

Naming Chemical Compounds

Naming Simple Binary Compounds

Name each of the following simple binary compounds.

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|-----------------------------|---------------------|-----------------------------|--------------------|
| 1. Na_2O | sodium oxide | 11. Na_2S | sodium sulfide |
| 2. Li_2O | lithium oxide | 12. KI | potassium iodide |
| 3. SrO | strontium oxide | 13. CaO | calcium oxide |
| 4. Al_2O_3 | aluminum oxide | 14. BeI_2 | beryllium iodide |
| 5. NaCl | sodium chloride | 15. AlCl_3 | aluminum chloride |
| 6. MgS | magnesium sulfide | 16. AlP | aluminum phosphide |
| 7. CaBr_2 | calcium bromide | 17. LiBr | lithium bromide |
| 8. K_3P | potassium phosphide | 18. Rb_3N | rubidium nitride |
| 9. RbCl | rubidium chloride | 19. RbF | rubidium fluoride |
| 10. Sr_3P_2 | strontium phosphide | 20. Al_2P_3 | aluminum phosphide |

Creating Simple Binary Formulas

Write formulas for each of the following simple binary compounds.

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|------------------------|-------------------------|------------------------|-------------------------|
| 1. Lithium sulphide | Li_2S | 11. Hydrogen nitride | H_3N |
| 2. Potassium bromide | KBr | 12. Potassium chloride | KCl |
| 3. Cesium iodide | CsI | 13. Lithium nitride | Li_3N |
| 4. Calcium phosphide | Ca_3P_2 | 14. Beryllium oxide | BeO |
| 5. Sodium fluoride | NaF | 15. Sodium iodide | NaI |
| 6. Strontium oxide | SrO | 16. Magnesium oxide | MgO |
| 7. Beryllium sulphide | BeS | 17. Potassium chloride | KCl |
| 8. Magnesium bromide | MgBr_2 | 18. Calcium sulphide | CaS |
| 9. Lithium oxide | Li_2O | 19. Rubidium oxide | Rb_2O |
| 10. Strontium chloride | SrCl_2 | 20. Strontium nitride | Sr_3N_2 |

Writing Names for Compounds with Polyatomic Ions

Write the chemical formula using the given ions.

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| 1. NH_4^+ and PO_4^{3-} | $(\text{NH}_4)_3\text{PO}_4$ | 11. Ca^{2+} and SO_4^{2-} | CaSO_4 |
| 2. H^+ and BO_3^{3-} | H_3BO_3 | 12. Sr^{2+} and CO_3^{2-} | SrCO_3 |
| 3. Li^+ and CO_3^{2-} | Li_2CO_3 | 13. Ba^{2+} and BO_3^{3-} | $\text{Ba}_3(\text{BO}_3)_2$ |
| 4. Na^+ and SO_4^{2-} | Na_2SO_4 | 14. B^{3+} and PO_4^{3-} | BPO_4 |
| 5. K^+ and CrO_4^{2-} | K_2CrO_4 | 15. NH_4^+ and HPO_4^{2-} | $(\text{NH}_4)_2\text{HPO}_4$ |
| 6. Rb^+ and $\text{Cr}_2\text{O}_7^{2-}$ | $\text{Rb}_2\text{Cr}_2\text{O}_7$ | 16. H^+ and $\text{Cr}_2\text{O}_7^{2-}$ | $\text{H}_2\text{Cr}_2\text{O}_7$ |
| 7. Cs^+ and HPO_4^{2-} | Cs_2HPO_4 | 17. Rb^+ and CO_3^{2-} | Rb_2CO_3 |
| 8. Be^{2+} and $\text{Cr}_2\text{O}_7^{2-}$ | BeCr_2O_7 | 18. Ca^{2+} and HPO_4^{2-} | CaHPO_4 |
| 9. Mg^{2+} and CrO_4^{2-} | MgCrO_4 | 19. B^{3+} and $\text{Cr}_2\text{O}_7^{2-}$ | $\text{B}_2(\text{Cr}_2\text{O}_7)_3$ |
| 10. B^{3+} and HPO_4^{2-} | $\text{Be}_2(\text{HPO}_4)_3$ | 20. Be^{2+} and BO_3^{3-} | $\text{Be}_3(\text{BO}_3)_2$ |

Writing Chemical Formulas for Compounds with Polyatomic Ions

Write the chemical formula for each of the following ionic compounds.

