

The last L digits can be efficiently computed in $\text{poly}(\log n, L)$ time. See e.g. <https://emathgroup.github.io/blog/factorial-tail>.

It suffices to compute $n!$ (or the Gamma function) to some constant precision, and we can use [Stirling's approximation](#) in $O(\text{polylog } n)$ time.

The total running time is $O(\text{polylog } n)$.

Remark. most of the accepted solutions have precision issues, see my article <https://leetcode-cn.com/problems/abbreviating-the-product-of-a-range/solution/yi-ge-shu-ju-tuan-mie-jue-da-bu-fen-dai-234yd/>.

Abbreviating the Product of a Range

Submission Detail

291 / 291 test cases passed.

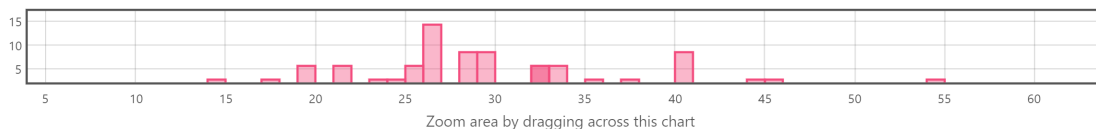
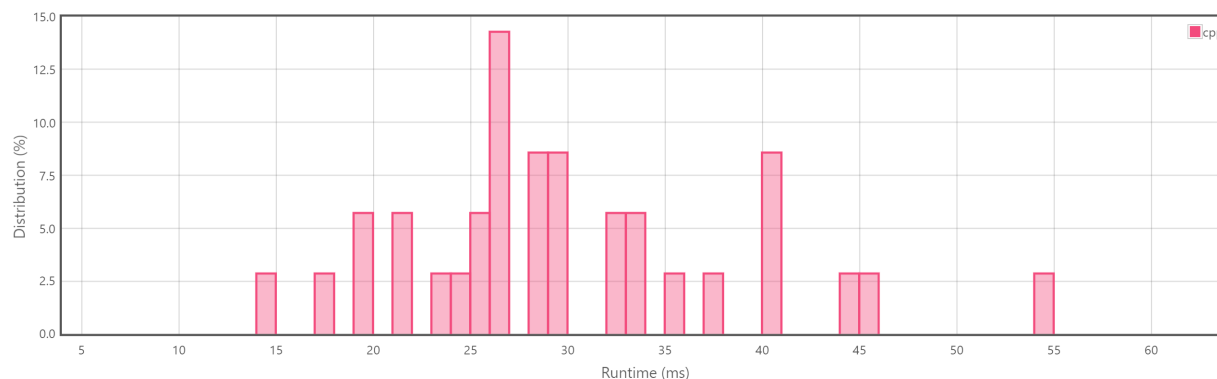
Runtime: 0 ms

Memory Usage: 6.4 MB

Status: **Accepted**

Submitted: 0 minutes ago

Accepted Solutions Runtime Distribution



Runtime: 0 ms, faster than 100.00% of C++ online submissions for Abbreviating the Product of a Range.

Memory Usage: 6.4 MB, less than 20.00% of C++ online submissions for Abbreviating the Product of a Range.

References