

Name _____

Date _____

GRCI CHEMISTRY

Nomenclature
Molecular Elements
and
Molecular Compounds

	Formula	Description for interest only	Name
1.	CCl ₄	toxic cleaning fluid	
2.		78% of air	nitrogen
3.		21% of air	oxygen
4.	CO ₂	0.035% of air	
5.	NO	in automobile exhaust	
6.	NO ₂	Los Angeles type smog	
7.		London type smog	sulphur dioxide
8.	SO ₃	air pollutant - makes sulphuric acid	
9.		colourless, odourless poison	carbon monoxide
10.		in upper atmosphere	ozone
11.		grain alcohol, ethyl alcohol	ethanol
12.		table sugar	sucrose
13.		yellow solid in group VI	sulphur
14.	P ₄ O ₁₀	oxides formed by combustion of the element phosphorus	
15.	P ₄ O ₈		
16.		chlorination of water	chlorine dioxide
17.		methyl alcohol, methyl hydrate	methanol
18.		spontaneously combusts in air	phosphorus
19.		a cleaner when dissolved in water	ammonia
20.	CH ₄	natural gas	
21.	HCl	a gas - makes hydrochloric acid	
22.		laughing gas	dinitrogen oxide
23.		dissolves in alcohol	iodine
24.	H ₂ O	the most common solvent	

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Nomenclature
Molecular Compounds

	Molecular Formula	Name
1.	Si ₂ Br ₆	
2.		tetraphosphorus hexaoxide
3.		selenium disulphide
4.	BrCl	
5.	As ₂ Se ₅	
6.	N ₂ H ₅	
7.		iodine heptafluoride
8.		dinitrogen tetraoxide
9.	P ₄ S ₁₀	
10.	S ₂ O ₇	
11.		diboron nonaoxide
12.		selenium dicarbide
13.		phosphorus trifluoride
14.	Br ₃ O ₈	
15.	As ₃ P ₆	
16.	B ₂ S ₅	
17.	CS ₂	
18.		phosphorus pentafluoride
19.		selenium tetrafluoride
20.	B ₄ H ₉	

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Nomenclature

Binary Ionic Compounds

	Formula	Description for interest only	Name
1	CaCl ₂	on roads to keep down dust	
2		dietary supplement for iodine	potassium iodide
3	MgO	in fire bricks	
4		antiperspirant	aluminum chloride
5	Na ₂ S	used to dehair hides	
6	Al ₂ O ₃	aluminum ore (bauxite)	
7		black powder	lithium nitride
8	CaO	quicklime	
9		heart stimulant	barium chloride
10		table salt	sodium chloride
11	ZnO	UV blocker	
12		photographic emulsion	silver bromide
13		ignites on contact with air	magnesium hydride
14	MgCl ₂	11% of salt in sea water	
15		in soldering paste	zinc chloride
16	Ag ₂ S	tarnish on silverware	
17		potash fertilizer	potassium chloride
18	CaF ₂	used to fluoridate drinking water	
19		zinc ore	zinc sulphide
20		white solid	gallium fluoride
21		phosphorescent dye	zinc selenide
22	CdSe	in photocells	
23	BaF ₂	in embalming	
24		reacts with water to release ammonia	beryllium nitride

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Nomenclature

Binary Ionic Compounds

Multiple Valence

	Formula	Description for interest only	Name
1	Cu ₂ S	copper ore	
2		uranium ore	uranium(IV) oxide
3		lead ore (galena)	lead(IV) sulphide
4	SnO ₂	tin ore (cassiterite)	
5		manganese ore (pyrolusite)	manganese(IV) oxide
6	Sb ₂ S ₃	antimony ore (stibnite)	
7		iron ore (hematite)	iron(III) oxide
8	HgS	mercury ore (cinnabar)	
9	MoS ₃	molybdenum ore (molybdenite)	
10		manufacture of artificial pearls	titanium(IV) chloride
11	FeS	also in chalcopyrite	
12		electrode in car battery	lead(IV) oxide
13	HgO	used to make oxygen in labs	
14	V ₂ O ₅	pigment for yellow glass	
15		toothpaste additive	tin(II) fluoride
16		a green paint pigment	chromium(III) oxide
17	TiO ₂	a white paint pigment	
18	AuCl ₃	gives colour in ruby glass	
19		separation of uranium isotopes	uranium(VI) fluoride
20	NiBr ₂	forms a green coloured solution	
21		invisible ink	cobalt(II) chloride
22		purifying natural gas	manganese(II) chloride
23	PtO ₂	catalyst for hydrogenating oils	
24	Sb ₂ S ₅	in fireworks	

