

Problem 1 – 2-4-8

Molly and Molly (yes, they have the same name) are two girls from the neighborhood. They like very much two games – one is singing the famous song “Molly, molly, molly...” and the other is sending encrypted SMS messages between each other so that their friends can never read them, no matter what.

Molly and Molly communicate with a secret algorithm. It accepts **three numbers**, **one** of which is a **secret code**, defining a **mathematical** (don't hate us, math is a universal language) **function** for the **other two**. Afterwards, a **magic number 4 appears** in the calculations and distorts the answer. Maybe you should start using this algorithm for your SMS messages too!

You are given three numbers **A**, **B**, **C**, where **B** is actually the secret code symbol.

- If the code is **2** – find the remainder after **A** is divided by **C**. Example: **A = 5**, **C = 3**, **A % C = 2**.
- If the code is **4** – find the sum of **A** and **C**. Example: **A = 5**, **C = 3**, **A + C = 8**.
- If the code is **8** – find the product of **A** and **C**. Example: **A = 5**, **C = 3**, **A * C = 15**.

After you find the result **R** from the code transformation, if **R can be divided by 4** with **remainder 0**, find **R divided by 4**. Otherwise **find the remainder after R is divided by 4**.

For example, if **R** is **16**, it can be divided by **4** with no remainder, so the answer is **4**. If **R** is **9**, it cannot be divided by **4**, so the answer is **1**.

Input

The input data should be read from the console.

On the first input line you will receive the positive integer **A**.

On the second input line you will receive the positive integer **B**.

On the third input line you will receive the positive integer **C**.

The input data will always be valid and in the format described. There is no need to check it explicitly.

Output

The output should be printed on the console.

If **R** can be divided by **4** with no remainder, on the first output line you should print **R divided by 4**.

Otherwise, on the first output line you should print the **remainder after R is divided by 4**.

On the second output line, you should print **R**.

Constraints

- **A**, **B** and **C** will be positive integers between **1** and **999 999**, inclusive.
- Allowed working time for your program: **0.10** seconds. Allowed memory: **16 MB**.

Examples

Input example	Output example
10 2 6	1 4
6 4 3	1 9