

Chapter 9 Practice Test - Naming and Writing Chemical Formulas

Matching

Match each item with the correct statement below.

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- | | |
|--------------------------------|--------------------|
| a. monatomic ion | f. cation |
| b. acid | g. binary compound |
| c. base | h. anion |
| d. law of definite proportions | i. polyatomic ion |
| e. law of multiple proportions | |

- ___ 1. consists of a single atom with a positive or negative charge
- ___ 2. atom or group of atoms having a negative charge
- ___ 3. atom or group of atoms having a positive charge
- ___ 4. tightly-bound group of atoms that behaves as a unit and carries a net charge
- ___ 5. compound composed of two different elements
- ___ 6. produces a hydrogen ion when dissolved in water
- ___ 7. produces a hydroxide ion when dissolved in water
- ___ 8. In any chemical compound, the masses of elements are always in the same proportion by mass.
- ___ 9. when two elements form more than one compound, the masses of one element that combine with the same mass of the other element are in the ratio of small, whole numbers

Multiple Choice

Identify the choice that best completes the statement or answers the question.

- ___ 10. When naming a transition metal ion that can have more than one common ionic charge, the numerical value of the charge is indicated by a ____.
- | | |
|-----------|-------------------------------------|
| a. prefix | c. Roman numeral following the name |
| b. suffix | d. superscript after the name |
- ___ 11. Which of the following correctly provides the name of the element, the symbol for the ion, and the name of the ion?
- | | |
|-----------------------------------|-------------------------------------|
| a. fluorine, F^+ , fluoride ion | c. copper, Cu^+ , cuprous ion |
| b. zinc, Zn^{2+} , zincate ion | d. sulfur, S^{2-} , sulfurous ion |
- ___ 12. The nonmetals in Groups 6A and 7A ____.
- lose electrons when they form ions
 - have a numerical charge that is found by subtracting 8 from the group number
 - all have ions with a -1 charge
 - end in *-ate*
- ___ 13. Which of the following is NOT a cation?
- | | |
|------------------|------------------|
| a. iron(III) ion | c. Ca^{2+} |
| b. sulfate | d. mercurous ion |

- ___ 14. An *-ate* or *-ite* at the end of a compound name usually indicates that the compound contains ____.
- fewer electrons than protons
 - neutral molecules
 - only two elements
 - a polyatomic anion
- ___ 15. Which of the following is true about the composition of ionic compounds?
- They are composed of anions and cations.
 - They are composed of anions only.
 - They are composed of cations only.
 - They are formed from two or more nonmetallic elements.
- ___ 16. Which element, when combined with fluorine, would most likely form an ionic compound?
- lithium
 - carbon
 - phosphorus
 - chlorine
- ___ 17. Which of the following compounds contains the lead(II) ion?
- PbO
 - PbCl₄
 - Pb₂O
 - Pb₂S
- ___ 18. What is the correct formula for potassium sulfite?
- KHSO₃
 - KHSO₄
 - K₂SO₃
 - K₂SO₄
- ___ 19. What type of compound is CuSO₄?
- monatomic ionic
 - polyatomic covalent
 - polyatomic ionic
 - binary molecular
- ___ 20. Sulfur hexafluoride is an example of a ____.
- monatomic ion
 - polyatomic ion
 - binary compound
 - polyatomic compound
- ___ 21. Molecular compounds are usually ____.
- composed of two or more transition elements
 - composed of positive and negative ions
 - composed of two or more nonmetallic elements
 - exceptions to the law of definite proportions
- ___ 22. In naming a binary molecular compound, the number of atoms of each element present in the molecule is indicated by ____.
- Roman numerals
 - superscripts
 - prefixes
 - suffixes
- ___ 23. Consider a mystery compound having the formula M_xT_y. If the compound is not an acid, if it contains only two elements, and if M is not a metal, which of the following is true about the compound?
- It contains a polyatomic ion.
 - Its name ends in *-ite* or *-ate*.
 - Its name ends in *-ic*.
 - It is a binary molecular compound.
- ___ 24. When dissolved in water, acids produce ____.
- negative ions
 - polyatomic ions
 - hydrogen ions
 - oxide ions
- ___ 25. When naming acids, the prefix *hydro-* is used when the name of the acid anion ends in ____.
- ide*
 - ate*

