
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 $n, s(n), s(s(n)), \dots$ only contains prime numbers. For instance, 977 is a perfect prime, because 977, as well as $9 + 7 + 7 = 23$, $2 + 3 = 5$, $5, 5, \dots$ 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

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

Sample output

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

Problem information

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