**Q 16.11**(pg. 182 *Cracking the Coding Interview, 6th Edition*)

You are building a diving board by placing a bunch of planks of wood end-to-end. There are two types of planks, one of length shorter and one of length longer. You must use exactly K planks of wood. Write a method to generate all possible lengths for the diving board.

*Hint 1*: Consider building a diving board. What are the choices you make?

*Hint 3*: Consider a recursive solution.

*Hint 4*: Once you have a recursive algorithm, think about the runtime. Can you make this faster? How?

*Hint 5*: Consider memorization (dynamic programming) to optimize the runtime. Think carefully about what exactly you cache. What is the runtime? The runtime is closely related to the max size of the table.

*Hint 6*: There an alternate, clever (and very fast) solution. You can actually do this in linear time without recursion. How?

*Hint 7*: Think about it this way. You are picking K planks and there are two different types. All choices with 10 of the first type and 4 of the second type will have the same sum. Can you just iterate through all possible choices?