Why Hypothesis Testing?

What the book says on pages 174-175 is not mathematically wrong, but it is somewhat remote from the actual applications of hypothesis testing in business and in business research.

The typical reason to do a hypothesis test is to use sample data to make an educated guess about whether or not the population mean is different from some specified standard of comparison.

We may want to know whether or not the potential population of future objects (people, places, things) subjected to a new procedure has a higher mean of some desired characteristic (like profit) than the prior established amount or than the breakeven amount. If the sample mean is so much higher than the prior established or breakeven amount that it strongly implies that the population mean must also be above the prior established or breakeven amount, we will seriously consider switching. But if the sample mean is only a little higher than the prior established or breakeven amount (or is actually lower than it), we will not likely want to waste resources making the switch.

Technically, this situation calls for a one sided test.
The null hypothesis is $H_0 : \mu = \mu_o$ and the alternate hypothesis is $H_1 : \mu > \mu_o$ where $\mu$ is the unknown mean of the potential population of future objects subjected to a new procedure, and $\mu_o$ is the previous or threshold value that we are interested in.

Contrariwise, we may want to know if the current population mean falls below some historical or otherwise specified standard of some desired characteristic. If the sample data strongly indicate that the mean is below the standard, we might take action to solve the problem. But if the evidence is weak or missing, we will not likely expend resources fixing a problem that may very well not exist.

Technically, this situation calls for a one sided test.
The null hypothesis is $H_0 : \mu = \mu_o$ and the alternate hypothesis is $H_1 : \mu < \mu_o$

Finally, we may want to make an educated guess about whether the mean of a population is exactly (or almost exactly) equal to a specified value, or whether it is different from that specified value. without caring whether the difference, if it exists, is on the high side or the low side.

Technically, this situation calls for a two sided test.
The null hypothesis is $H_0 : \mu = \mu_o$ and the alternate hypothesis is $H_1 : \mu \neq \mu_o$