

Largest Triangle

Input file: **standard input**
Output file: **standard output**
Time limit: 2 seconds
Memory limit: 1024 megabytes

There are N straight sticks. The length of i -th stick is L_i .

Consider making a (non-degenerate) triangle with 3 sticks selected in them. Determine whether the selection exists, and if it exists, calculate the square of the maximum of surface of the triangle which can be made.

There are T test cases, so answer each of them.

Input

The input is given from Standard Input in the following format. In this, case_i means the i -th test case.

```
T
case1
case2
⋮
caseT
```

Each test case is given in the following format.

```
N
L1 L2 ... LN
```

- All inputs are integer.
- $1 \leq T \leq 2 \times 10^5$
- $3 \leq N \leq 3 \times 10^5$
- $2 \leq L_i \leq 20000$
- L_i is even.
- In each input, the sum of N of all test cases is equal or less than 2×10^5 .

Output

Print T lines. In the i -th line, print the answer of i -th test case.

In each test case, print -1 if there exists no valid selection of 3 sticks. If it exists, print the square of the maximum of area of the triangle which can be made. Note that this value is integer under the constraints.

Example

standard input	standard output
3	3
5	1344
2 2 2 2 2	-1
7	
2 6 4 10 8 10 20	
5	
4 16 36 64 100	

Note

In the 2nd test case, the triangle with 3 sides of length 8, 10, 10 has a maximum area of $8\sqrt{21}$. The square of this is 1344.

In the 3rd test case, no three bars cannot be combined to form a non-degenerate triangle.