2376 - I2P(I) 2021_Chen_final

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Clarification

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Overview Problem

13228 - Unlimited Triangle Work - ver2

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Description

After obtaining enough swords, Gilgamesh would like to forge some more swords in his favorite form.

The requirements of forging a sword is to build a valid triangle: $x + y > z \text{ where } x, y, z \text{ is the sides}$. However, Gilgamesh prefers swords that forged by one more constrain: $x + y < 1.5z$.

Now, he threats you with more swords that you forged, you have to help him.

You are given for positive integer $A \leq B \leq C \leq D$, you're going to count how many **eligible triangles** can be build by edges with length x, y, z, where $A \leq x \leq B \leq y \leq C \leq z \leq D$.

A eligible triangle should follow the following condition:

1. $x + y > z$
2. $x + y < 1.5z$

For example: $A = 1, B = 2, C = 3, D = 4$

You can build triangles with edges: $(x, y, z) \in \{(1, 3, 3), (2, 2, 3), (2, 3, 4)\}$

So the answer is 3.

- Note that although $(2, 3, 3)$ is a valid triangle, it does not fit the 2-nd constrain: $x + y < 1.5z$ $(2 + 3 = 5 > 1.5 \times 3 = 4.5)$.

Input

The first line contains one integer T, there are T testcases below.

For each testcase, the four integer A, B, C, D is given respectively.

$1 \leq T \leq 100$.

$1 \leq A \leq B \leq C \leq D \leq 5 \times 10^4$.

Output

For each testcase, output its answer, followed by a newline character.

Sample Input

Download (data:text/plain;charset=utf-8,5%0A1%202%203%204%0A1%205%209%2016%0A1%2050%20100%202000%0A10%201364%209841%2050000%0A50000

```
5
1 2 3 4
1 5 9 16
1 50 100 2000
10 1364 9841 50000
50000 50000 50000 50000
```

Sample Output

Download (data:text/plain;charset=utf-8,3%0A34%0A22099%0A423883295%0A0%0A)

```
3
34
22099
423883295
0
```

Discuss