

7629 Powers

Given a number n , solve the equation $n = a^b$ where a and b are positive integers and b is as large as possible.

Input

The input consists of an arbitrary number of records, but no more than 20. Each record is a line containing a positive integer n ($2 \leq n \leq 10^9$).

The end of input is indicated by a line containing only the value '-1'.

Output

For each input record, output a line of the form ' a^b ', where $n = a^b$ and b is as large as possible.

Sample Input

```
17
25
6561
-1
```

Sample Output

```
17^1
5^2
3^8
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