Calculate

$$R := B^P \bmod M$$

for large values of B, P, and M using an efficient algorithm. (That's right, this problem has a time dependency !!!.)

Input

The input will contain several test cases, each of them as described below. Consecutive test cases are separated by a single blank line.

Three integer values (in the order B, P, M) will be read one number per line. B and P are integers in the range 0 to 2147483647 inclusive. M is an integer in the range 1 to 46340 inclusive.

Output

For each test, the result of the computation. A single integer on a line by itself.

Sample Input

```
3
18132
17

17
1765
3

2374859
3029382
36123
```

Sample Output

```
13
2
13195
```