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

- 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 ($0 \le x \le y \le 10^5$). 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
```

Sample Output

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