

Name: _____

THE MONATOMIC IONS!

1. What is the formula for silver? Ag^+
2. What is the formula for cadmium? Cd^{2+}
3. What is the formula for manganese (II)? Mn^{2+}
4. What is the formula for nickel (II)? Ni^{2+}
5. What is the formula for chromous? Cr^{2+}
6. What is the formula for zinc? Zn^{2+}
7. What is the formula for cobaltous? Co^{2+}
8. What is the formula for cuprous? Cu^+
9. What is the formula for ferrous? Fe^{2+}
10. What is the formula for mercurous? Hg_2^{2+}
11. What is the formula for stannous? Sn^{2+}
12. What is the formula for plumbous? Pb^{2+}
13. What is the formula for chromic? Cr^{3+}
14. What is the formula for cobaltic? Co^{3+}
15. What is the formula for cupric? Cu^{2+}
16. What is the formula for ferric? Fe^{3+}
17. What is the formula for mercuric? Hg^{2+}
18. What is the formula for plumbic? Pb^{4+}
19. What is the formula for stannic? Sn^{4+}
20. What is the formula for chromium (III)? Cr^{3+}
21. What is the formula for cobalt (III)? Co^{3+}
22. What is the formula for cobalt (II)? Co^{2+}
23. What is the formula for chromium (II)? Cr^{2+}
24. What is the formula for copper (II)? Cu^{2+}
25. What is the formula for tin (IV)? Sn^{4+}
26. What is the formula for lead (IV)? Pb^{4+}
27. What is the formula for iron (III)? Fe^{3+}
28. What is the formula for mercury (I)? Hg_2^{2+}
29. What is the formula for lead (II)? Pb^{2+}
30. What is the formula for mercury (II)? Hg^{2+}
31. What is the formula for iron (II)? Fe^{2+}
32. What is the formula for copper (I)? Cu^+
33. What is the formula for tin (II)? Sn^{2+}
34. What is the formula for fluoride? F^-
35. What is the formula for chloride? Cl^-
36. What is the formula for hydride? H^-
37. What is the formula for bromide? Br^-
38. What is the formula for iodide? I^-
39. What is the formula for nitride? N^{3-}
40. What is the formula for oxide? O^{2-}
41. What is the formula for phosphide? P^{3-}

THE MONATOMIC IONS & PREFIXES! (Page 4)

1. What is the name for Sn^{4+} ? **Stannic, Tin (IV)**
2. What is the name for Zn^{2+} ? **Zinc**
3. What is the name for Co^{3+} ? **Cobaltic, Cobalt (III)**
4. What is the name for Fe^{3+} ? **Ferric, Iron (III)**
5. What is the name for Ni^{2+} ? **Nickel (II)**
6. What is the name for Hg_2^{2+} ? **Mercurous, Mercury (I)**
7. What is the name for Sn^{2+} ? **Stannous, Tin (II)**
8. What is the name for Co^{2+} ? **Cobaltous, Cobalt (II)**
9. What is the name for Cd^{2+} ? **Cadmium**
10. What is the name for Pb^{4+} ? **Plumbic, Lead (IV)**
11. What is the name for Mn^{2+} ? **Manganese (II)**
12. What is the name for Cr^{3+} ? **Chromic, Chromium (III)**
13. What is the name for Ag^+ ? **Silver**
14. What is the name for Cr^{2+} ? **Chromous, Chromium (II)**
15. What is the name for Hg^{2+} ? **Mercuric**
16. What is the name for Pb^{2+} ? **Plumbous**
17. What is the name for Cu^+ ? **Cuprous**
18. What is the name for Fe^{2+} ? **Ferrous**
19. What is the name for Cu^{2+} ? **Cupric**
20. What is the name for F^- ? **Fluoride**
21. What is the name for Br^- ? **Bromide**

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22. What is the name for I^- ? **Iodide**
23. What is the name for O^{2-} ? **Oxide**
24. What is the name for P^{3-} ? **Phosphide**
25. What is the name for N^{3-} ? **Nitride**
26. What is the name for H^+ ? **Hydrogen**
27. What is the name for Cl^- ? **Chloride**
28. What is the prefix for the number six? **hexa**
29. What is the prefix for the number one? **mono**
30. What is the prefix for the number five? **penta**

