Artificium

Ruby's House Hunt

Runtime Limit – 3s

Problem Statement

Houses are costly, usually requiring mortgages for purchase. Mortgages are long-term loans secured by property, with an annual interest rate applied for the bank's profit.

Ruby seeks her dream home, and is contemplating a 30-year mortgage. She must ensure a down payment of at least 10% from her *savings* and assess her monthly *income* for affordability.

For each house in a list, with *price*, and monthly living *expenses*, along with Ruby's mortgage rate (*mr*), *savings*, and monthly *income*, determine *affordability*, and *spare monthly income* rounded down.

Format

Input

Line 1: Ruby's Monthly *income* (integer), the current *mr* (float) mortgage rate and Ruby's *savings* (integer), separated by a space.

Line 2: An integer *N* for the number of houses Ruby is looking at.

Next *N* lines: The house *price*, and the additional monthly living *expenses* of Ruby for this house. All integers, separated by a space.

Output

***N* lines:**

"Yes, the house is affordable with $*spare monthly income* (rounded down) to spare."

OR

"No, the house is not affordable."

Constraints

$0 < N < 10$

$0 <= price <= 1000000$

$0 <= mr < 1$

Sample

Input

```
2000 0.075 10000
6
100000 200
100000 150
100000 1500
100000 1500
100000 1800
150000 200
```

Output

```
Yes, the house is affordable with $1237 to spare.
Yes, the house is affordable with $1287 to spare.
No, the house is not affordable.
No, the house is not affordable.
No, the house is not affordable.
No, the house is not affordable.
```