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Nomenclature
Complex Ionic

	Name	Formula
1	magnesium nitrate	
2		$\text{Cr}(\text{IO}_3)_3$
3		$\text{Ca}_3(\text{BO}_3)_2$
4	barium iodate	
5	aluminum acetate	
6		GaPO_4
7	iron(III) sulphate	
8		ZnCrO_4
9	lithium carbonate	
10		$\text{Mn}(\text{CO}_3)_2$
11	gold(I) borate	
12	tin(IV) chlorate	
13		CuSO_4
14		$\text{V}(\text{CH}_3\text{COO})_5$
15	lead(IV) phosphate	
16	scandium bromate	
17		NiBO_3
18		$\text{Al}(\text{NO}_3)_3$
19	mercury(I) sulphate	
20	silver phosphate	

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Nomenclature
Special Complex Ionic

	Name	Formula
1	zinc benzoate	
2		$\text{Sb}(\text{MnO}_4)_3$
3		$\text{Ca}_5(\text{P}_3\text{O}_{10})_2$
4	strontium cyanide	
5	ammonium acetate	
6		$\text{Ga}_2(\text{OOC}\text{COO})_3$
7	chromium(III) hydroxide	
8		BeB_4O_7
9	cesium silicate	
10		$\text{Mn}(\text{Cr}_2\text{O}_7)_2$
11	mercury(I) stearate	
12	titanium(IV) thiosulphate	
13		CuSiO_3
14		$\text{Sb}(\text{MnO}_4)_5$
15	sodium glutamate	
16	scandium thiocyanate	
17		NiCr_2O_7
18		$\text{In}(\text{CN})_3$
19	ammonium sulphate	
20	cadmium benzoate	

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Nomenclature
Ionic - Derived Complex

	Name	Formula
1	potassium sulphite	
2		Fe(IO) ₃
3		Be ₃ (BO ₄) ₂
4	cadmium periodate	
5	aluminum hyposulphite	
6		Mg(NO ₄) ₂
7	vanadium(III) borite	
8		ZnCrO ₂
9	lithium percarbonate	
10		Mn(IO ₂) ₄
11	copper(I) persulphate	
12	manganese(IV) hypoborite	
13		NiCrO ₃
14		Sb(BrO ₄) ₅
15	tin(IV) perphosphate	
16	scandium chlorite	
17		Pb ₃ (PO ₂) ₄
18		Ga(NO) ₃
19	mercury(I) perphosphate	
20	silver hypochromite	

MORE COMPLEX IONS

NAME	FORMULA	FORMULA	NAME
1. ammonium nitrite		26. Na_2SO_4	
2. magnesium persulphate		27. KOH	
3. aluminum carbonate		28. KNO_2	
4. zinc hydroxide		29. Hg_2CO_3	
5. ammonium sulphite		30. NH_4ClO	
6. iron (II) hypophosphite		31. $\text{Ca}(\text{OH})_2$	
7. copper (II) nitrate		32. $\text{Al}_2(\text{CO}_3)_3$	
8. lead (II) carbonate		33. NaClO_4	
9. silver hypobromite		34. $(\text{NH}_4)_2\text{SO}_3$	
10. potassium phosphite		35. MnCO_3	
11. sodium acetate		36. PbSO_4	
12. aluminum hydroxide		37. $\text{Ca}(\text{NO}_2)_2$	
13. manganese (IV) sulphite		38. Rb_3PO_5	
14. chromium (II) periodate		39. LiBrO_2	
15. potassium hypochlorite		40. $\text{Mg}(\text{OH})_2$	
16. iron (III) hydroxide		41. $(\text{NH}_4)_3\text{PO}_3$	
17. mercury (I) carbonate		42. KNO_2	
18. strontium bromite		43. CaSO_3	
19. barium nitrite		44. $\text{Cr}(\text{BrO}_2)_2$	
20. zinc carbonate		45. MgSO_5	
21. silver persulphate		46. $\text{Zn}(\text{NO}_2)_2$	
22. copper (I) hydroxide		47. $\text{Ca}_3(\text{PO}_3)_2$	
23. magnesium carbonate		48. CsIO_4	
24. barium perbromate		49. BaCO_3	
25. iron (II) nitrate		50. $\text{Fe}(\text{OH})_3$	

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Nomenclature

Hydrates

A number of ionic compounds call "hydrates" produce water when they decompose upon heating. When the formula of a hydrated compound is written, the number of water molecules is also included. See the example below. The name or formula tells how many water molecules join with one unit of the ionic compound.

