Exercise 35

Problems 35 and 36 require some knowledge of chemical notation.

Write the chemical equation $CO + H_2O = H_2 + CO_2$ as an equation in ordered triples (x_1, x_2, x_3), where x_1, x_2, x_3 are the number of carbon, hydrogen, and oxygen atoms, respectively, in each molecule.

Solution

$$CO + H_2O = H_2 + CO_2$$
$$(1, 0, 1) + (0, 2, 1) = (0, 2, 0) + (1, 0, 2)$$
$$(1, 2, 2) = (1, 2, 2)$$

This shows that the number of atoms present is the same before and after the chemical reaction.