We all know the Super Powers of this world and how they manage to get advantages in political warfare or even in other sectors. But this is not a political platform and so we will talk about a different kind of super powers — "The Super Power Numbers". A positive number is said to be super power when it is the power of at least two different positive integers. For example 64 is a super power as $64 = 8^2$ and $64 = 4^3$. You have to write a program that lists all super powers within 1 and $2^{64} - 1$ (inclusive).

Input

This program has no input.

Output

Print all the Super Power Numbers within 1 and $2^{64} - 1$. Each line contains a single super power number and the numbers are printed in ascending order.

Note: Remember that there are no input for this problem. The sample output is only a partial solution.

Sample Input

Sample Output

```
1
16
64
81
256
512
.
.
.
```