	Formula	Common use	Name
e.g.	$\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$	copper plating, fungicide	copper(II) sulphate pentahydrate
1	$\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$	Epsom salts, matches	
2		washing soda	sodium carbonate decahydrate
3	$\text{MgCl}_2 \cdot 6\text{H}_2\text{O}$	fireproofing, disinfectants	
4		tanning leather	barium chloride dihydrate
5	$\text{Cd}(\text{NO}_3)_2 \cdot 4\text{H}_2\text{O}$	photographic emulsions	
6	$\text{ZnCl}_2 \cdot 6\text{H}_2\text{O}$	embalming, fireproofing	
7		clarifying glue	zinc sulphate heptahydrate
8		soldering aluminum	lithium chloride tetrahydrate
9	$\text{Na}_3\text{PO}_4 \cdot 5\text{H}_2\text{O}$	white solid	
10		foam stabilizer in beer	cobalt(II) chloride hexahydrate
11	$\text{AlCl}_3 \cdot 6\text{H}_2\text{O}$	antiperspirant	
12	$\text{CaCl}_2 \cdot 2\text{H}_2\text{O}$	de-icer used on highways	
13		manufacture of glass	barium hydroxide octahydrate
14		absorbs ammonia gas	nickel(II) chloride hexahydrate
15	$\text{Na}_2\text{SO}_4 \cdot 10\text{H}_2\text{O}$	Glauber's salt (medicine)	
16	$\text{TiBr}_3 \cdot 6\text{H}_2\text{O}$	red-violet solid	
17	$\text{CrSO}_4 \cdot 7\text{H}_2\text{O}$	absorption of O_2 from gases	
18		mordant in dyeing	aluminum oxalate tetrahydrate
19		soaking solution in making lantern mantels	thorium nitrate tetrahydrate
20	$\text{Fe}(\text{NO}_3)_3 \cdot 9\text{H}_2\text{O}$	pale violet solid	
21		corrosion inhibitor	barium hydroxide octahydrate

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GRCI CHEMISTRY

Binary and Oxy Acids
Part 1

Please complete the following table using the method you have learned in class.

ENJOY!!!

	Oxy or Binary	Chemical Formula	Common Name or Use	Name of Acid
1		$\text{H}_3\text{BO}_3(\text{aq})$	boracic acid, eye wash	
2			muriatic acid, cleaning bricks, acid in stomach	hydrochloric acid
3		$\text{CH}_3\text{COOH}(\text{aq})$	vinegar, used in pickling	
4		$\text{H}_2\text{SO}_4(\text{aq})$	oil of vitriol, battery acid, most used chemical, acid rain	
5			in rust removers, in rhubarb leaves, very toxic	oxalic acid
6			"manu" of fertilizers, cleaning metals for paint	phosphoric acid
7			found in fats, "manu" of soap	stearic acid
8		$\text{H}_2\text{CO}_3(\text{aq})$	carbonated beverages	
9			"manu" of fertilizers	nitric acid
10		$\text{H}_2\text{S}(\text{aq})$	from sour gas wells, in rotten eggs	
11			used to etch patterns in glass	hydrofluoric acid
12			used in chrome plating iron, a yellow solution	chromic acid
13	neither	$\text{HCN}(\text{aq})$	poisonous, very toxic	
14			analytical chemical oxidizing agent	bromic acid

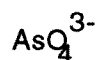
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Binary and Oxy Acids Part 2

The following will give you more practice with naming acids. Listed below are some complex ions which you have never seen before. However, the same rules apply to these ions as with the other complex ions you have used. Please complete the table below. ENJOY!!



arsenate

 COOH^- formate

	Oxy or Binary	Chemical Formula	Common Name or Use	Name of Acid
1		$\text{H}_2\text{SO}_3(\text{aq})$	found in acid rain	
2			separating sodium from potassium	perchloric acid
3		$\text{HI}(\text{aq})$	"manu" of iodine substituted organic compounds	
4		$\text{H}_3\text{PO}_2(\text{aq})$	analytical chemical	
5			sting of ants tanning, kettle cleaner	formic acid
6			analytical chemical	hydroselenic acid
7		$\text{HC}_6\text{H}_5\text{COO}(\text{aq})$	antifungal agent preserving food	
8		$\text{H}_2\text{SO}_5(\text{aq})$	analytical chemical	
9			"manu" of organic compounds	periodic acid
10			sedative analytical chemical	hydrobromic acid
11		$\text{H}_2\text{SiO}_3(\text{aq})$	"manu" of silica gel insecticide	
12			found in photochemical smog	nitrous acid
13			analytical chemical	hypoiodous
14		$\text{HClO}(\text{aq})$	found in bleach	
15			chemist cupboard	perboric acid
16			?	hypoarsenous acid

