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CHAPTER 8 STUDY GUIDE FOR CONTENT MASTERY

Section 8.3 Chemical Formulas and Their Names

In your textbook, read about communicating what is in a compound and naming ions and ionic compounds.

Use each of the terms below just once to complete the passage.

anion	*-ate*	cation	electrons	zero
lower right	monatomic	one	oxidation number	*-ite*
oxyanion	polyatomic	subscript		

A one-atom ion is called a(n) **(1)** monatomic ion. The charge of such an ion is equal to the atom's **(2)** oxidation number, which is the number of **(3)** electrons transferred to or from the atom to form the ion. In ionic compounds, the sum of the charges of all the ions equals **(4)** zero. Ions made up of more than one atom are called **(5)** polyatomic ions. If such an ion is negatively charged and includes one or more oxygen atoms, it is called a(n) **(6)** oxyanion. If two such ions can be formed that contain different numbers of oxygen atoms, the name for the ion with more oxygen atoms ends with the suffix **(7)** *-ate*. The name for the ion with fewer oxygen atoms ends with **(8)** *-ite*.

In the chemical formula for any ionic compound, the chemical symbol for the **(9)** cation is written first, followed by the chemical symbol for the **(10)** anion. A(n) **(11)** subscript is a small number used to represent the number of ions of a given element in a chemical formula. Such numbers are written to the **(12)** lower right of the symbol for the element. If no number appears, the assumption is that the number equals **(13)** one.

For each formula in Column A, write the letter of the matching name in Column B.

Column A	Column B
e 14. ClO_2^-	a. chlorate
d 15. ClO_4^-	b. hypochlorite
b 16. ClO^-	c. chloride
c 17. Cl^-	d. perchlorate
a 18. ClO_3^-	e. chlorite

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Section 8.3 *continued*

For each of the following chemical formulas, write the correct name of the ionic compound represented. You may refer to the periodic table and Table 8.7 for help.

19. NaI sodium iodide
20. $CaCl_2$ calcium chloride
21. K_2S potassium sulfide
22. MgO magnesium oxide
23. $LiHSO_4$ lithium hydrogen sulfate
24. NH_4Br ammonium bromide
25. Ca_3N_2 calcium nitride
26. Cs_3P cesium phosphide
27. $KBrO_3$ potassium bromate
28. $Mg(ClO)_2$ magnesium hypochlorite
29. Li_2O_2 lithium peroxide
30. $Be_3(PO_4)_2$ beryllium phosphate
31. $(NH_4)_2CO_3$ ammonium carbonate
32. $NaBrO_3$ sodium bromate
33. Fe_2O_3 iron(III) oxide
34. $Fe(IO_3)_2$ iron(III) iodate

For each of the following ionic compounds, write the correct formula for the compound. You may refer to the periodic table and Table 8.7 for help.

35. beryllium nitride Be_3N_2
36. nickel(II) chloride $NiCl_2$
37. potassium chlorite $KClO_2$
38. copper(I) oxide Cu_2O
39. magnesium sulfite $MgSO_3$
40. ammonium sulfide $(NH_4)_2S$
41. calcium iodate $Ca(IO_3)_2$
42. iron(III) perchlorate $Fe(ClO_4)_3$
43. sodium nitride Na_3N

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Section 9.2 Naming Molecules

In your textbook, read about how binary compounds and acids are named from their formulas.

For each statement below, write *true* or *false*.

false 1. Binary molecular compounds are generally composed of a metal and a nonmetal.

false 2. The second element in the formula of a binary compound is named using the suffix *-ite*.

false 3. The prefix *tetra-* indicates three atoms.

true 4. The prefix *hexa-* indicates six atoms.

true 5. In naming the first element in a formula, the prefix *mono-* is not used.

true 6. For binary acids, the hydrogen part of the compound is named using the prefix *hydro-*.

false 7. An oxyacid contains only two elements.

false 8. If the name of the anion of an oxyacid ends in *-ate*, the acid name contains the suffix *-ous*.

In your textbook, read about naming molecular compounds and oxyacids.

For each item in Column A, write the letter of the matching item in Column B.

Column A	Column B
c 9. CO	a. hydrobromic acid
i 10. CO_2	b. dinitrogen tetroxide
g 11. H_2CO_3	c. carbon monoxide
e 12. NH_3	d. nitrous acid
b 13. N_2O_4	e. ammonia
d 14. HNO_2	f. nitric acid
f 15. HNO_3	g. carbonic acid
a 16. HBr	h. bromic acid
h 17. $HBrO_3$	i. carbon dioxide