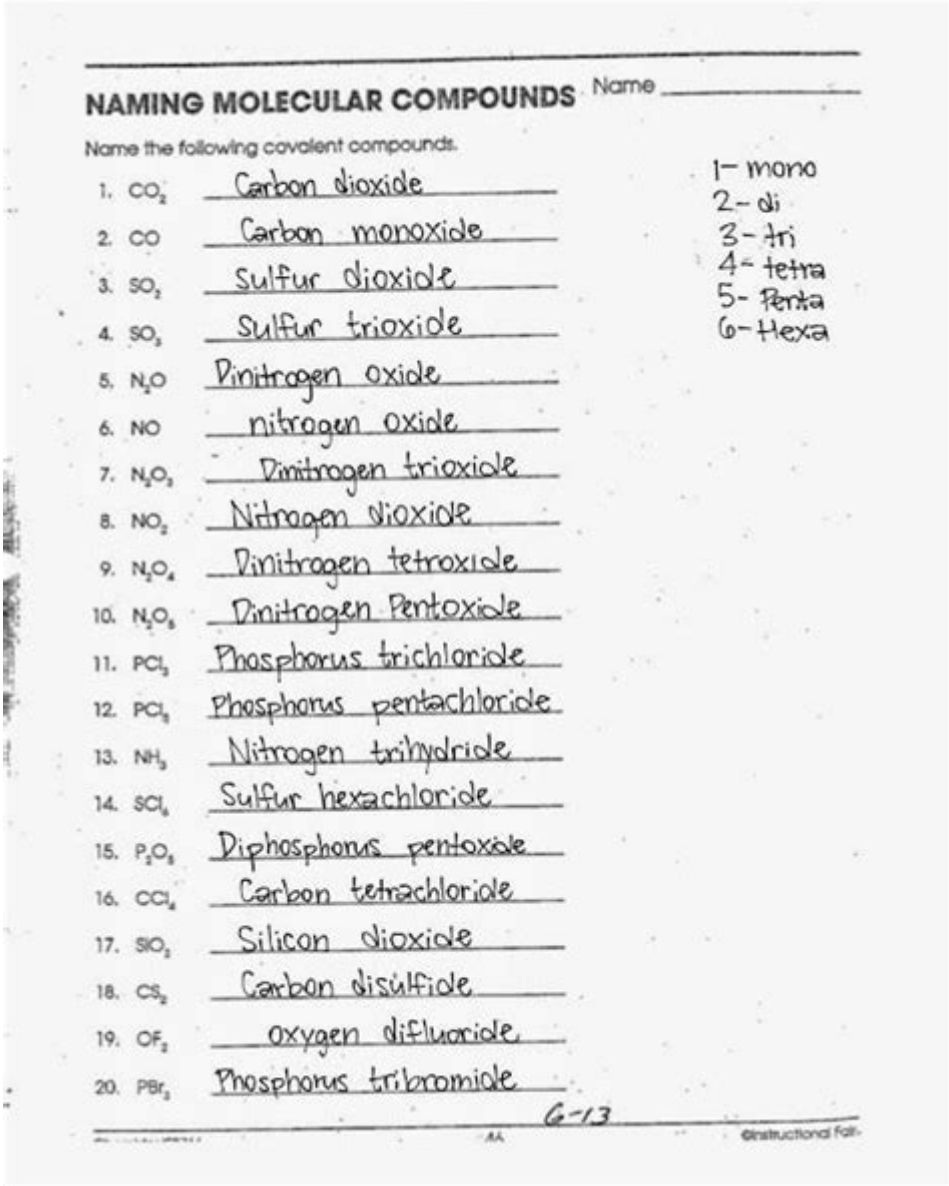
Covalent Compound Naming Practice Answer Key



NAMING MOLECULAR COMPOUNDS Name _____

Name the following covalent compounds.

1. CO_2 Carbon dioxide
2. CO Carbon monoxide
3. SO_2 Sulfur dioxide
4. SO_3 Sulfur trioxide
5. N_2O Dinitrogen oxide
6. NO nitrogen oxide
7. N_2O_3 Dinitrogen trioxide
8. NO_2 Nitrogen dioxide
9. N_2O_4 Dinitrogen tetroxide
10. N_2O_5 Dinitrogen Pentoxide
11. PCl_3 Phosphorus trichloride
12. PCl_5 Phosphorus pentachloride
13. NH_3 Nitrogen trihydride
14. SCl_6 Sulfur hexachloride
15. P_2O_5 Diphosphorus pentoxide
16. CCl_4 Carbon tetrachloride
17. SiO_2 Silicon dioxide
18. CS_2 Carbon disulfide
19. OF_2 oxygen difluoride
20. PBr_3 Phosphorus tribromide

1- mono
2- di
3- tri
4- tetra
5- Penta
6- Hexa

6-13

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Covalent compound naming practice answer key is an essential resource for students and educators in the field of chemistry. Understanding how to name covalent compounds is crucial for mastering chemical nomenclature, which is the system of naming chemical substances. Covalent compounds, formed by the sharing of electrons between non-metal atoms, have unique naming conventions that differ from those of ionic compounds. This article will explore the principles of covalent compound naming, provide examples, and present a practice answer key to enhance your understanding of this important topic.

Understanding Covalent Compounds

Covalent compounds are formed when two or more non-metal atoms share electrons to achieve a full outer shell, following the octet rule. This

sharing can occur in various combinations, resulting in a wide variety of covalent compounds with distinct properties.

