

NAME _____

DATE _____ PER _____

NAMING III - Identifying Problems Chemical Compound Names

Using the lettered selections below, answer the questions that follow by using the selection that best fits each situation. There may be a few questions where more than one response is appropriate. A given response may be used more than once. Binary means containing two different parts.

- A. Greek symbols are used for binary compounds of two nonmetals.
- B. Greek symbols are not used for binary compounds of a metal and a nonmetal.
- C. Roman numerals are used for the metal when its valence cannot be determined from its position on the periodic table.
- D. Roman numerals are not used for the metal when its valence can be determined from its position on the periodic table.
- E. The Roman numeral is the valence for a single atom of a metal and not the number of atoms present in the compound.
- F. Roman numerals are not used for binary compounds of two nonmetals.
- G. The most metallic element is written first.
- H. When a polyatomic (compound/complex) ion is part of a compound, its name is used as is.
- I. A subscript is needed to show the number of atoms (ions) or polyatomic ions present in a compound.

CORRECT NAME/FORMULA

- | | |
|---|-------|
| _____ 1. Why isn't $\text{Co}_2(\text{SO}_3)_3$ named dicobalt trisulfite? | _____ |
| _____ 2. Why isn't SnI_4 named tin iodide? | _____ |
| _____ 3. Why isn't P_2O_5 named phosphorus (V) oxide? | _____ |
| _____ 4. Why isn't N_2O_5 named nitrogen oxide? | _____ |
| _____ 5. Why isn't NaCl named sodium (I) chloride? | _____ |
| _____ 6. Why isn't K_2O named dipotassium monoxide? | _____ |
| _____ 7. Why doesn't iron (III) chloride have the formula Fe_3Cl ? | _____ |
| _____ 8. Why doesn't tin (IV) sulfide have the formula S_2Sn ? | _____ |
| _____ 9. Why doesn't aluminum nitrate have the formula AlNO_3 ? | _____ |
| _____ 10. Why isn't mononitrogen tetrahydrogen monochloride the name for NH_4Cl ? | _____ |

REVIEWING THE RULES FOR NAMING CHEMICAL COMPOUNDS

A. If the compound is binary and consists of a metal and a ___(1)___, then we name the elements and add an ___(2)___ to the ___(3)___ element's name. If we **can predict** the charge of the metal ion from its position on the periodic table (i.e., group 1 has a ___(4)___ charge, group 2 has a ___(5)___ charge and aluminum has a ___(6)___ charge), then we ___(7)___ use the Greek prefixes for either element and we ___(8)___ use Roman numerals for the metal ion.

B. If the compound is binary and consists of a metal and a ___(9)___, then we name the elements and add an ___(10)___ to the ___(11)___ element's name. If we **cannot predict** the charge of the metal ion from its position in the periodic table, then we ___(12)___ use the Greek prefixes for either element and we ___(13)___ use Roman numerals for the metal ion.

C. If the compound is binary and consists of two nonmetals, Then we name the elements and add an ___(14)___ to the ___(15)___ element's name. We use the Greek prefixes to tell the numbers of atoms of each kind of element present. (Except for the prefix ___(16)___, which is usually omitted for the more ___(17)___ element. We ___(18)___ use Roman numerals for either element.

D. If an ionic compound contains more than two elements, it is often termed a ___(19)___ ion. This kind of ion is composed of two nonmetals, the one written first is the more ___(20)___ and assumes a positive valence. When ___(21)___ ions in a chemical compound, we simply write their names as given. The ending ___(22)___ may be used if the nonmetal is a single element.

E. Nonmetals will form ions when they combine with metals. In these cases, we can often predict their valences or ionic charge. Nitrogen has a ___(23)___ charge, sulfur and oxygen have a ___(24)___ charge and the halogens, members of group 17 have a ___(25)___ charge.

A. 1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

B. 9. _____

10. _____

11. _____

12. _____

13. _____

C. 14. _____

15. _____

16. _____

17. _____

18. _____

D. 19. _____

20. _____

21. _____

22. _____

E. 23. _____

24. _____

25. _____