TABLE 4 Binary Compounds of Nitrogen and Oxygen

Formula	Prefix-system name
N_2O	dinitrogen monoxide
NO	nitrogen monoxide
NO_2	nitrogen dioxide
N_2O_3	dinitrogen trioxide
N_2O_4	dinitrogen tetroxide
N_2O_5	dinitrogen pentoxide

The prefix system is illustrated further in **Table 4,** which lists the names of the six oxides of nitrogen. Note the application of rule 1, for example, in the name *nitrogen dioxide* for NO_2. No prefix is needed with *nitrogen* because only one atom of nitrogen is present in a molecule of NO_2. On the other hand, according to rule 2, the prefix *di-* in *dioxide* is needed to indicate the presence of two atoms of oxygen. Take a moment to review the prefixes in the other names in **Table 4.**

SAMPLE PROBLEM D

a. Give the name for As_2O_5.
b. Write the formula for oxygen difluoride.

SOLUTION

a. A molecule of the compound contains two arsenic atoms, so the first word in the name is *diarsenic.* The five oxygen atoms are indicated by adding the prefix *pent-* to the word *oxide.* The complete name is *diarsenic pentoxide.*

b. The first symbol in the formula is that for oxygen. Oxygen is first in the name because it is less electronegative than fluorine. Since there is no prefix, there must be only one oxygen atom. The prefix *di-* in *difluoride* shows that there are two fluorine atoms in the molecule. The formula is OF_2.

PRACTICE

Answers in Appendix E

1. Name the following binary molecular compounds:
   a. SO_3
   b. ICl_3
   c. PBr_5
2. Write formulas for the following compounds:
   a. carbon tetraiodide
   b. phosphorus trichloride
   c. dinitrogen trioxide

extension
Go to **go.hrw.com** for more practice problems that ask you to write names and formulas for binary molecular compounds.
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