

Naming Ionic Compounds HW #1 ANSWERS

1. Define Isoelectric: Having and electron configuration similar to (a noble gas).

Iso means the same, electric refers to the electron configuration. All ions are isoelectric to a noble gas.

This is always true.

2. Define mono-atomic ion:

Mono is one, ion is a positively or negatively charged particle. These are single ions, when an metal atom from the periodic table loses electrons to become a cation, or a nonmetal gains electrons to become an anion. There are polyatomic ions, listed on table E of your reference tables. You don't need to know them yet.

atom	ground state e ⁻ configuration	ion e ⁻ configuration (isoelectric to?)	ion symbol
Mg	2-8-2	2-8 (Ne)	Mg ⁺²
Al	2-8-3	2-8 (Ne)	Al ⁺³
Cl	2-8-7	2-8-8 (Ar)	Cl ⁻¹
F	2-7	2-8 (Ne)	F ⁻¹
Sr	2-8-18-8-2	2-8-18-8 (Kr)	Sr ⁺²
S	2-8-6	2-8-8 (Ar)	S ⁻²
N	2-5	2-8 (Ne)	N ⁻³
Li	2-1	2 (He)	Li ⁺¹

Naming Ionic Compounds HW #2 answers

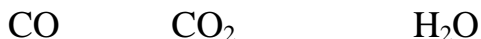
Metal	Non-metal	Cation	Anion	Neutral compound formula	Compound name
Ba	S	Ba ⁺²	S ⁻²	BaS	Barium sulfide
Rb	N	Rb ⁺¹	N ⁻³	Rb ₃ N	Rubidium nitride
Li	O	Li ⁺¹	O ⁻²	Li ₂ O	Lithium oxide
Al	F	Al ⁺³	F ⁻¹	AlF ₃	Aluminum fluoride
Sr	S	Sr ⁺²	S ⁻²	SrS	Strontium sulfide
Na	Br	Na ⁺¹	Br ⁻¹	NaBr	Sodium bromide
Ca	Cl	Ca ⁺²	Cl ⁻¹	CaCl ₂	Calcium chloride
Cs	P	Cs ⁺¹	P ⁻³	Cs ₃ P	Cesium phosphide
Be	O	Be ⁺²	O ⁻²	BeO	Beryllium oxide
Mg	I	Mg ⁺²	I ⁻¹	MgI ₂	Magnesium iodide
K	O	K ⁺¹	O ⁻²	K ₂ O	Potassium oxide
Na	P	Na ⁺¹	P ⁻³	Na ₃ P	Sodium phosphide

Compounds HW #3 Molecular Compounds name: **ANSWERS**

Write the prefixes for one to ten in the boxes below. The first box is done as an example.

1	2	3	4	5	6	7	8	9	10
mono	di	tri	tetra	penta	hexa	hepta	octa	nona	deca

The rules to naming molecular compounds are summed up using three common substances. Their formulas are:



N ₂ O ₅	dinitrogen pentoxide	hydrogenmono iodide	HI
SO ₃	sulfur trioxide	silicon difluoride	SiF ₂
PCl ₃	phosphorous trichloride	dinitrogen monoxide	N ₂ O
NF ₄	nitrogen tetrafluoride	fluorine monobromide	FBr
PBr ₃	phosphorous tribromide	arsenic trichloride	AsCl ₃
CCl ₄	carbon tetrachloride	sulfur dioxide	SO ₂
H ₂ S	dihydrogen monosulfide	phosphorous pentabromide	PBr ₅

Compound HW #4 transitional metal compounds name: **ANSWERS**

Name these compounds from their formulas on the left, then write the proper formula for the compounds named on the right side.