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|----------------------------------|-----------------------------------|-----------------------------------|---------------------------|
| 1. Ammonium borate | $(\text{NH}_4)_3\text{BO}_3$ | 8. Hydrogen phosphate | H_3PO_4 |
| 2. Potassium phosphate | K_3PO_4 | 9. Cesium borate | Cs_3BO_3 |
| 3. Beryllium sulphate | BeSO_4 | 10. Sodium carbonate | Na_2CO_3 |
| 4. Hydrogen chromate | H_2CrO_4 | 11. Strontium dichromate | SrCr_2O_7 |
| 5. Sodium monohydrogen phosphate | Na_2HPO_4 | 12. Barium monohydrogen phosphate | BaHPO_4 |
| 6. Boron chromate | $\text{B}_2(\text{CrO}_4)_3$ | 13. Barium chromate | BaCrO_4 |
| 7. Potassium dichromate | $\text{K}_2\text{Cr}_2\text{O}_7$ | 14. Lithium sulphate | Li_2SO_4 |

Naming Chemical Compounds with Polyatomic Ions
Name each of the following ionic compounds.

1. $(\text{NH}_4)_2\text{CO}_3$ ammonium carbonate
2. Rb_2HPO_4 rubidium monohydrogen phosphate
3. $\text{Li}_2\text{Cr}_2\text{O}_7$ lithium dichromate
4. MgHPO_4 magnesium monohydrogen phosphate
5. SrHPO_4 strontium monohydrogen phosphate
6. Na_3BO_3 sodium borate
7. H_2SO_4 hydrogen sulfate
8. $\text{Sr}_3(\text{PO}_4)_2$ strontium phosphate
9. Rb_3PO_4 rubidium phosphate
10. Rb_2CrO_4 rubidium chromate
11. MgCr_2O_7 magnesium dichromate
12. $(\text{NH}_4)_2\text{Cr}_2\text{O}_7$ ammonium dichromate
13. Cs_2CO_3 cesium carbonate
14. $\text{Ca}_3(\text{BO}_3)_2$ calcium borate
15. SrCrO_4 strontium chlorate
16. $\text{B}_2(\text{CO}_3)_3$ boron carbonate

Writing Formulas for Compounds with Polyatomic Ions
Write the chemical formula for the following ionic compounds.

1. Ammonium cyanide NH_4CN
2. Potassium nitrate KNO_3
3. Beryllium hydroxide $\text{Be}(\text{OH})_2$
4. Cesium permanganate CsMnO_4
5. Boron iodate $\text{B}(\text{IO}_3)_3$
6. Sodium bicarbonate NaHCO_3
7. Rubidium dihydrogen phosphate RbH_2PO_4
8. Ammonium hydroxide NH_4OH
9. Sodium chlorate NaClO_3
10. Rubidium iodate RbIO_3
11. Potassium permanganate KMnO_4
12. Cesium bicarbonate CsHCO_3
13. Sodium hydroxide NaOH
14. Hydrogen cyanide HCN
15. Barium bisulphate $\text{Ba}(\text{HSO}_4)_2$
16. Cesium nitrate CsNO_3
17. Magnesium permanganate $\text{Mg}(\text{MnO}_4)_2$
18. Calcium cyanide $\text{Ca}(\text{CN})_2$

Naming Compounds with Polyatomic Ions
Name each of the following ionic compounds.

