

What Does Understanding Mean?

In science and engineering, we understand something only if we can describe it mathematically. Note that I wrote *can describe*, not *have described*. For example, if you play chess, you understand how the squares of a chessboard are colored even though you have never described it mathematically. However, you should be able to write a function that mathematically describes the coloring scheme—for example, as a function *color* such that *color*[*i*][*j*] equals the color of the square in the *i*th row and *j*th column. If you can't describe such a function at least informally, you may need to study the *modulus* operator `%`, described in [Section 13.1](#).

Understanding what a specification should say means being able to describe each atomic action mathematically.