Chapter 9 Practice Test - Naming and Writing Chemical Formulas

Answer Section

MATCHING

- ANS: A PTS: 1 DIF: L1 REF: p. 253
OBJ: 9.1.1 Identify the charges of monatomic ions by using the periodic table, and name the ions.
STA: Ch.5.a
- ANS: H PTS: 1 DIF: L1 REF: p. 254
OBJ: 9.1.1 Identify the charges of monatomic ions by using the periodic table, and name the ions.
STA: Ch.5.a
- ANS: F PTS: 1 DIF: L1 REF: p. 253
OBJ: 9.1.1 Identify the charges of monatomic ions by using the periodic table, and name the ions.
STA: Ch.5.a
- ANS: I PTS: 1 DIF: L1 REF: p. 257
OBJ: 9.1.2 Define a polyatomic ion and write the names and formulas of the most common polyatomic ions.
STA: Ch.5.a
- ANS: G PTS: 1 DIF: L1 REF: p. 261
OBJ: 9.2.1 Apply the rules for naming and writing formulas for binary ionic compounds.
STA: Ch.5.a
- ANS: B PTS: 1 DIF: L1 REF: p. 271
OBJ: 9.4.1 Apply three rules for naming acids. STA: Ch.5.a
- ANS: C PTS: 1 DIF: L1 REF: p. 273
OBJ: 9.4.3 Apply the rules for naming bases. STA: Ch.5.a
- ANS: D PTS: 1 DIF: L1 REF: p. 274
OBJ: 9.5.1 Define the laws of definition proportions and multiple proportions.
STA: Ch.5.a
- ANS: E PTS: 1 DIF: L1 REF: p. 274
OBJ: 9.5.1 Define the laws of definition proportions and multiple proportions.
STA: Ch.5.a

MULTIPLE CHOICE

- ANS: C PTS: 1 DIF: L1 REF: p. 254 | p. 255
OBJ: 9.1.1 Identify the charges of monatomic ions by using the periodic table, and name the ions.
- ANS: C PTS: 1 DIF: L2 REF: p. 254 | p. 255
OBJ: 9.1.1 Identify the charges of monatomic ions by using the periodic table, and name the ions.
- ANS: B PTS: 1 DIF: L2 REF: p. 254
OBJ: 9.1.1 Identify the charges of monatomic ions by using the periodic table, and name the ions.
STA: Ch.1.c | Ch.1.d
- ANS: B PTS: 1 DIF: L1 REF: p. 254 | p. 255 | p. 257
OBJ: 9.1.1 Identify the charges of monatomic ions by using the periodic table, and name the ions. | 9.1.2
Define a polyatomic ion and write the names and formulas of the most common polyatomic ions.
STA: Ch.2
- ANS: D PTS: 1 DIF: L2 REF: p. 257
OBJ: 9.1.2 Define a polyatomic ion and write the names and formulas of the most common polyatomic ions.
STA: Ch.2
- ANS: A PTS: 1 DIF: L2 REF: p. 261
OBJ: 9.2.1 Apply the rules for naming and writing formulas for binary ionic compounds.
STA: Ch.2.a
- ANS: A PTS: 1 DIF: L2 REF: p. 253 | p. 254 | p. 262
OBJ: 9.2.1 Apply the rules for naming and writing formulas for binary ionic compounds.
STA: Ch.2

