

D. Prizes, Prizes, more Prizes

time limit per test: 2 seconds

memory limit per test: 256 megabytes

input: standard input

output: standard output

Vasya, like many others, likes to participate in a variety of sweepstakes and lotteries. Now he collects wrappings from a famous chocolate bar "Jupiter". According to the sweepstake rules, each wrapping has an integer written on it — the number of points that the participant adds to his score as he buys the bar. After a participant earns a certain number of points, he can come to the prize distribution center and exchange the points for prizes. When somebody takes a prize, the prize's cost is simply subtracted from the number of his points.

Vasya didn't only bought the bars, he also kept a record of how many points each wrapping cost. Also, he remembers that he always sticks to the greedy strategy — as soon as he could take at least one prize, he went to the prize distribution centre and exchanged the points for prizes. Moreover, if he could choose between multiple prizes, he chose the most expensive one. If after an exchange Vasya had enough points left to get at least one more prize, then he continued to exchange points.

The sweepstake has the following prizes (the prizes are sorted by increasing of their cost):

- a mug (costs a points),
- a towel (costs b points),
- a bag (costs c points),
- a bicycle (costs d points),
- a car (costs e points).

Now Vasya wants to recollect what prizes he has received. You know sequence p_1, p_2, \dots, p_n , where p_i is the number of points Vasya got for the i -th bar. The sequence of points is given in the chronological order.

You also know numbers a, b, c, d, e . Your task is to find, how many prizes Vasya received, what prizes they are and how many points he's got left after all operations are completed.

Input

The first line contains a single integer n ($1 \leq n \leq 50$) — the number of chocolate bar wrappings that brought points to Vasya. The second line contains space-separated integers p_1, p_2, \dots, p_n ($1 \leq p_i \leq 10^9$). The third line contains 5 integers a, b, c, d, e ($1 \leq a < b < c < d < e \leq 10^9$) — the prizes' costs.

Output

Print on the first line 5 integers, separated by a space — the number of mugs, towels, bags, bicycles and cars that Vasya has got, respectively. On the second line print a single integer — the number of points Vasya will have left after all operations of exchange are completed.

Please, do not use the `%lld` specifier to read or write 64-bit integers in C++. It is preferred to use the `cin`, `cout` streams or the `%I64d` specifier.

Examples

input

```
3
3 10 4
2 4 10 15 20
```

output

```
1 1 1 0 0
1
```

input

4 10 4 39 2 3 5 10 11 12
output
3 0 1 0 3 0

Note

In the first sample Vasya gets 3 points after eating the first chocolate bar. Then he exchanges 2 points and gets a mug. Vasya wins a **bag** after eating the second chocolate bar. Then he wins a **towel** after eating the third chocolate bar. After all chocolate bars $3 - 2 + 10 - 10 + 4 - 4 = 1$ points remains.