chlorate

If a formula can be named more than one correct way, then give all. For example, $Fe(HCO_3)_3$ can be named four different ways. They are iron(III) bicarbonate, iron(III) hydrogen carbonate, ferric bicarbonate, and ferric hydrogen carbonate. The second way would be best.

151. HgF_2
152. KCl
153. $KMnO_4$
154. $KClO_4$
155. ZnO
156. $Ba(OH)_2$
157. NH_4MnO_4
158. $CaCO_3$
159. $Ba_3(PO_4)_2$
160. Fe_2O_3
161. CoF_3
162. H_2CO_3
163. K_2SO_4
164. $NaHSO_4$
165. PF_5
166. Ag_2O
167. $Pb(ClO_2)_2$
168. Cu_2CrO_4
169. $Ca(ClO_4)_2$
170. $HC_2H_3O_2$
171. LiI
172. $Al_2(SO_4)_3$
173. HBr
174. $Hg_2(ClO)_2$
175. $CrCl_3$
176. H_3PO_4
177. $LiMnO_4$
178. $Fe_2(HPO_4)_3$
179. Na_2CO_3
180. $Mg(HCO_3)_2$
181. $Sn_3(PO_4)_4$
182. HNO_3
183. $ZnCl_2$
184. NaH_2PO_4
185. Hg_2Cl_2
186. $Fe(NO_2)_2$
187. $CuNH_4PO_4$
188. $NaMgPO_4$
189. $Sn(HCO_3)_4$
190. $NaMnO_4$
191. KF
192. $CaSO_4$
193. HCl
194. $SbCl_3$
195. As_4O_{10}
196. NH_4Cl
197. NH_4NO_3
198. IF_5
199. $NaHCO_3$
200. $Ba(OH)_2$
201. $FeCl_3$
202. HF
203. $PbSO_4$
204. KrF_2
205. NaCl
206. P_2O_5
207. $AlBr_3$
208. Ba(NO3)2
209. BrF_5
210. P_4O_6
211. $FePO_4$
212. Hg_2SO_4
213. KH
214. $Co_2(SO_3)_3$
215. N_2O_3
216. N_2O
217. $Fe(NO_2)_3$
218. $Sn_3(PO_4)_2$
219. H_2O_2
220. $Be(OH)_2$
221. $Sr(HCO_3)_2$
222. $Sr(OH)_2$
223. P_4S_{10}
224. Hg_2O_2
225. $Hg_2(OH)_2$
226. NH_4F
227. XeF_6
228. $K_2Cr_2O_7$
229. NH_4OH
230. $(NH_4)_3PO_4$
231. N_2O_5
232. $SnCrO_4$
233. Al_2O_3
234. $CuCO_3$
235. ClO_2
236. CuS
237. MgI_2
238. $CoCl_3$
239. NaCN
240. Hg_3N_2
241. BrO_3
242. SiF_4
243. Sb_2O_5
244. LiH
245. SF_6
246. SnI_4
247. KOH
248. K_2O
249. H_2SO_4
250. lithium oxide
251. xenon trioxide
252. gold(I) chloride
253. gold(I) cyanide
254. sodium oxide
255. potassium chlorate
256. mercurous nitrite
257. nickel(II) fluoride
258. potassium cyanide
259. manganese dioxide
260. osmium tetrachloride
261. rubidium carbonate
262. trisulfur dinitride
263. nitrogen trichloride
264. vanadium(V) oxide
265. selenium tetrafluoride
266. stannous hypochlorite
267. tellurium hexafluoride
268. lanthanum(III) phosphate
269. sodium hydrogen sulfate monohydrate
270. chromium(III) hydrogen phosphate
271. NaOH
272. NI_3
273. ClF_3
274. P_3N_5
275. UF_6
276. NBr_3
277. Cl_2O_3
278. CsF
279. CO
280. Cu_2S
281. $KHCO_3$
282. $SbCl_5$
283. CO2
284. HgO
285. PCl_3
286. PBr_5
287. IF_7
288. Cl_2O
289. CCl_4
290. XeF_4
291. $Hg(OH)_2$
292. CaH_2
293. As_4O_6
294. BN
295. CoS
296. N_2O_4
297. H_3BO_3
298. I_2O_5
299. PbO
300. NaBr
301. Li_2CrO_4
302. ICl
303. SO_3
304. Hg_2O
305. NaH
306. OsO_4
307. XeF_2
308. $Ca(C_2H_3O_2)_2$
309. $NaC_2H_3O_2$
310. $Al(OH)_3$
311. Li_2HPO_4
312. $Ca(NO_3)_2$
313. $Ni(ClO_4)_2$
314. $Mn(NO_3)_2$
315. $Au(H_2PO_4)_3$
316. $Al(C_2H_3O_2)_3$
317. $KAl(SO_4)_2$
318. $Al(MnO_4)_3$
319. $(NH_4)_3PO_4$
320. $CoSO_4 \cdot 6\ H_2O$
321. $MgCl_2 \cdot 6\ H_2O$
322. $CuSO_4 \cdot 5\ H_2O$
323. $NaHS \cdot H_2O$
324. $MgSO_4 \cdot 9\ H_2O$
325. $NaH_2PO_4 \cdot 9\ H_2O$
326. $Na_2CrO_4 \cdot 4\ H_2O$
327. $Pb(CH_3COO)_2 \cdot 3\ H_2O$
328. $Be(ClO_4)_2$
329. $(NH_4)_2Cr_2O_7$
330. $Ba(BrO_3)_2$
331. $AuCl_3$
332. Al_2S_3
333. Na_2HPO_4
334. $Mg_3(PO_4)_2$
335. $CuSO_3$
336. $KAl(C_2O_4)_2$
337. $Cr_2(SO_3)_3$
338. HClO
339. $HClO_2$
340. $HClO_3$
341. $HClO_4$
342. $Mn(IO_3)_2$
343. $KBrO_3$
344. $Fe(ClO_4)_3$
345. $Cr(OH)_3$

Acid Nomenclature Worksheet Name _____

Write the formula for each of the acids listed below:

1. Nitric acid	
2. Chloric acid	
3. Acetic acid	
4. Hydrobromic acid	
5. Sulfurous acid	
6. Chlorous acid	
7. Hydrochloric acid	
8. Phosphoric acid	
9. Nitrous acid	
10. Hydrofluoric acid	
11. Perchloric acid	
12. Hydroiodic acid	
13. Phosphorous acid	
14. Carbonic acid	
15. Sulfuric acid	

Name each of the following acids:

16. $HClO_4$	
17. H_3PO_4	
18. $HCl_{(aq)}$	
19. H_2SO_4	
20. HNO_2	
21. $HI_{(aq)}$	
22. $HC_2H_3O_2$	
23. $HF_{(aq)}$	
24. H_3PO_3	
25. $HClO_3$	
26. H_2CO_3	
27. H_2SO_3	
28. $HClO_2$	
29. HNO_3	
30. $HBr_{(aq)}$	