Characteristics of Covalent Compounds

- Composition: Covalent compounds typically consist of non-metal elements.
- State of Matter: They can exist in all three states of matter: solid, liquid, or gas.
- Melting and Boiling Points: Generally, covalent compounds have lower melting and boiling points compared to ionic compounds.
- Electrical Conductivity: These compounds do not conduct electricity in their solid state, but some may conduct when dissolved in water.
- Solubility: Covalent compounds can be polar or non-polar, affecting their solubility in water and other solvents.

Nomenclature Rules for Covalent Compounds

The naming of covalent compounds follows specific rules to ensure clarity and consistency. Understanding these rules is vital for accurately naming and writing formulas for these compounds.

Rule 1: Prefixes Indicate the Number of Atoms

Prefixes are used to denote the number of each type of atom present in the compound. The following prefixes are commonly used:

1. Mono- (1)
2. Di- (2)
3. Tri- (3)
4. Tetra- (4)
5. Penta- (5)
6. Hexa- (6)
7. Hepta- (7)
8. Octa- (8)
9. Nona- (9)
10. Deca- (10)

Example: CO is named carbon monoxide, while CO_2 is called carbon dioxide.

Rule 2: The First Element is Named First

In a covalent compound, the first element in the formula is named using the full element name, followed by the appropriate prefix if there is more than one atom of that element.

Example: In N_2O, nitrogen is named first as "nitrogen" because it is the first element in the formula.

Rule 3: The Second Element Gets a Modified Name

The second element in a covalent compound is named by taking the root of the element's name and adding the suffix "-ide." This modification is essential for distinguishing the second element.

Example: In the compound SO_2, sulfur is named first, and oxygen becomes "oxide," resulting in sulfur dioxide.

Rule 4: Dropping the Prefix 'Mono-' for the First Element

When the first element in a covalent compound has only one atom, the prefix "mono-" is typically omitted.

Example: In N_2O, we say "nitrogen" instead of "mononitrogen" but still use "oxide" for oxygen.

Practice Problems: Naming Covalent Compounds

To reinforce the principles of covalent compound naming, here are some practice problems for students. The following list contains formulas of covalent compounds. Your task is to name each compound according to the rules discussed above.

1. CO
2. PCl_3
3. N_2O_4
4. SF_6
5. CCl_4
6. NO
7. Cl_2O
8. N_2S_3
9. H_2O
10. C_2H_6

Answer Key: Covalent Compound Naming Practice

Now that you have attempted to name the covalent compounds listed above, here are the correct answers for your reference:

1. CO - Carbon monoxide
2. PCl_3 - Phosphorus trichloride
3. N_2O_4 - Dinitrogen tetroxide
4. SF_6 - Sulfur hexafluoride
5. CCl_4 - Carbon tetrachloride
6. NO - Nitric oxide
7. Cl_2O - Dichlorine monoxide
8. N_2S_3 - Dinitrogen trisulfide
9. H_2O - Dihydrogen monoxide
10. C_2H_6 - Ethane

Common Mistakes in Naming Covalent Compounds

When learning to name covalent compounds, students often make some common mistakes. Recognizing these pitfalls can help avoid confusion.

Overusing or Misplacing Prefixes

- Many students mistakenly add prefixes to the first element even when it only has one atom. Remember to omit "mono-" for the first element.

Example: "Monocarbon monoxide" is incorrect; it should simply be "carbon monoxide."

Incorrectly Modifying the Second Element

- Students sometimes forget to change the name of the second element to end with "-ide."

Example: "Carbon dioxide" should not be named "carbon dioxygen."

Confusing Covalent and Ionic Compounds

- Students may confuse the naming conventions for covalent and ionic compounds. Ionic compounds often use the name of the metal followed by the non-metal with an "-ide" ending, and they may also include Roman numerals for transition metals.

Conclusion

In summary, the covalent compound naming practice answer key serves as an invaluable tool for students learning to navigate the complexities of chemical nomenclature. By understanding the rules and practicing with various examples, students can gain confidence in their ability to name covalent compounds accurately. The systematic approach to naming these compounds not only enhances their knowledge of chemistry but also prepares them for more advanced topics in the field. With regular practice and careful attention to the naming conventions, mastering covalent compound nomenclature becomes an achievable goal for any chemistry student.

Frequently Asked Questions

What is the general naming convention for covalent compounds?

Covalent compounds are named using prefixes to indicate the number of atoms of each element present, followed by the name of the first element and the

root name of the second element with an '-ide' suffix.

How do you determine the prefix for naming covalent compounds?

The prefix is based on the number of atoms of each element in the compound: mono- (1), di- (2), tri- (3), tetra- (4), penta- (5), hexa- (6), hepta- (7), octa- (8), nona- (9), and deca- (10).

What is the correct name for the compound N_2O_4?

The correct name for N_2O_4 is dinitrogen tetroxide.

Why is the prefix 'mono-' often omitted for the first element in covalent compound names?

The prefix 'mono-' is usually omitted for the first element in the name to avoid awkwardness; for example, CO is named carbon monoxide instead of monocarbon monoxide.

Can you provide an example of a compound with a prefix and its name?

Yes, for the compound PCl_5, the name is phosphorus pentachloride, where 'penta-' indicates five chlorine atoms.

What should you do if the second element begins with a vowel in covalent compound naming?

If the second element begins with a vowel, the prefix 'a' or 'o' may be dropped to avoid awkward pronunciation, for example, CO_2 is named carbon dioxide instead of carbon dioxygen.

Covalent Compound Naming Practice Answer Key

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[illegible]

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Jul 1, 2025 · [illegible]TOP20[illegible] [illegible]2025[illegible]7[illegible]1[illegible] [illegible] [illegible] ...

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