

## Problem I. Operation Hope

Input file:            **standard input**  
 Output file:        **standard output**  
 Time limit:         10 seconds  
 Memory limit:      512 megabytes

Little Q is playing an RPG online game. In this game, there are  $n$  characters labeled by  $1, 2, \dots, n$ . The  $i$ -th character has three types of quotas:

- $a_i$  - The maximum points of damage he can achieve in 15 seconds.
- $b_i$  - The maximum points of damage he can achieve in 40 seconds.
- $c_i$  - The maximum points of damage he can achieve in 120 seconds.

You are the team leader working for the new balance between these  $n$  characters, aiming at bringing hope to the weak characters. For each character, your teammates have made a plan to strengthen some skills such that the three quotas may be increased as a result. Note that it is not allowed to weaken characters, because it will make their owners upset.

To make a perfect balance, you need to accept some plans and deny others such that the gap between all the  $n$  characters is minimized. Note that a plan can only be entirely accepted or entirely denied. Here, the gap is defined as

$$\max\left\{\max_{1 \leq i \leq n} a_i - \min_{1 \leq i \leq n} a_i, \max_{1 \leq i \leq n} b_i - \min_{1 \leq i \leq n} b_i, \max_{1 \leq i \leq n} c_i - \min_{1 \leq i \leq n} c_i\right\}$$

### Input

The first line contains a single integer  $T$  ( $1 \leq T \leq 100$ ), the number of test cases. For each test case:

The first line contains a single integer  $n$  ( $1 \leq n \leq 100\,000$ ), denoting the number of characters.

In the next  $n$  lines, the  $i$ -th line contains six integers  $a_i, b_i, c_i, a'_i, b'_i$  and  $c'_i$  ( $1 \leq a_i \leq a'_i \leq 10^9$ ,  $1 \leq b_i \leq b'_i \leq 10^9$ ,  $1 \leq c_i \leq c'_i \leq 10^9$ ), describing the quotas of the  $i$ -th character now and in plan.

It is guaranteed that the sum of all  $n$  is at most 500 000.

### Output

For each test case, output a single line containing an integer, denoting the optimal gap.

### Example

| standard input | standard output |
|----------------|-----------------|
| 1              | 2               |
| 2              |                 |
| 1 1 1 2 3 5    |                 |
| 2 4 3 7 5 8    |                 |