[Sum of Prime Factors](https://discuss.codecademy.com/t/challenge-sum-of-prime-factors/81035)

**Code Challenge, April 5th 2017**

Every two weeks, we feature the type of brain-teasing question that [might be asked](https://discuss.codecademy.com/t/about-code-challenges/82161) in a full-stack developer’s job interview.

For this week’s challenge:

Write a function that finds the sum of all [prime factors 1.5k](https://en.wikipedia.org/wiki/Prime_factor) of a given number, n.

Try to write your function without using [trial division 1.1k](http://mathworld.wolfram.com/TrialDivision.html)!

**Scroll down and reply to this thread with your code to participate!**

**Extra Credit**

**Intermediate Difficulty**

If you’d like to go a step further:

Write a function that finds the sum of each *unique* prime factor of a given number, n. For example, 3 is the only prime factor of 9.

**Advanced Difficulty**

For a final, more advanced challenge, your code should run in *sub-linear time* (find out what we mean by reading about Big O notation and complexity [here 234](https://rob-bell.net/2009/06/a-beginners-guide-to-big-o-notation/) and [here 88](http://stackoverflow.com/questions/487258/what-is-a-plain-english-explanation-of-big-o-notation)). There’s also an old (and thus unsupported) Codecademy course on Big O [here 108](https://www.codecademy.com/courses/big-o/0/1) (thanks [@mindful\_coder](https://discuss.codecademy.com/u/mindful_coder)).

**How to participate**

We featured the best submissions entered in the opening few days of this challenge [here](https://discuss.codecademy.com/t/challenge-sum-of-prime-factors/81035/25), but do feel free to continue to post your answers below!

Happy coding!

The fine print:

* Remember, the point of code challenges like these is to test and stretch yourself with an *unusual* problem, so don’t be dissuaded if you find it difficult or don’t know where to start! Start with Googling, but see if you can find out how to think about the problem and what tools you need to solve it, but don’t just go looking for the solution itself. This way, it’ll be a better learning exercise for you - developers can’t always find and copy “the right answer” online, which is why questions like these are **used in developer job interviews**!
* Do you have a code challenge to share with other users? Let us know! Make a new topic with [Challenge] in the title to open a challenge, maybe we’ll even feature it in our next newsletter!