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| 1. HOH hydrogen hydroxide | 11. LiHCO_3 lithium bicarbonate |
| 2. LiCN lithium cyanide | 12. KHSO_4 potassium sulfate |
| 3. RbNO_3 rubidium nitrate | 13. CsIO_3 cesium iodate |
| 4. $\text{Be}(\text{ClO}_3)_2$ beryllium chlorate | 14. $\text{NH}_4\text{H}_2\text{PO}_4$ ammonium dihydrogen phosphate |
| 5. $\text{Ca}(\text{MnO}_4)_2$ calcium permanganate | 15. RbOH rubidium hydroxide |
| 6. HCH_3COO hydrogen acetate | 16. $\text{Be}(\text{CN})_2$ beryllium cyanide |
| 7. NH_4HCO_3 ammonium bicarbonate | 17. $\text{Ca}(\text{NO}_3)_2$ calcium nitrate |
| 8. $\text{Ba}(\text{IO}_3)_2$ barium iodate | 18. KClO_3 potassium chlorate |
| 9. $\text{Mg}(\text{HSO}_4)_2$ magnesium sulfate | 19. CsCH_3COO cesium acetate |
| 10. $\text{Sr}(\text{NO}_3)_2$ strontium nitrate | 20. KHCO_3 potassium bicarbonate |

Creating Formulas for the Transition Metals

Name each of the following ionic compounds using Roman Numerals where necessary.

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| 1. ScCl_3 scandium chloride | 11. PtO_2 platinum(IV) oxide |
| 2. $\text{Cr}(\text{NO}_3)_6$ chromium(VI) nitrate | 12. Zn_3P_2 zinc phosphide |
| 3. MnO manganese(II) oxide | 13. $\text{Sn}(\text{HSO}_4)_4$ tin(IV) bisulfate |
| 4. $\text{Fe}(\text{MnO}_4)_2$ iron(II) permanganate | 14. Au_2O_3 gold(III) oxide |
| 5. CoF_3 cobalt(III) fluoride | 15. $\text{Bi}_3(\text{BO}_3)_5$ bismuth(V) borate |
| 6. $\text{Ni}_3(\text{PO}_4)_2$ nickel(II) phosphate | 16. NiN nickel(II) nitride |
| 7. CuCl_2 copper(II) chloride | 17. TiO_2 titanium(IV) oxide |
| 8. ZnO zinc oxide | 18. VSO_4 vanadium(II) sulfate |
| 9. GeS_2 germanium sulfide | 19. $\text{Cr}(\text{H}_2\text{PO}_4)_3$ chromium(III) dihydrogen phosphate |
| 10. AgCl silver chloride | 20. $\text{W}(\text{MnO}_4)_4$ tungsten(IV) permanganate |

Writing Formulas for Compounds with Transition Metals
Write the chemical formula for each of the following ionic compounds.

1. Chromium (II) sulphate CrSO_4
2. Manganese (IV) phosphide Mn_3P_4
3. Iron (III) sulphide Fe_2S_3
4. Cobalt (II) dichromate CoCr_2O_7
5. Nickel (III) nitride Ni_3N_2
6. Copper (I) cyanide CuCN
7. Zinc carbonate ZnCO_3
8. Cadmium phosphate $\text{Cd}_3(\text{PO}_4)_2$
9. Mercury (II) iodide HgI_2
10. Gold (III) permanganate $\text{Au}(\text{MnO}_4)_3$

Creating Formulas for Binary Molecular Compounds
Write the chemical formula for each of the following molecular compounds.

1. Carbon dioxide CO_2
2. Bromine monoxide BrO
3. Iodine monochloride ICl
4. Antimony trifluoride SbF_3
5. Bromine dioxide BrO_2
6. Carbon monosulphide CS
7. Phosphorus tribromide PBr_3
8. Dinitrogen tetraoxide N_2O_4
9. Chlorine trifluoride ClF_3
10. Phosphorus pentachloride PCl_5
11. Bromine monofluoride BrF
12. Dinitrogen pentoxide N_2O_5
13. Carbon tetraiodide CI_4
14. Tellurium dioxide TeO_2

Naming Binary Molecular Compounds

Write the name for each of the following molecular compounds.

1. SiC silicon monocrbide
2. SiO_2 silicon dioxide
3. SbBr_3 antimony tribromide
4. IBr iodine monobromide
5. SiCl_4 silicon tetrachloride
6. N_2O dinitrogen monoxide
7. CSe_2 carbon diselenide
8. CS_2 carbon disulfide
9. CO carbon monoxide
10. BrF_5 bromine pentafluoride
11. SbCl_3 antimony trichloride
12. IF_5 iodine pentafluoride
13. SO_2 sulfur dioxide