Control C301C   P57882_en

Given a natural number $n \geq 1$, being $s(n)$ the sum of its divisors not counting itself. A number $n \geq 3$ is called *popiropis* if $n = s(n-2) + s(n) + s(n+2)$. A number $n \geq 3$ is called *k-popiropis* if $n*k = s(n-2) + s(n) + s(n+2)$ for an integer $k \geq 2$.

For instance, the number 133 is popiropis, because $s(131) = 1$, $s(133) = 27$ and $s(135) = 105$. Besides, 132 is 3-popiropis, because $s(130) + s(132) + s(134) = 396 = 132*3$.

Your task is to write a program that, for each natural number given, print if it is popiropis, if is *k*-popiropis (and which is the value of *k*), or if it is nothing.

Input

The input is a sequence of natural numbers $n \geq 3$.

Output

Your program must print a line for each *n*, indicating which class is: popiropis, *k*-popiropis, or nothing.

Observation

Your program must implement and use the function

>   **int** *sum_divisors* (**int** *n*);

that, given a natural number n different than 0, returns the sum of its divisors (not counting itself).

Sample input 1

```
131
132
133
134
```

Sample output 1

```
131: nothing
132: 3-popiropis
133: popiropis
134: nothing
```

Sample input 2

```
3
80
273
38222
44642
1000000
1629073
8802908
```

Sample output 2

```
3: nothing
80: 3-popiropis
273: popiropis
38222: 4-popiropis
44642: 4-popiropis
1000000: nothing
1629073: popiropis
8802908: 3-popiropis
```

Problem information

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