Problem E. Elegant Square

Input file:	`elegant.in`
Output file:	`elegant.out`
Time limit:	2 seconds
Memory limit:	512 megabytes

Many people know about magic squares — squares that contain distinct numbers and have equals sums of rows and columns. Recently Eve has heard about magic squares, and now she has invented her own version: *elegant squares*.

Eve calls a square of $n \times n$ integers elegant if the following conditions are satisfied:

- All entries of the square are distinct positive integers.
- All integers are square free. That means that no integer is divisible by t^2 for any $t > 1$.
- The product of numbers in any row and any column is the same.

For example, the picture below shows an elegant 3×3 square.

1	21	10
6	5	7
35	2	3

All of its entries are distinct positive square free integers, and product of any row and any column is 210.

Help Eve, find an $n \times n$ elegant square. All numbers in the square must not exceed 10^{18}. It is guaranteed that for the given constraints there exists such square.

Input

The input file a single integer n ($3 \le n \le 30$).

Output

Output $n \times n$ integers: the found elegant square. All printed integers must not exceed 10^{18}.

Examples

elegant.in	elegant.out
3	1 21 10 6 5 7 35 2 3