

## Problem H. Hardcore String Counting 2

Input file: *standard input*  
Output file: *standard output*  
Time limit: 1 second  
Memory limit: 512 mebibytes

What happened to “Hardcore String Counting 1”? That’s a secret!

A non-empty word  $v$  over some alphabet is a *square* if it can be represented as  $v = ww$  for some word  $w$ .

A word is *square-free* if all its non-empty substrings are not squares.

Your task is to compute the number of square-free words of length  $\ell$  over the alphabet  $\{a, b, c\}$  for each  $\ell$  from 1 to  $n$ .

### Input

The only line of the input contains an integer  $n$  ( $1 \leq n \leq 120$ ).

### Output

For each  $\ell$  from 1 to  $n$ , print the number of square-free words of length  $\ell$  over the alphabet  $\{a, b, c\}$  on a separate line.

### Example

standard input	standard output
10	3 6 12 18 30 42 60 78 108 144

### Note

You can see <https://oeis.org/A006156> for more details, but this probably won’t help you much.