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GRCI CHEMISTRY

Nomenclature
Derived Oxy Acids

	Name	Formula
1	nitrous acid	
2		$\text{H}_2\text{CrO}_5(\text{aq})$
3		H_3PO_2
4	perchloric acid	
5	hydrogen hyposulphite	
6		HBrO_4
7	perphosphoric acid	
8		$\text{HIO}(\text{aq})$
9	percarbonic acid	
10		H_2CrO_3
11	hydrogen hyponitrite	
12	perchromic acid	
13		$\text{H}_3\text{BO}_4(\text{aq})$
14		$\text{H}_3\text{PO}_3(\text{aq})$
15	bromous acid	
16	hypochlorous acid	
17		H_2SO_2
18		$\text{HIO}_4(\text{aq})$
19	hypoborous acid	
20	hydrogen bromite	

II. DERIVATIVE OXY-ACIDS

Write Formulas		Write Names	
1.	nitric acid	26.	H_2CO_3
2.	nitrous acid	27.	H_2CO_4
3.	persulfuric acid	28.	HClO
4.	sulfuric acid	29.	$HClO_4$
5.	pernitric acid	30.	H_2CO
6.	sulfurous acid	31.	H_3PO_2
7.	hyponitrous acid	32.	HFO_4
8.	carbonous acid	33.	$HClO_2$
9.	hypoiodous acid	34.	H_3PO_4
10.	hyposulfurous acid	35.	$HBrO_4$
11.	perphosphoric acid	36.	HFO_3
12.	bromic acid	37.	HIO_4
13.	bromous acid	38.	HFO_2
14.	iodic acid	39.	HFO
15.	hypobromous acid	40.	HIO_2
16.	carbonic acid	41.	HNO_3
17.	hypochlorous acid	42.	H_2SO_5
18.	percarbonic acid	43.	HNO_4
19.	perfluoric acid	44.	HNC
20.	phosphoric acid	45.	HIO
21.	fluoric acid	46.	H_3PO_5
22.	hypofluorous acid	47.	$HBrO_3$
23.	iodous acid	48.	HBrO
24.	periodic acid	49.	H_2SO_3
25.	percarbonic acid	50.	H_3PO_3

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SCHNomenclature
Ionic - Acid Salts

	Name	Formula
1	copper(II) hydrogen sulphate	
2	iron(II) dihydrogen phosphate	
3	rubidium hydrogen carbonate	
4	gallium dihydrogen borate	
5	ammonium hydrogen borate	
6	indium hydrogen sulphate	
7	tungsten(VI) hydrogen phosphate	
8	nickel(II) hydrogen chromate	
9	lithium dihydrogen phosphate	
10	vanadium(III) hydrogen borate	
11	cobalt(II) hydrogen sulphate	
12		LiH_2BO_3
13		CdHPO_4
14		$\text{Sb}(\text{H}_2\text{PO}_4)_5$
15		$\text{Pt}(\text{HCrO}_4)_2$
16		$\text{Mn}(\text{HSO}_4)_4$
17		$\text{Hg}(\text{HBO}_3)$
18		$\text{Po}(\text{HCO}_3)_4$
19		K_2HPO_4
20		$\text{Sr}(\text{HCO}_3)_2$
21		$\text{Cu}(\text{H}_2\text{BO}_3)_2$
22		$\text{Bi}(\text{H}_2\text{PO}_4)_3$

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Ionic - Acid Salts - Derived Oxy

	Name	Formula
1	magnesium hydrogen sulphite	
2	tin(II) dihydrogen perphosphate	
3	silver hydrogen carbonite	
4	indium dihydrogen hypoborite	
5	ammonium hydrogen borite	
6	bismuth(III) hydrogen persulphate	
7	molybdenum(VI) hydrogen phosphite	
8	cobalt(II) hydrogen perchromate	
9	sodium dihydrogen hypophosphite	
10	gold(III) hydrogen hypoborite	
11	mercury(II) hydrogen sulphite	
12		AgH_2BO_4
13		CaHPO_3
14		$\text{Bi}(\text{H}_2\text{PO}_5)_5$
15		$\text{Co}(\text{HCrO}_5)_2$
16		$\text{Ti}(\text{HSO}_2)_4$
17		CuHBO
18		$\text{Mn}(\text{HCrO}_3)_4$
19		Ag_2HPO_2
20		$\text{Be}(\text{HCrO}_2)_2$
21		$\text{Sn}(\text{H}_2\text{BO}_2)_2$
22		$\text{Sc}(\text{H}_2\text{PO}_5)_3$

