

H Hopelessly Hungover

Time limit: 1s

First-year student Bob needs to learn n facts for an online exam. Currently, he knows none. The exam can be taken at any time, even during weekends, but due to the surveillance software, it is impossible to cheat. The grading is quite harsh and requires that he knows all the n facts to pass.

On weekdays, Bob studies diligently and can learn at most k facts per day. On weekends, there are the Freshmen Party Committee events, meticulously planned and impossible to miss, where he forgets m facts per day due to sheer excitement. Of course, when the number of facts Bob knows is less than m , he will forget all the facts during the party and wakes up the next day knowing none. Starting in the morning of some given day of the week, determine how many days it takes until he first knows all n facts, or determine that he never learns all n facts.



Beer and studying do not go great together.
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As an example, consider the first sample input, where Bob needs to learn 14 facts. He can learn 1 fact every weekday and forgets 1 fact per day in the weekend. He starts off knowing 0 facts on a Monday morning. Bob learns 1 fact during the day. He does so on all the 5 weekdays, so on Saturday morning he knows 5 facts. Unfortunately, he forgets a fact on both Saturday and Sunday, so he starts the second week on Monday morning knowing 3 facts. This keeps going in the span of 4 weeks. On the Friday of the last week, he knows all the 14 facts so he can start his online exam in the evening. This turns out to be exactly 26 days, accounting for the starting Monday and final Friday as well.

Input

The input consists of:

- One line with four integers n , k , m , and d ($1 \leq n, k, m \leq 1000$, $1 \leq d \leq 7$), where: n is the total number of facts that Bob must learn, k is the number of facts learned on a weekday, m is the number of facts forgotten on a weekend day, and d represents the current day of the week (where 1 corresponds to Monday and 7 corresponds to Sunday).

Output

Output the number of days (including the current day) that elapse before Bob first knows all n facts. Note that the last day that Bob still needs to study should be included, although he will know all the facts on the same day in the evening and can start his exam immediately. If Bob can never learn all facts, output “impossible”.

Sample Input 1

14 1 1 1

Sample Output 1

26

Sample Input 2

15 1 10 4

Sample Output 2

impossible

Sample Input 3

10 2 20 2

Sample Output 3

11