Using Function Notation

Recall that function notation, $y = f(x)$, indicates that the function f associates output y to input x. This notation is flexible enough to describe not only problems in which it is desired to determine the unknown output for a given input, but also to determine an unknown input for a given output. (Examples: p. 65, #25, 11)

Domain and Range

The **domain** of a function *f* is the set of all of its possible input values. The **range** of *f* is the set of all its corresponding possible output values. Be aware that when functions are used to model real phenomena, their domains (and ranges) may be naturally restricted in ways that would not occur if the same function had no underlying modeling context. (Example: p. 72, #29)

While the phenomenon being modeled generally makes clear what the domain of the model function is, a function's formula also provides valuable information about the domain. Look for values of the input variable that force a *division by* 0 or the computation of the *square root of a negative number*; these are input values that cannot be part of the domain. (Examples: p. 72, #12, 10, 16)
The determination of the range of a function is generally much harder than the determination of its domain. Often, the graph of a function gives a good indication of what the range of a function is. (Example: p. 72, #1, 7, 11)