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GRCI CHEMISTRY
SCHNomenclature
Complex Ionic Mix

	Name	Formula
1	sodium nitrate	
2		$\text{Cr}(\text{IO}_3)_3$
3		$\text{Mg}_3(\text{BO}_3)_2$
4	barium iodate	
5	aluminum sulphate	
6		$\text{Ca}(\text{H}_2\text{PO}_4)_2$
7	iron(III)hydroxide	
8		ZnCrO_4
9	lithium carbonate	
10		$\text{Mn}(\text{CN})_4$
11	gold(I)stearate	
12	tin(IV)dihydrogen borate	
13		$\text{CuOOC}(\text{COO})$
14		$\text{V}(\text{OH})_5$
15	lead(IV) hydrogen phosphate	
16	scandium bromate	
17		NiBO_3
18		$\text{Al}(\text{HS})_3$
19	mercury(I) permanganate	
20	silver sulphate	

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GRCI CHEMISTRY
SCHNomenclature
Complex Ionic Mix 2

	Name	Formula
1	lead(II) hydrogen sulphate	
2	platinum(II) permanganate	
3	silver phosphate	
4	scandium dihydrogen borate	
5	ammonium carbonate	
6	aluminum stearate	
7	uranium(VI) iodate	
8	tin(II) acetate	
9	cesium dihydrogen phosphate	
10	nickel(III) hydroxide	
11	lead(II) cyanide	
12		NH_4BrO_3
13		CoHPO_4
14		$\text{V}(\text{NO}_3)_5$
15		$\text{Fe}(\text{OH})_2$
16		$\text{Pt}(\text{SO}_4)_2$
17		$\text{Ni}_3(\text{BO}_3)_2$
18		$\text{Mn}(\text{CH}_3\text{COO})_4$
19		NH_4ClO_3
20		$\text{Be}(\text{HCO}_3)_2$
21		$\text{Zn}(\text{H}_2\text{BO}_3)_2$
22		$\text{Au}(\text{C}_{17}\text{H}_{35}\text{COO})_3$

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GRCI CHEMISTRY
SCHNomenclature
Review of All Types

	i, m or a	Name	Formula
1		sodium chloride	
2			CaCO ₃
3		sodium hydrogen sulphate	
4		sodium hydroxide	
5			CaO
6			MgSO ₄ •7H ₂ O
7		carbon dioxide	
8		acetic acid	
9		calcium iodate	
10			Na ₂ SiO ₃
11			Ca(HCO ₃) ₂
12		magnesium hydroxide	
13		potassium chloride	
14		Sodium hypochlorite	
15			K ₂ CrO ₄
16			HCl(aq)
17		potassium nitrate	
18			CuSO ₄ •5H ₂ O
19			Mg
20		iron	
21		magnesium oxide	
22			KI
23			H ₂ SO ₃ (aq)
24		silicon carbide	
25			Ca(OH) ₂
26		cesium cyanide	
27		mercury	
28		sulphur	
29		cobalt(III) telluride	

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Nomenclature Review of All Types.2

	i, m or a	Name	Formula
1		carbon tetrabromide	
2			NH_4Cl
3			$\text{Li}_2\text{Cr}_2\text{O}_7$
4			SiO_2
5		tin	
6		perboric acid	
7			NH_4NO_3
8		calcium phosphide	
9			NaBrO_2
10			KMnO_4
11		ammonium phosphite	
12		tin(II) hyponitrite	
13			NaHSO_3
14			CH_3OH
15		methane	
16		diphosphorus pentoxide	
17		lead(IV) perchlorate	
18			$\text{Na}_2\text{SO}_4 \cdot 10\text{H}_2\text{O}$
19			W
20		dinitrogen oxide	
21		scandium sulphate	
22			$\text{Pt}(\text{SiO}_3)_2$
23			$\text{H}_2\text{Se}_{(\text{aq})}$
24		ammonia	
25			MnO_2
26		carbon disulphide	
27			O_3
28		sucrose	
29			$(\text{NH}_4)_2\text{HPO}_3$