Problem E. Sysadmin

Source file name:	Sysadmin.c, Sysadmin.cpp, Sysadmin.java, Sysadmin.py
Input:	`Standard`
Output:	`Standard`

Each year on the last Friday in July, the Sysadmin Day is celebrated to show appreciation to the epic greatness[1] of system administrators and other IT workers around the globe, recognizing all their hard work managing computer systems, networks and of course also printers.

At your company, the sysadmin Peter has just finished upgrading the printer firmware to the latest version, which promises to always print images at the lowest possible cost depending on supply and cost of the different types of toner. He has asked you to help him verify this claim.

For simplicity, we consider images to be made up of pixels, where each pixel is in one of the following colours: white, red, green, blue, cyan, magenta, yellow, black. These colours are denoted by their first letters, except for blac**k**, which is denoted by 'K'.

The printer is a CMYK printer, which means that it can print individual pixels using toner in one of the colours cyan, magenta, yellow or black. Pixels of the various colours are then formed using subtractive colour mixing, printing pixels with different toners on top of each other:

- white is made by not printing anything

- red is made from magenta and yellow

- green is made from cyan and yellow

- blue is made from cyan and magenta

- cyan, magenta and yellow are made from just themselves

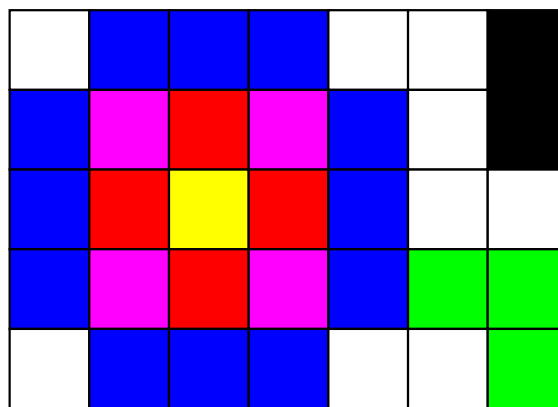- black is made either from just itself or by combining cyan, magenta and yellow

Figure 3. Illustration of Example Input 5

Given the individual costs to print pixels in the four base toners, the image you want to print, and the amount of each toner that you have available, what is the cheapest possible cost to print the image? It is guaranteed that it is possible to print the image with the supply of toner you have.

Input
The input consists of:

- One line with four integers c_c, c_m, c_y and c_k ($1 \leq c_c, c_m, c_y, c_k \leq 1000$), the costs to print one pixel in cyan, magenta, yellow and black, respectively.

- One line with four integers v_c, v_m, v_y and v_k ($0 \leq v_c, v_m, v_y, v_k \leq 10^6$), the number of pixels you can print in cyan, magenta, yellow and black, respectively.

- One line with two integers h and w ($1 \leq h, w \leq 100$), the height and width of the image.

- h lines, each with a string s of length w consisting of the characters "WRGBCMYK", describing the rows of the image.

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[1] `https://sysadminday.com`

Output

Output the minimal cost to print the image.

Example

Input	Output
1 2 3 4 100 100 100 100 1 5 KRGBW	16
1 1 1 10 3 4 5 6 2 4 KKKK KKKK	59
314 159 265 358 10 9 8 7 3 5 KBMRY CCWYG RWKKR	4715
1 2 3 4 5 6 7 2 3 5 KBMRY CCWYG RWKKR	46
314 159 265 358 100 100 100 1 5 7 WBBBWWK BMRMBWK BRYRBWW BMRMBGG WBBBWWG	11106