

# Problem I

## Interesting Calculator

There is an interesting calculator. It has 3 rows of buttons.

Row 1: button 0, 1, 2, 3, ..., 9. Pressing each button *appends* that digit to the end of the display.

Row 2: button +0, +1, +2, +3, ..., +9. Pressing each button *adds* that digit to the display.

Row 3: button \*0, \*1, \*2, \*3, ..., \*9. Pressing each button *multiplies* that digit to the display.

Note that it never displays leading zeros, so if the current display is 0, pressing 5 makes it 5 instead of 05. If the current display is 12, you can press button 3, +5, \*2 to get 256. Similarly, to change the display from 0 to 1, you can press 1 or +1 (but not both!).

Each button has a positive cost, your task is to change the display from  $x$  to  $y$  with minimum cost. If there are multiple ways to do so, the number of presses should be minimized.

### Input

There will be at most 30 test cases. The first line of each test case contains two integers  $x$  and  $y$  ( $0 \leq x \leq y \leq 10^5$ ). Each of the 3 lines contains 10 positive integers (not greater than  $10^5$ ), i.e. the costs of each button.

### Output

For each test case, print the minimal cost and the number of presses.

#### Sample Input

```
12 256
1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1
12 256
100 100 100 1 100 100 100 100 100 100
100 100 100 100 100 1 100 100 100 100
100 100 10 100 100 100 100 100 100 100
```

#### Output for the Sample Input

```
Case 1: 2 2
Case 2: 12 3
```