17. ANS: A PTS: 1 DIF: L2 REF: p. 262 | p. 263
OBJ: 9.2.1 Apply the rules for naming and writing formulas for binary ionic compounds.
STA: Ch.2
18. ANS: C PTS: 1 DIF: L2 REF: p. 257 | p. 261 | p. 262
OBJ: 9.2.2 Apply the rules for naming and writing formulas for compounds with polyatomic ions.
STA: Ch.2
19. ANS: C PTS: 1 DIF: L2 REF: p. 264 | p. 277
OBJ: 9.2.2 Apply the rules for naming and writing formulas for compounds with polyatomic ions.
STA: Ch.2.a
20. ANS: C PTS: 1 DIF: L2 REF: p. 268
OBJ: 9.3.1 Interpret the prefixes in the names of molecular compounds in terms of their chemical formulas.
STA: Ch.2.a
21. ANS: C PTS: 1 DIF: L1 REF: p. 268
OBJ: 9.3.1 Interpret the prefixes in the names of molecular compounds in terms of their chemical formulas. |
9.3.2 Apply the rules for naming and writing formulas for binary molecular compounds.
STA: Ch.2.a
22. ANS: C PTS: 1 DIF: L1 REF: p. 269
OBJ: 9.3.2 Apply the rules for naming and writing formulas for binary molecular compounds.
STA: Ch.2
23. ANS: D PTS: 1 DIF: L3 REF: p. 268 | p. 269
OBJ: 9.3.2 Apply the rules for naming and writing formulas for binary molecular compounds.
STA: Ch.2
24. ANS: C PTS: 1 DIF: L1 REF: p. 271
OBJ: 9.4.1 Apply three rules for naming acids. STA: Ch.5.a
25. ANS: A PTS: 1 DIF: L2 REF: p. 272
OBJ: 9.4.1 Apply three rules for naming acids. STA: Ch.5.a
26. ANS: D PTS: 1 DIF: L2 REF: p. 272
OBJ: 9.4.1 Apply three rules for naming acids. STA: Ch.5
27. ANS: A PTS: 1 DIF: L2 REF: p. 272
OBJ: 9.4.1 Apply three rules for naming acids. STA: Ch.5.a
28. ANS: D PTS: 1 DIF: L3 REF: p. 272
OBJ: 9.4.2 Apply the rules in reverse to write formulas of acids.
STA: Ch.5
29. ANS: D PTS: 1 DIF: L2 REF: p. 261 | p. 262 | p. 277
OBJ: 9.2.1 Apply the rules for naming and writing formulas for binary ionic compounds. | 9.5.2 Apply the rules
for naming chemical compounds by using a flowchart. STA: Ch.5
30. ANS: C PTS: 1 DIF: L3 REF: p. 257 | p. 264
OBJ: 9.2.2 Apply the rules for naming and writing formulas for compounds with polyatomic ions. | 9.5.2 Apply
the rules for naming chemical compounds by using a flowchart.
STA: Ch.5
31. ANS: C PTS: 1 DIF: L3 REF: p. 257 | p. 264
OBJ: 9.2.2 Apply the rules for naming and writing formulas for compounds with polyatomic ions. | 9.5.2 Apply
the rules for naming chemical compounds by using a flowchart.
STA: Ch.5
32. ANS: A PTS: 1 DIF: L1 REF: p. 257 | p. 278
OBJ: 9.1.3 Identify the two common endings for the names of most polyatomic ions. | 9.5.3 Apply the rules for
writing chemical formulas by using a flowchart. STA: Ch.2
33. ANS: B PTS: 1 DIF: L3 REF: p. 264 | p. 277
OBJ: 9.5.3 Apply the rules for writing chemical formulas by using a flowchart.
STA: Ch.2.b | Ch.5

ESSAY

34. ANS:

CuBr_2 is copper(II) bromide. The name must include a Roman numeral because copper is a transition element that can form ions with more than one charge. SCl_2 is sulfur dichloride. The compound is named with prefixes because sulfur and chlorine are both nonmetals and thus form a molecular compound. BaF_2 is barium fluoride. A Roman numeral is not needed in this name because barium is a Group A metal and forms only the 2+ ion. Prefixes are not used in ionic compounds.

PTS: 1

DIF: L3

REF: p. 277

OBJ: 9.5.3 Apply the rules for writing chemical formulas by using a flowchart.

STA: Ch.2