Practice: Formula Writing – Binary Ionic Compounds! (Page 5)

Write the formulas for the following:

- | | |
|---|--|
| 1) Sodium chloride NaCl | 13) Aluminum oxide Al₂O₃ |
| 2) Mercury (I) iodide Hg₂I₂ | 14) Silver sulfide Ag₂S |
| 3) Ferrous bromide FeBr₂ | 15) Cadmium bromide CdBr₂ |
| 4) Barium nitride Ba₃N₂ | 16) Ferric oxide Fe₂O₃ |
| 5) Magnesium fluoride MgF₂ | 17) Sodium sulfide Na₂S |
| 6) Cadmium oxide CdO | 18) Silver bromide AgBr |
| 7) Manganese (II) sulfide MnS | 19) Potassium sulfide K₂S |
| 8) Lithium iodide LiI | 20) Strontium chloride SrCl₂ |
| 9) Chromium (II) nitride Cr₃N₂ | 21) Magnesium nitride Mg₃N₂ |
| 10) Calcium oxide CaO | 22) Zinc oxide ZnO |
| 11) Zinc chloride ZnCl₂ | 23) Cobaltic nitride CoN |
| 12) Silver iodide AgI | 24) Aluminum fluoride AlF₃ |

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25) Zinc chloride ZnCl_2

26) Plumbous iodide PbI_2

27) Cadmium phosphide Cd_3P_2

28) Lead (IV) oxide PbO_2

29) Chromous fluoride CrF_2

30) Nickel(II)oxide NiO

31) Mercurous chloride Hg_2Cl_2

32) Copper (II) sulfide Cu_2S

33) Mercuric oxide HgO

34) Iron (II) chloride FeCl_2

35) Cuprous chloride CuCl

36) Tin (II) oxide SnO

37) Cobalt (II) chloride CoCl_2

38) Manganese phosphide Mn_3P_2

39) Tin (IV) chloride SnCl_4

40) Stannous fluoride SnF_2

Practice: Formula Writing – Binary Ionic Compounds! (Page 6)

Write the chemical name for the following:

Part I: Write the name using the LATIN system.

1) CuO Cupric oxide

2) CuF_2 Cupric fluoride

3) Fe_2O_3 ferric oxide

4) HgCl_2 mercuric chloride

5) CoS cobaltous sulfide

6) CuBr cuprous bromide

7) SnBr_2 stannous bromide

8) PbS plumbous sulfide

9) Cu_2O cuprous oxide

10) Hg_2S mercurous sulfide

11) CrO chromous oxide

12) PbF_4 plumbic fluoride

13) FeS ferrous sulfide

14) Sn_3N_4 stannic nitride

15) CoI_3 cobaltic iodide

16) CrN chromic nitride

Part II: Write the name using the STOCK system.

1) CuO copper (II) oxide

2) CrCl_2 chromium (II) chloride

3) PbS Lead (II) sulfide

4) CoN Cobalt (III) Nitride

5) CuS Copper (II) Sulfide

6) Sn_3P_2 Tin (II) Phosphide

Name: _____

7) PbO_2 Lead (IV) Oxide

8) HgCl_2 Mercury (II) Chloride

9) FeO Iron (II) oxide

10) CuF Copper (I) Fluoride

11) CoO Cobalt (II) Oxide

12) Hg_2S Mercury (I) Sulfide

13) CrI_3 Chromium (III) Iodide

14) FeCl_3 Iron (III) Chloride

15) CuCl_2 Copper (II) Chloride

16) Hg_2O Mercury (I) Oxide

Formula Writing – Molecular Binary Compounds (page 7)

Write the chemical names of the following molecular binary compounds. Prefixes need to be used.

1) N_2O Dinitrogen Monoxide

2) ICl_3 Iodine Trichloride

3) UF_6 Uranium Hexafluoride

4) N_2O_3 Dinitrogen Trioxide

5) CO Carbon Monoxide

6) H_2O Water

7) P_4S_3 Tetraphosphorus Trisulfide

8) PBr_3 Phosphorus Tribromide

9) NO_2 Nitrogen Dioxide

10) CO_2 Carbon Dioxide

11) CF_4 Carbon Tetrafluoride

12) SiO_2 Silicon Dioxide

13) PCl_3 Phosphorus Trichloride

14) N_2O_5 Dinitrogen Pentaoxide

15) SF_6 Sulfur Hexafluoride

16) SO_2 Sulfur Dioxide

Write the molecular binary formula for the following molecular binary compounds.

