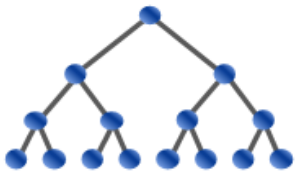

# USACO 2016 FEBRUARY CONTEST, BRONZE
# PROBLEM 2. CIRCULAR BARN

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Contest has ended.

**Log in to allow submissions in analysis mode**

English (en)

Being a fan of contemporary architecture, Farmer John has built a new barn in the shape of a perfect circle. Inside, the barn consists of a ring of $n$ rooms, numbered clockwise from $1 \ldots n$ around the perimeter of the barn ($3 \leq n \leq 1,000$). Each room has doors to its two neighboring rooms, and also a door opening to the exterior of the barn.

Farmer John wants exactly $r_i$ cows to end up in each room $i$ ($1 \leq r_i \leq 100$). To herd the cows into the barn in an orderly fashion, he plans to unlock the exterior door of a single room, allowing the cows to enter through that door. Each cow then walks clockwise through the rooms until she reaches a suitable destination. Farmer John wants to unlock the exterior door that will cause his cows to collectively walk a minimum total amount of distance. Please determine the minimum total distance his cows will need to walk, if he chooses the best such door to unlock. The distance walked by a single cow is the number of interior doors through which she passes.

**INPUT FORMAT (file cbarn.in):**

The first line of input contains $n$. Each of the remaining $n$ lines contain $r_1 \ldots r_n$.

**OUTPUT FORMAT (file cbarn.out):**

Please write out the minimum total amount of distance the cows collectively need to travel.

**SAMPLE INPUT:**

```
5
4
7
8
6
4
```

**SAMPLE OUTPUT:**

```
48
```

In this example, the best solution is to let the cows enter through the door of the room that requires 7 cows.

Problem credits: Brian Dean

Contest has ended. No further submissions allowed.