You put an amount into a bank account that earns interest at a fixed rate every year.

How many years does it take for the account balance to be double the original amount?

**Generalization of Example:** Horstman, page 18

**Variables?**

- ✓ Deposit amount  
  \[ Amount \text{ (input)} \]
- ✓ % Interest rate  
  \[ Rate \text{ (input)} \]
- ✓ Account balance  
  \[ Balance \]
- ✓ Number of years  
  \[ Years \]
- ✓ Yearly Interest  
  \[ Interest \]
Algorithm?

Input  Amount

Input  Rate

Years ← 0

Balance ← Amount

Repeat while Balance < 2 x Amount

{

  Years ← Years + 1

  Interest ← Balance x Rate / 100

  Balance ← Balance + Interest

}

Output Years
START

INPUT
Amount
Rate

INITIALIZE
Years \leftarrow 0
Balance \leftarrow Amount

 Balance < 2 \times Amount ?

NO
UPDATE Years
Years \leftarrow Years + 1

UPDATE Balance
Interest \leftarrow Balance \times Rate / 100
Balance \leftarrow Balance + Interest

OUTPUT
Years
Balance

STOP