Intergalactic Mortgage

`mortgage.c`, `mortgage.C`, `mortgage.java`, `mortgage.p`

Many people on Earth want to solve their housing. When they have not enough money to buy their house or flat, they get mortgage* from some bank and then they pay fixed monthly payments until they redeem the mortgage.

You may think that paying mortgage for 30 years is a long time, but that is quite short time compared to galactic mortgages. Aliens are not buying houses, but whole planets. Since planets are a "little" more expensive, the mortgage periods are longer.

The mortgages work the same way for aliens as for us earthlings. If an alien wants to buy a planet, he comes to GCB (Galactic Central Bank) to borrow an amount of X. Bank offers a mortgage with the *interest rate* r% p.a. (= "per year"). Interests are computed at the end of each month (1 alien year has 12 months). At the end of every month, the current debt is raised by $(r/12)$% and then the alien pays back to bank some fixed amount Y, which is subtracted from the debt.

Because of intergalactic financial crisis, bank rules are quite strict. Every mortgage must start on the first day of a year. If an alien does not pay enough money to cover the principal and interests within first N years, the bank will then confiscate his planet.

On the other hand, galactic employment works quite nice. Once you have a job, you are guaranteed to have it forever. An alien can give the same amount Y at the end of each month for the whole mortgage period.

Your task is to decide whether an alien is able to pay his mortgage or not.

Input Specification

The input contains several test cases. Each test case is described by a line containing numbers X, Y, N, r separated by space. X is principal (the initial amount borrowed), Y is the monthly payment (paid at the end of each month), N is number of years in which the alien is required to pay the mortgage, r is interest rate p.a. in percent.

X, Y are integer numbers ($1 \leq X, Y \leq 1\,000\,000\,000$). N is integer number ($1 \leq N \leq 10\,000$). r is float ($0 \leq r \leq 100$, 2 digits precision). Values X, Y, N, r for each test case were chosen so that even if the alien would not pay anything for the whole time, the resulting debt after N year would be at most 10^{25}. Also, the precision of double should be sufficient for most computations (differences in the rate less then 10^{-8}% will not affect the result).

The last test case is followed by a line containing four zeros.

*hypotéka

Output Specification

For each test case output “`YES`” if the alien can pay the mortgage within N years and “`NO`” if his salary is too small to pay the mortgage on time.

Sample Input

```
10000 500 2 5.00
10000 400 2 5.00
10000 245 100 30.00
321321321 2895492 11 3.23
0 0 0 0
```

Output for Sample Input

```
YES
NO
NO
NO
```