1) Silicon tetrafluoride SiF_4

2) Dinitrogen monoxide N_2O

3) Sulfur trioxide SO_3

4) Iodine pentafluoride IF_5

5) Tetraphosphorous trisulfide P_4S_3

6) Nitrogen monoxide NO

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7) Xenon tetraoxide XeO_4

8) Antimony pentafluoride SbF_5

9) Carbon disulfide CS_2

10) Carbon tetraiodide CI_4

11) Boron trichloride BCl_3

12) Diarsenic trisulfide As_2S_3

13) Diphosphorous pentoxide P_2O_5

14) Nitrogen triphosphide NP_3

THE POLYATOMIC IONS!!! (Page 8)

What is the name of the polyatomic ion with the formula...

1. SO_3^{2-} Sulfite

9. IO_3^- Iodate

17. ClO_2^- Chlorite

2. SO_4^{2-} Sulfate

10. IO_2^- Iodite

18. ClO^- Hypochlorite

3. PO_4^{3-} Phosphate

11. HSO_4^- Bisulfate

19. $\text{C}_2\text{H}_3\text{O}_2^-$ Acetate

4. OH^- Hydroxide

12. HCO_3^- Bicarbonate

20. BrO_4^- Perbromate

5. NO_3^- Nitrate

13. CO_3^{2-} Carbonate

21. BrO_3^- Bromate

6. NO_2^- Nitrite

14. CN^- Cyanide

22. BrO_2^- Bromite

7. NH_4^+ Ammonium

15. ClO_4^- Perchlorate

23. BrO^- Hypobromite

8. MnO_4^- Permanganate

16. ClO_3^- Chlorate

What is the formula for the polyatomic ion...

1. Acetate - $\text{C}_2\text{H}_3\text{O}_2^-$

6. Bromite - BrO_2^-

2. Ammonium - NH_4^+

7. Carbonate - CO_3^{2-}

3. Bicarbonate (Hydrogen carbonate) -
 HCO_3^-

8. Chlorate - ClO_3^-

4. Bisulfate (Hydrogen sulfate) - HSO_4^-

10. Cyanide - CN^-

5. Bromate - BrO_3^-

11. Hydroxide - OH^-

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12. Hypobromite - BrO^-

18. Perbromate - BrO_4^-

13. Hypochlorite - ClO^-

19. Perchlorate - ClO_4^-

14. Iodate - IO_3^-

20. Permanganate - MnO_4^-

15. Iodite - IO_2^-

21. Phosphate - PO_4^{3-}

16. Nitrate - NO_3^-

22. Sulfate - SO_4^{2-}

17. Nitrite - NO_2^-

23. Sulfite - SO_3^{2-}

Polyatomic Ions – Writing Formulas (page 9)

For each of the following problems – write the chemical name for the formula given. Give both possible names, when applicable.

	Stock Name	Latin Name
1) KOH	Potassium Hydroxide	Potassium Hydroxide
2) $\text{Co}(\text{NO}_3)_2$	Cobalt (II) Nitrate	Cobaltous Nitrate
3) MgSO_4	Magnesium Sulfate	Magnesium Sulfate
4) NH_4Cl	Ammonium Chloride	Ammonium Chloride
5) CrPO_4	Chromium (III) Phosphate	Chromic Phosphate
6) Cu_2CO_3	Copper (I) Carbonate	Cuprous Carbonate
7) $\text{Zn}_3(\text{PO}_4)_2$	Zinc Phosphate	Zinc Phosphate
8) $\text{Pb}(\text{OH})_4$	Lead (IV) Hydroxide	Plumbic Hydroxide
9) $\text{Hg}(\text{NO}_2)_2$	Mercury (II) Nitrite	Mercuric Nitrate
10) $\text{Ca}(\text{ClO}_3)_2$	Calcium Chlorate	Calcium Chlorate
11) $\text{Ba}(\text{BrO}_4)_2$	Barium Perbromate	Barium Perbromate
12) LiIO_2	Lithium Iodite	Lithium Iodite
13) NaHCO_3	Sodium Bicarbonate	Sodium Bicarbonate
14) KCN	Potassium Cyanide	Potassium Cyanide

