Problem A. Polynomial in a Black Box

Input file:	*standard input*
Output file:	*standard output*
Time limit:	2 seconds
Memory limit:	512 mebibytes

This is an interactive problem.

Alice has a black box which works with integers modulo $m = 10^9 + 7$. If a user types a number x on the keyboard of the box, the screen shows the number equal to the value of the polynomial $p(x) = (a_d x^d + a_{d-1} x^{d-1} + \ldots + a_1 x^1 + a_0) \bmod m$. The degree d of the polynomial is unknown, as are its coefficients a_i. It is only known that $0 \le d \le 10$ and $a_d \ne 0$.

Alice can type several numbers x and learn the values of the polynomial for these numbers. Help her find the degree d of the polynomial. She can input an x at most $d + 3$ times.

Interaction Protocol

To learn the value of the polynomial for number x, print a line of the form "`ask` x" ($0 \le x < 10^9 + 7$). As a result, you will get a line with the value $p(x)$, or, if you asked more than $d + 3$ such questions, you will get the number -1 instead of the value, and evaluation of your solution will terminate.

To give the answer, print a line of the form "`degree` d". After that, terminate your solution gracefully.

After printing each line, flush the output buffer, or you will get the outcome `Idleness Limit Exceeded`: this can be done by calling, for example, `fflush (stdout)` in C or C++, `System.out.flush ()` in Java, `flush (output)` in Pascal, or `sys.stdout.flush ()` in Python.

Example

standard input	standard output
1000000006 7 34 98	ask 1 ask 3 ask 6 ask 10 degree 2

Note

In each test, the degree and the coefficients of the polynomial $p(x)$ are chosen and fixed in advance.

In the example, which is also the first test in the testing system, $p(x) = x^2 + 1\,000\,000\,005$. All other tests were created as follows: first, the degree d was chosen ($0 \le d \le 10$), and after that, one of the polynomials of such degree was chosen as $p(x)$ uniformly at random.