

# The Enigma of Cocos Island Coins

David is a dedicated and adventurous diver. Every summer, without fail, he dives deep into the pristine blue waters, unveiling the mysteries of the ocean. On one such exhilarating dive near the enchanting Cocos Island, he stumbled upon a long-lost shipwreck. Nestled within its chambers, he discovered a treasure chest overflowing with gleaming coins of an age gone by.

The coins, although incredibly valuable, were deceptively similar to ordinary coins. Fearing they might be misplaced or mistaken for common currency, David devised a clever plan. He remembered an ancient prime number, which he decided to call ' $\Psi$ '. He then assigned a unique identifier to each coin, which he named 'Ancient Signature Token' (AST). This AST was special because it was defined as a number whose smallest prime factor was ' $\Psi$ '. He labelled the first coin with the tiniest AST, the subsequent one with the next in magnitude, and so forth.

Upon returning home and basking in the glory of his discovery, David wanted to share his joy. He decided to challenge his dear friend Sarah with a playful game. With a mischievous glint in his eye, David shared the secret prime number ' $\Psi$ ' with Sarah. The challenge? If Sarah could determine the unique ' $\Omega$ ' identifier of the  $n$ th coin, David would reward her with it. However, David added a twist: if the ' $\Omega$ ' value of the  $n$ th coin exceeds 109, Sarah should simply say 'zero'. In that case, she would instantly win the coin.

Can Sarah outwit David's challenge and claim the coin? It's a battle of wits, and you are her guiding star!

## Input Format

The first and only line of input contains two space-separated integers  **$n$**  and  **$\Psi$**

## Constraints

**$1 \leq n, \Psi \leq 109$**  It is guaranteed that  $\Psi$  is a prime number.

## Output Format

Print a single integer

## Sample Input 0

8 11

## Sample Output 0

341