

Naming Molecular Compounds

INSTRUCTOR / SELF-STUDY ANSWER KEY

Answers and reasoning appear in red. Use these to discuss why incorrect choices are incorrect.

Part A — Concept checks

1. Name CO.

Answer: B. carbon monoxide — One oxygen gives monoxide; initial mono- on carbon is omitted.

2. What is the formula of phosphorus trichloride?

Answer: B. PCl_3 — Tri- means three chlorine atoms.

3. Name N_2O_5 .

Answer: B. dinitrogen pentoxide — Two N and five O -> dinitrogen pentoxide.

4. Which compound commonly uses covalent prefixes?

Answer: C. CO_2 — CO_2 is a binary molecular compound made of two nonmetals.

5. What does hexa- indicate?

Answer: D. 6 — Hexa- means six.

6. Name SO_3 .

Answer: A. sulfur trioxide — Three oxygen atoms require tri- in trioxide.

Part B — Application and explanation

7. Name N_2O_4 .

Model solution: There are two nitrogen atoms (di-) and four oxygen atoms (tetra-); the conventional spelling shortens tetraoxide to tetroxide. Final answer: dinitrogen tetroxide

8. Explain why this guideline matters, with an example of what could go wrong if you ignore it: Do not use Greek prefixes for a simple ionic formula such as CaCl_2 , which is calcium chloride.

Model explanation: Do not use Greek prefixes for a simple ionic formula such as CaCl_2 , which is calcium chloride. Example/check: Two nonmetals often form a binary molecular compound. Unlike simple ionic naming, the compound name usually uses prefixes to show the atom counts.

REFERENCE RELATIONSHIP

binary covalent name = prefix + first element + prefix + second-element -ide