

Contest Duration: 2025-08-30(Sat) 22:00 (<http://www.timeanddate.com/worldclock/fixedtime.html?iso=20250830T2100&p1=248>) - 2025-08-30(Sat) 23:40 (<http://www.timeanddate.com/worldclock/fixedtime.html?iso=20250830T2240&p1=248>) (local time) (100 minutes)

[Back to Home \(/home\)](#)

[Top \(/contests/abc421\)](#)

[Tasks \(/contests/abc421/tasks\)](#)

[Clarifications \(/contests/abc421/clarifications\)](#) [Results ▾](#)

[Standings \(/contests/abc421/standings\)](#)

[Virtual Standings \(/contests/abc421/standings/virtual\)](#) [Editorial \(/contests/abc421/editorial\)](#)

[Discuss \(<https://codeforces.com/blog/entry/145931>\)](#)



## E - Yacht

[Editorial \(/contests/abc421/tasks/abc421\\_e/editorial\)](#)



Time Limit: 2 sec / Memory Limit: 1024 MiB

Score : 475 points

### Problem Statement

There are five six-sided dice. Each die has the numbers  $A_1, \dots, A_6$  written on its faces, and each face appears with probability  $\frac{1}{6}$ .

You will play a single-player game using these dice with the following procedure:

1. Roll all five dice, observe the results, and **keep** any number (possibly zero) of dice.
2. Re-roll all dice that are not kept, observe the results, and additionally keep any number (possibly zero) of the re-rolled dice. **The dice kept in the previous step remain kept.**
3. Re-roll all dice that are not kept and observe the results.
4. Choose any number  $X$ . Let  $n$  be the number of dice among the five dice that show  $X$ .  
The score of this game is  $nX$  points.

Find the expected value of the game score when you act to maximize the expected value of the game score.

### Constraints

- $A_i$  is an integer between 1 and 100, inclusive.

# Input

The input is given from Standard Input in the following format:

```
A1 A2 A3 A4 A5 A6
```

# Output

Print the answer. Your answer will be considered correct if the relative or absolute error from the true value is at most  $10^{-5}$ .

---

## Sample Input 1

Copy

```
1 2 3 4 5 6
```

Copy

## Sample Output 1

Copy

```
14.6588633742
```

Copy

For example, the game may proceed as follows (not necessarily optimal):

1. Roll all five dice and get 3, 3, 1, 5, 6. Keep the two dice that show 3.
2. Re-roll the three dice that are not kept and get 6, 6, 2. Additionally keep the two dice that show 6.
3. Re-roll the one die that is not kept and get 4.
4. Choose  $X = 6$ . The dice show 3, 3, 6, 6, 4, so the number of dice showing 6 is 2, and the score of this game is 12.

In this case, the expected value when acting optimally is  $\frac{143591196865}{9795520512} = 14.6588633742\dots$

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## Sample Input 2

Copy

```
1 1 1 1 1 1
```

Copy

## Sample Output 2

Copy

```
5.0000000000
```

Copy

2026-01-02 (Fri)  
05:29:26 +11:00

The dice may have faces with the same value written on them.

## Sample Input 3

Copy

31 41 59 26 53 58

Copy

## Sample Output 3

Copy

159.8253021021

Copy

'#telegram)

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