

## 6466 Von Neumann's Fly

The following problem was posed to John von Neumann:

Two bicyclists,  $A$  and  $B$ , start riding toward each other at the same time from places that are 250 miles apart,  $A$  traveling at 10 miles per hour, and  $B$  at 15 miles per hour. At the same time, a fly leaves the front wheel of  $A$ 's bicycle, and flies toward  $B$ 's bicycle at 20 miles per hour. As soon as he touches the front wheel of  $B$ 's bicycle, he turns around and flies back. As the bicycles approach each other, he continues flying back and forth, touching each front wheel in turn, until, alas, he is crushed between them. Since the fly travels faster than either cyclist, he makes an infinite number of trips, yet travels a finite distance (the infinite series converges). How far did the fly travel?

Von Neumann immediately summed the infinite series (in his head!), and arrived at the correct answer: 200 miles.

You are to write a program that solves a more general version of that problem, with varying initial distances and speeds.

### Input

The first line of input contains a single integer  $P$ , ( $1 \leq P \leq 1000$ ), which is the number of data sets that follow. Each data set should be processed identically and independently.

Each data set consists of a single line containing five values: an integer  $N$  (the data set number), and four floating-point values:  $D$  (the initial distance between the bicycles,  $10 \leq D \leq 1000$ ),  $A$  (cyclist  $A$ 's speed in miles per hour,  $1 \leq A \leq 30$ ),  $B$  (cyclist  $B$ 's speed in miles per hour,  $1 \leq B \leq 30$ ), and  $F$  (the fly's speed in miles per hour,  $A \leq B < F \leq 50$ ).

### Output

For each data set there is one line of output. It contains the data set number followed by a single space, followed by the number of miles traveled by the fly, (the sum of the infinite series described by the input values), accurate to two decimal places.

### Sample Input

```
5
1 250 10 15 20
2 10.7 3.5 4.7 5.5
3 523.7 15.3 20.7 33.3
4 1000 30 30 50
5 500 15 15 25
```

### Sample Output

```
1 200.00
2 7.18
3 484.42
4 833.33
5 416.67
```