

Break it down to # of iterations

2 3 ~~4~~ 5 ~~6~~ 7 ~~8~~ 9 ~~10~~ 11 ~~12~~ 13 ~~14~~

First Prime = 2, remove $\frac{n}{2}$ (4, 6, 8, 10, 12, 14...)

Second = 3, remove $\frac{n}{3}$ (6, 9, 12, ...)

Third = 5, remove $\frac{n}{5}$ (10, 15, ...)

$$\therefore \Rightarrow \left\{ \frac{n}{2} + \frac{n}{3} + \frac{n}{5} + \dots \right\} = O(n \log(\log n))$$

from $\frac{1}{p}$ for all primes up to n

from n on top

each one represents going into inner loop they are the only ones we care about (since the others will add up to be $\leq O(n)$)