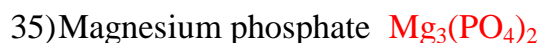
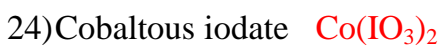
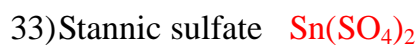
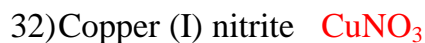
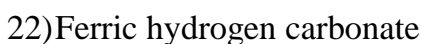
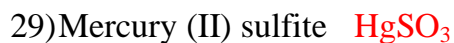
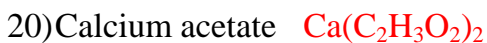
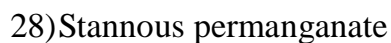
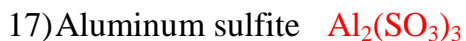
Name: _____



Aluminum Acetate

Aluminum Acetate

For each of the following, write the chemical formula for the name given.



Name: _____

Anions, Cations, Polyatomic Ions, and Prefixes (page 11)

Write the formula for each of the following ions, polyatomic ions and prefixes.

- | | | |
|---|------------------------------------|--------------------------------------|
| 1. Acetate $\text{C}_2\text{H}_3\text{O}_2^-$ | 19. Hemi half | 36. Nitride N^{3-} |
| 2. Ammonium NH_4^+ | 20. Hepta 7 | 37. Nitrite NO_2^- |
| 3. Bicarbonate
HCO_3^- | 21. Hexa 6 | 38. Nona 9 |
| 4. Bisulfate HSO_4^- | 22. Hydride H^- | 39. Octa 8 |
| 5. Bromate BrO_3^- | 23. Hydroxide OH^- | 40. Oxide O^{2-} |
| 6. Bromite BrO_2^- | 24. Hypobromite
BrO^- | 41. Penta 5 |
| 7. Bromide Br^- | 25. Hypochlorite
ClO^- | 42. Perchlorate ClO_4^- |
| 8. Cadmium Cd^{2+} | 26. Iodide I^- | 43. Permanganate
MnO_4^- |
| 9. Carbonate CO_3^{2-} | 27. Iodate IO_3^- | 44. Perbromate BrO_4^- |
| 10. Chlorate ClO_3^- | 28. Iodite IO_2^- | 45. Phosphate PO_4^{3-} |
| 11. Chloride Cl^- | 29. Iron (II) Fe^{2+} | 46. Phosphide P^{3-} |
| 12. Chlorite ClO_2^- | 30. Iron (III) Fe^{3+} | 47. Plumbic Pb^{4+} |
| 13. Copper (I) Cu^+ | 31. Lead (II) Pb^{2+} | 48. Silver Ag^+ |
| 14. Cupric Cu^{2+} | 32. Mercury (I) Hg_2^{2+} | 49. Stannic Sn^{4+} |
| 15. Cyanide CN^- | 33. Mercury (II) Hg^{2+} | 50. Stannous Sn^{2+} |
| 16. Deca 10 | 34. Mono 1 | 51. Sulfate SO_4^{2-} |
| 17. Di 2 | 35. Nitrate NO_3^- | 52. Sulfide S^{2-} |
| 18. Fluoride F^- | | 53. Sulfite SO_3^{2-} |

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54. Tetra 4

55. Tri 3

56. Zinc Zn^{2+}

Review of Ionic & Molecular Formulas (page 12)

Write the chemical formula for the ionic compounds and molecular compounds.

