Perfect primes P16356_en

Given a natural number n, let $s(n)$ be the sum of the digits (in base 10) of n. We say that n is a *perfect prime* if the infinite sequence formed by n, $s(n)$, $s(s(n))$, ... only contains prime numbers. For instance, 977 is a perfect prime, because 977, as well as $9+7+7 = 23$, $2+3 = 5$, 5, 5, ... are prime numbers.

Input

Each line of the input contains a number $1 \leq n \leq 16 \cdot 10^6$. A line with $n = 0$ marks the end of the input.

Output

For each n, print in a line "`yes`" or "`no`", depending on whether n is a perfect prime or it is not.

Sample input 1

```
977
1
7
17
15999923
16000000
0
```

Sample output 1

```
yes
no
yes
no
yes
no
```

Problem information

Author: Salvador Roura
Translator: Carlos Molina

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