Checking every product one-by-one (linear search) is simple, and if you're lucky the first product is a match, and you take no time, but with linear search you'll typically check half your list, and in the worst case you may check every product. This means your response time scales directly with your catalog (O(n)).

Binary search, on the other hand, works when you've sorted your products (for example, by name), and even in the worst case you're only reducing your search space by half, so you have O(log n) comparisons each time.

Sorting has a cost of O(n log n) upfront, and if you're actively adding and removing products you'll have to maintain the sort order! For pure name lookups in a mostly static set of products, binary search provides a large speedup over linear scans. But, for a real e-commerce platform, you'd typically build on a hash map (for exact ID lookups in O(1) time) or a full-text search engine like Elasticsearch (to support partial matches, rank ordering, and other kinds of queries).