1. Nitrogen trioxide NO_3

13. Cupric perchlorate $\text{Cu}(\text{ClO}_4)_2$

2. Calcium oxide CaO

14. Silver phosphide Ag_3P

3. Potassium phosphate K_3PO_4

15. Cadmium cyanide $\text{Cd}(\text{CN})_2$

4. Lead (II) hypochlorite $\text{Pb}(\text{ClO})_2$

16. Carbon monoxide CO

5. Sulfur tetrachloride SCl_4

17. Ferric phosphate FePO_4

6. Copper (I) hydroxide CuOH

18. Plumbic sulfite $\text{Pb}(\text{SO}_3)_2$

7. Magnesium cyanide $\text{Mg}(\text{CN})_2$

19. Aluminum carbonate $\text{Al}_2(\text{CO}_3)_3$

8. Stannous bisulfate $\text{Sn}(\text{HSO}_4)_2$

20. Potassium bromate KBrO_3

9. Sodium bicarbonate NaHCO_3

21. Beryllium acetate $\text{Be}(\text{C}_2\text{H}_3\text{O}_2)_2$

10. Tin (IV) perbromate $\text{Sn}(\text{BrO}_4)_4$

22. Mercury (I) chlorate $\text{Hg}_2(\text{ClO}_3)_2$

11. Ammonium sulfate $(\text{NH}_4)_2\text{SO}_4$

23. Dinitrogen monoxide N_2O

12. Ferrous Permanganate $\text{Fe}(\text{MnO}_4)_2$

24. Calcium nitrate $\text{Ca}(\text{NO}_3)_2$

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25. Zinc bromide ZnBr_2

38. Mercuric oxide HgO

26. Magnesium nitride Mg_3N_2

39. Cuprous fluoride CuF

27. Lithium iodide LiI

40. Zinc bromate $\text{Zn}(\text{BrO}_3)_2$

28. Sodium hydroxide NaOH

41. Calcium hypochlorite $\text{Ca}(\text{ClO})_2$

29. Mercury (II) nitrite $\text{Hg}(\text{NO}_2)_2$

42. Ammonium carbonate

30. Boron trifluoride BF_3

$(\text{NH}_4)_2\text{CO}_3$

31. Strontium chloride SrCl_2

43. Sodium perchlorate NaClO_4

32. Iron (III) sulfide Fe_2S_3

44. Copper (II) sulfide CuSO_3

33. Stannous phosphate $\text{Sn}_3(\text{PO}_4)_2$

45. Stannous nitride $\text{Sn}(\text{NO}_3)_2$

34. Cadmium bisulfate $\text{Cd}(\text{HSO}_4)_2$

46. Iron (II) bicarbonate $\text{Fe}(\text{HCO}_3)_2$

35. Lithium acetate $\text{LiC}_2\text{H}_3\text{O}_2$

47. Mercury (I) acetate $\text{Hg}(\text{C}_2\text{H}_3\text{O}_2)$

36. Ammonium permanganate

48. Sodium bromite NaBrO_2

NH_4MnO_4

49. Carbon dioxide CO_2

37. Phosphorus pentoxide PO_5

50. Ammonium sulfite $(\text{NH}_4)_2\text{SO}_3$

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Chem I Formula Writing Worksheet (page 14)

First, determine whether the compound is Ionic or Molecular. If ionic (metal and nonmetal or polyatomic ions) cross charges to write formula. If the compound is molecular (2 nonmetals) use prefixes to determine subscripts in formula.

Name	Ionic or Molecular?	Formula
Silver Nitrate	I	AgNO ₃
Silver Nitride	I	Ag ₃ N
Calcium Hydroxide	I	Ca(OH) ₂
Carbon Tetrachloride	M	CCl ₄
Magnesium Oxide	I	MgO
Carbon Disulfide	M	CS ₂
Ammonium Hydroxide	I	NH ₄ OH
Aluminum Chloride	I	AlCl ₃
Carbon Dioxide	M	CO ₂
Diphosphorus Pentoxide	M	P ₂ O ₅
Sodium Carbonate	I	Na ₂ CO ₃
Potassium Chlorate	I	KClO ₃
Boron Trifluoride	M	BF ₃
Sodium Sulfate	I	Na ₂ SO ₄
Cuprous Nitrate	I	CuNO ₃
Ferric Chloride	I	FeCl ₃
Cupric Sulfate	I	CuSO ₄
Dinitrogen Monoxide	M	N ₂ O
Zinc Chromate	I	ZnCrO ₄
Cobaltous Hydroxide	I	Co(OH) ₂
Lead (II) Chloride	I	PbCl ₂
Carbon Tetrachloride	M	CCl ₄
Manganese (II) oxide	I	MnO
Xenon Hexafluoride	M	XeF ₆
Stannic Carbonate	I	Sn(CO ₃) ₂