Problem 3: This problem was not brought to you by jane street
3 Points

Problem ID: `paint`
Rank: `1`

Introduction

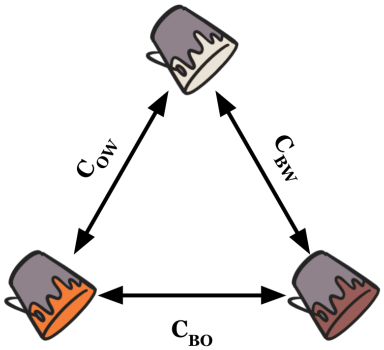
After successfully purchasing your offshore paint assets, you want to consolidate your funds to centralize your investment portfolio into pigment futures. Following the advice of world-renowned financial guru 🅱️onald 🅱️uck, you know that converting all of your paint into a single color is the smartest way to go. However, your math skills aren't up to par and so you resort to a computer program to make your decisions.

Problem Statement

Given $\mathbf{W}$ buckets of white paint, $\mathbf{O}$ buckets of orange paint, and $\mathbf{B}$ buckets of brown paint, find the minimum cost to convert all of the paint into a single color.

It costs $\mathbf{C_{OW}}$ dollars to convert between a bucket of orange and white paint, $\mathbf{C_{BO}}$ dollars to convert between a bucket of brown and orange paint, and $\mathbf{C_{BW}}$ dollars to convert between a bucket of brown and white paint. All costs are bidirectional: it costs $\mathbf{C_{OW}}$ to convert a bucket of orange paint to white paint, and likewise a bucket of white paint to orange paint. Since the paint is very robust, you can convert the same bucket of paint as many times as you like, including back to previous colors.

As you are on a budget, you must convert all paint to a single color using as little money as possible.



*Note: This problem—alongside **all other problems in this contest**—has templates available in Python, Java, and C++! You can find them in the contest.zip provided at the start of the contest. Templates parse the input into a neat function to fill out, so you can jump right into problem solving!*

Input Format

The first line of the input contains an integer $\mathbf{T}$ denoting the number of test cases that follow. For each test case:

- The first line contains 6 space-separated integers $\mathbf{W}$ $\mathbf{O}$ $\mathbf{B}$ $\mathbf{C_{OW}}$ $\mathbf{C_{BO}}$ $\mathbf{C_{BW}}$ where:
  - $\mathbf{W}$ denotes the number of buckets of white paint you have.
  - $\mathbf{O}$ denotes the number of buckets of orange paint you have.
  - $\mathbf{B}$ denotes the number of buckets of brown paint you have.
  - $\mathbf{C_{OW}}$ denotes the cost to convert between a bucket of orange and white paint.
  - $\mathbf{C_{BO}}$ denotes the cost to convert between a bucket of brown and orange paint.
  - $\mathbf{C_{BW}}$ denotes the cost to convert between a bucket of brown and white paint.

Output Format

For each test case, output a single line containing the minimum cost to convert all of the paint into a single color.

Constraints

$1 \le \mathbf{T} \le 100$
$0 \le \mathbf{W}, \mathbf{O}, \mathbf{B} \le 100$
$1 \le \mathbf{C_{OW}}, \mathbf{C_{BO}}, \mathbf{C_{BW}} \le 100$

Sample Test Cases

Sample Input *Download*

```
3
30 0 0 2 5 10
21 9 10 4 1 2
9 6 6 50 4 8
```

Sample Output *Download*

```
0
47
96
```

Sample Explanations

Test Case #1:
Since all of the paint is white, we do not require any conversions, so our cost is 0 dollars.

Test Case #2:
To achieve our minimum cost, we must convert all of our paint into white paint. We can convert our brown into white paint for $10 \times 2 = 20$ dollars. However, we must convert our orange paint to brown paint first, before then turning it into white paint. This costs $9 \times (1 + 2) = 27$ dollars, for a total cost of 47 dollars.

Test Case #3:
The minimum cost involves converting all of our paint into brown paint. We convert our white paint into brown paint for $9 \times 8 = 72$ dollars and our orange paint directly for $6 \times 4 = 24$ dollars, for a total cost of 96 dollars.