

PTIME - Prime Time

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For your math homework this week your teacher gave you five large numbers and asked you to find their prime factors. However these numbers aren't *nearly* large enough for someone with knowledge of programming like yourself. So you decide to take the factorial of each of these numbers. Recall that $N!$ (N factorial) is the product of the integers from 1 through N (inclusive). It's your job now to create a program to help you do your homework.

Input

Each test case contains a number N ($2 \leq N \leq 10000$).

Output

The output should contain a line representing the prime factorization of the factorial given number, which should be of the form: $p_1^{e_1} * p_2^{e_2} * \dots * p_k^{e_k}$ where p_1, p_2, \dots, p_k are the distinct prime factors of the factorial of the given number in increasing order, and e_1, e_2, \dots, e_k are their exponents.


Example

Input:

10

Output:

$2^8 * 3^4 * 5^2 * 7^1$

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stranger77 (/users/stranger77): 2017-02-07 10:56:49
Easy one AC in 1 go.....0.0sec!



aeonflux (/users/aeonflux): 2016-12-11 16:39:17
no need of sieve..simple brute force works!!!!



Anuj Arora (/users/anujiit): 2016-09-03 21:26:30
AC in one go!!! 111th question

Last edit: 2016-09-03 21:27:14



vinay12345 (/users/vinay12345): 2016-08-25 17:37:30
AC in one go ...0.00sec



mkfeuhrer (/users/mkfeuhrer): 2016-06-14 23:33:55
AC in 1 go :-) my 100th :-) prime funn..!



AD (/users/anurag_101): 2016-06-14 21:35:46
Easy one ! Simple trial division will do. :D



pranjalikumar9 (/users/pranjalikumar9): 2016-05-21 10:40:05
De Polignac's :) learnt something new!




sy_117 (/users/sy_117): 2016-04-05 23:50:26
wow such a nice ques nD i got AC in 0.0 sec !!!!! :P



hanstan (/users/hanstananda): 2016-04-05 19:13:17
Care the limit is for N more than 10000...
Finally AC 0.00s




surya2196 (/users/surya2196): 2016-04-03 22:58:15
lolypop question

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Added by: Amlesh Jayakumar
(/users/amlesh_jk92)
Date: 2012-06-19
Time limit: 0.197s
Source limit: 50000B
Memory limit: 1536MB
Cluster: Cube (Intel G860) (/clusters/)
Languages: All except: ASM64
Resource: DWITE Programming Contest
2012 (Own Problem)

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