



HOME TOP CONTESTS GYM PROBLEMSET GROUPS RATING EDU API CALENDAR HELP

PROBLEMS SUBMIT CODE MY SUBMISSIONS STATUS HACKS ROOM STANDINGS CUSTOM INVOCATION

### A. Three swimmers

time limit per test: 1 second memory limit per test: 512 megabytes input: standard input output: standard output

Three swimmers decided to organize a party in the swimming pool! At noon, they started to swim from the left side of the pool.

It takes the first swimmer exactly a minutes to swim across the entire pool and come back, exactly b minutes for the second swimmer and c minutes for the third. Hence, the first swimmer will be on the left side of the pool after  $0,\,a,\,2a,\,3a,\,\ldots$  minutes after the start time, the second one will be at  $0,\,b,\,2b,\,3b,\,\ldots$  minutes, and the third one will be on the left side of the pool after  $0,\,c,\,2c,\,3c,\,\ldots$  minutes.

You came to the left side of the pool exactly p minutes after they started swimming. Determine how long you have to wait before one of the swimmers arrives at the left side of the pool.

### Input

The first line of the input contains a single integer t ( $1 \le t \le 1000$ ) — the number of test cases. Next t lines contains test case descriptions, one per line.

Each line contains four integers p, a, b and c ( $1 \le p, a, b, c \le 10^{18}$ ), time in minutes after the start, when you came to the pool and times in minutes it take the swimmers to cross the entire pool and come back.

# Output

For each test case, output one integer — how long you have to wait (in minutes) before one of the swimmers arrives at the left side of the pool.

### Example

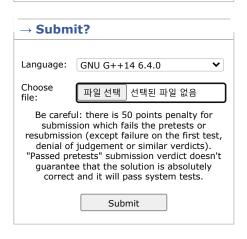
input	Сору
4	
9 5 4 8	
2 6 10 9	
10 2 5 10	
10 9 9 9	
output	Сору
1	
4	
0	
8	

# Note

In the first test case, the first swimmer is on the left side in  $0,5,10,15,\ldots$  minutes after the start time, the second swimmer is on the left side in  $0,4,8,12,\ldots$  minutes after the start time, and the third swimmer is on the left side in  $0,8,16,24,\ldots$  minutes after the start time. You arrived at the pool in 9 minutes after the start time and in a minute you will meet the first swimmer on the left side.

In the second test case, the first swimmer is on the left side in  $0,6,12,18,\ldots$  minutes after the start time, the second swimmer is on the left side in  $0,10,20,30,\ldots$  minutes after the start time, and the third swimmer is on the left side in  $0,9,18,27,\ldots$  minutes after the start time. You arrived at the pool 2 minutes after the start time and after 4 minutes meet the first swimmer on the left side.

# Contest is running 01:39:43 Contestant



ightarrow Last submissions			
Submission	Time	Verdict	
108251524	Feb/23/2021 12:24	Pretests passed	
108249577	Feb/23/2021 12:21	Wrong answer on pretest 2	

→ Score table		
	Score	
<u>Problem A</u>	460	
<u>Problem B</u>	920	
<u>Problem C</u>	1380	
<u>Problem D</u>	2070	
<u>Problem E</u>	2760	
Successful hack	100	
Unsuccessful hack	-50	
Unsuccessful submission	-50	
Resubmission	-50	

<sup>\*</sup> If you solve problem on 00:20 from the first attempt

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In the third test case, you came to the pool 10 minutes after the start time. At the same time, all three swimmers are on the left side. A rare stroke of luck!

In the fourth test case, all swimmers are located on the left side in  $0,9,18,27,\ldots$  minutes after the start time. You arrived at the pool 10 minutes after the start time and after 8 minutes meet all three swimmers on the left side.

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Server time: Feb/23/2021 18:25:10<sup>UTC+9</sup> (i2).
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