Mergesort running time

Recall the Mergesort algorithm: divide into two sets, sort the two sets, then merge.
The running time analysis had

- $t(1) = C_1$
- $t(n) = 2t(\frac{n}{2}) + Cn$ for $n > 1$

Hence, there is some constant C' such that $t(n) \leq C'n \log n$ for all $n \in \mathbb{Z}$.