CuSO ₄	copper (II) sulfate	tin (IV) fluoride	SnF ₄
Ni ₂ O ₃	nickel (III) oxide	niobium (V) phosphide	Nb ₃ P ₅
PbO ₂	lead (IV) oxide	bismuth (III) chloride	BiCl ₃ J
PbO	lead (II) oxide	iron (III) oxide	Fe ₂ O ₃
TiCl ₄	titanium (IV) chloride	iron (II) oxide	FeO
CrO ₃	chromium (VI) oxide	gold (I) sulfide	Au ₂ S
MnS ₂	manganese (IV) sulfide	gold (III) selenide	Au ₂ Se ₃

Naming Compounds Homework Special

ANSWERS

cations	anions	formulas
Fe^{+2}	NO_3^{-1}	$\text{Fe}(\text{NO}_3)_2$
Fe^{+3}	OH^{-1}	$\text{Fe}(\text{OH})_3$
Au^{+1}	OH^{-1}	AuOH
Ir^{+4}	NO_3^{-1}	$\text{Ir}(\text{NO}_3)_4$
Li^{+1}	P^{-3}	Li_3P
Al^{+3}	SO_4^{-2}	$\text{Al}_2(\text{SO}_4)_3$
NH_4^{+1}	O^{-2}	$(\text{NH}_4)_2\text{O}$
NH_4^{+1}	N^{-3}	$(\text{NH}_4)_3\text{N}$
formulas	STOCK NAMES	
N_2S_3	dinitrogen trisulfide	
CBr_4	carbon tetrabromide	
HI	hydrogen monoiodide	
SiF_4	silicon tetrafluoride	
BN	boron mononitride	
CSe_2	carbon diselenide	

cations	anions	formulas
Tin II	chlorate	$\text{Sn}(\text{ClO}_3)_2$
Tin IV	chlorite	$\text{Sn}(\text{ClO}_2)_4$
palladium IV	sulfite	$\text{Pd}(\text{SO}_3)_2$
tungsten	oxide	WO_3
Lead II	permanganate	$\text{Pb}(\text{MnO}_4)_2$
Lead IV	carbonate	$\text{Pb}(\text{CO}_3)_2$
Osmium III	carbonate	$\text{Os}_2(\text{CO}_3)_3$
Osmium IV	permanganate	$\text{Os}(\text{MnO}_4)_4$
formulas	STOCK NAMES	
AsCl_3	arsenic trichloride	
SF_4	sulfur tetrafluoride	
PI_5	phosphorous pentaiodide	
B_2O_3	diboron trioxide	
SiO_2	silicon dioxide	
SeBr_6	selenium hexabromide	

Define Isoelectric:

	atom	ground state electron configuration	possible excited state electron configuration	electron configuration as an ION	What noble gas is this ion isoelectric to, if any?
1	Mg	2-8-2	2-8-1-1 2-7-3	2-8	neon
2	S	2-8-6	2-8-5-1 2-7-7	2-8-8	argon
3	F	2-7	2-6-1 1-8	2-8	neon
4	K	2-8-8-1	2-8-7-2 2-8-7-1-1	2-8-8	argon
5	Rh	2-8-18-16-1	2-8-18-15-2 2-8-18-15-1-1	X	not isoelectric

	Give an example of each Combine a...	cation	anion	formula	name
6	monoatomic cation + monoatomic anion	Na^{+1}	Cl^{-1}	NaCl	sodium chloride
7	monoatomic cation + polyatomic anion	Ca^{+2}	NO_3^{-1}	$\text{Ca}(\text{NO}_3)_2$	calcium nitrate
8	polyatomic cation + monoatomic anion	NH_4^{+1}	N^{-3}	$(\text{NH}_4)_3\text{N}$	ammonium nitride
9	polyatomic cation + polyatomic anion	NH_4^{+1}	$\text{Cr}_2\text{O}_7^{-2}$	$(\text{NH}_4)_2\text{Cr}_2\text{O}_7$	ammonium dichromate
10	transitional metal cation + monoatomic anion (with Roman Numeral)	Pb^{+4}	S^{-2}	PbS_2	Lead IV sulfide
11	transitional metal cation + polyatomic anion (with Roman Numeral)	Sb^{+5}	$\text{S}_2\text{O}_3^{-2}$	$\text{Sb}_2(\text{S}_2\text{O}_3)_5$	antimony V thiosulfate
12	silicon and fluorine into a molecular compound (your choice which one)	Si^{+2} with F^{-1} Si^{+4} with F^{-1}		SiF_2 is silicon difluoride SiF_4 is silicon tetrafluoride	