

## 11500 Vampires

Felipinho is thrilled with his new RPG game, about wars between clans of vampires. In this game he plays a vampire that repeatedly comes into combat against vampires from other clans. Such battles are won or lost based on some characteristics of the opponents, with the help of a standard six-faced dice.

For simplicity, we will consider only the fight between two vampires, Vampire 1 and Vampire 2. Each vampire has a vital energy (denoted respectively by  $EV_1$  and  $EV_2$ ). Besides, an attack force  $AT$  and a damage capacity  $D$  are also given. The combat is fought in turns, in the following way. At each turn, the dice is rolled; if the result value is less than or equal to  $AT$ , Vampire 1 wins the turn, otherwise Vampire 2 wins. The winner then sucks the value  $D$  from the loser's vital energy. That is,  $D$  points are subtracted from the loser's vital energy and added to the winner's vital energy. The combat continues until one of the fighters has  $EV$  less than or equal to zero.

For example, suppose  $EV_1 = 7$ ,  $EV_2 = 5$ ,  $AT = 2$  and  $D = 4$ . The dice is rolled and the result value is 3. Then, Vampire 2 wins the turn, and therefore 4 points are subtracted from  $EV_1$  and added to  $EV_2$ . The new values for the vital energies would be  $EV_1 = 3$  and  $EV_2 = 9$ . Notice that, if in the next turn Vampire 2 wins again, the combat ends.

The values of  $AT$  and  $D$  are constant throughout the combat; only  $EV_1$  and  $EV_2$  vary. Despite loving the game, Felipinho thinks that the combats are too long, and suspects that, given the initial values of  $EV_1$ ,  $EV_2$ ,  $AT$  and  $D$ , it is possible to determine the probability of one of the players winning the combat, and that could help shorten the combat time.

Felipinho has asked your help to verify his suspicion.

### Input

The input contains several test cases. Each test case is given in one single line, containing four integers  $EV_1$ ,  $EV_2$ ,  $AT$  and  $D$  separated by spaces ( $1 \leq EV_1, EV_2 \leq 10$ ,  $1 \leq AT \leq 5$  and  $1 \leq D \leq 10$ ).

The end of input is indicated by one line containing only four zeros, separated by spaces.

### Output

For each test case in the input, your program must print a single line. The line must contain a real number representing, in terms of percentages, the probability that Vampire 1 wins the combat. The result must be printed as a real number with exactly one decimal figure.

### Sample Input

```
1 1 3 1
1 2 1 1
8 5 3 1
7 5 2 4
0 0 0 0
```

### Sample Output

```
50.0
3.2
61.5
20.0
```