Happy Numbers

Time limit: *1250 ms*
Memory limit: *256 MB*

A happy number n is a positive integer defined by the following process:

- Starting with n, replace it with the sum of the squares of its digits.
- Repeat the process until the number reaches 1 (where it will stay in eternal happiness), or repeats in an infinite loop that does not include 1.
- Those numbers for which this process ends in 1 are happy numbers.

For example, 23 is a happy number: 23 -> 13 -> 10 -> 1 -> 1.

However, 89 is not a happy number (cycle in bold): 89 -> 145 -> **42 -> 20 -> 4 -> 16 -> 37 -> 58 -> 89 -> 145** -> 42 -> 20 -> 4

Given two numbers a, b return the number of happy numbers between a and b (inclusive).

Standard Input

Each test contains two space separated integers a, b

Standard Output

For each test case, output a single integer, the number of happy numbers between a and b (inclusive).

Constraints and notes

- $1 \leq a \leq b \leq 10^{16}$

Input	Output	Explanation
`1 44`	`10`	There are 10 happy numbers between 1 and 44 (inclusive): 1, 7, 10, 13, 19, 23, 28, 31, 32, 44