

ANZAC 2014 - Round 1

Problem I: Exponential Towers

The number 729 can be written as a power in several ways: 3^6 , 9^3 and 27^2 . It can be written as 729^1 , of course, but that does not count as a power. We want to go some steps further. To do so, it is convenient to use '^' for exponentiation, so we define $a^b = a^b$. The number 256 then can be also written as 2^{2^3} , or as 4^{2^2} . Recall that '^' is right associative, so 2^{2^3} means $2^{(2^3)}$.

We define a *tower of powers of height k* to be an expression of the form $a_1^{a_2^{a_3^{\dots^{a_k}}}}$, with $k > 1$, and integers $a_i > 1$. Given a tower of powers of height 3, representing some integer n , how many towers of powers of height *at least* 3 represent n ?

Input

The input file contains several test cases, each on a separate line. Each test case has the form a^b^c , where a , b and c are integers, $1 < a, b, c \leq 9585$.

Output

For each test case, print the number of ways the number $n = a^b^c$ can be represented as a tower of powers of height at least three.

The magic number 9585 is carefully chosen such that the output is always less than 2^{63} .

Sample Input	Sample Output
4^{2^2}	2
8^{12^2}	10
$8192^{8192^{8192}}$	1258112
$2^{900^{576}}$	342025379