Stapled intervals

[The original version of this problem (in Spanish) can be found at http://dc.uba.ar/events/icpc/download/problems/tap2014-problems.pdf]

Two natural numbers **n** and **m** are said to be *coprime* if their greatest common divisor is the number **1**. In other words, **n** and **m** are coprime if there is no integer **d > 1** such that **d** exactly divides both **n** and **m**. A finite set of two or more consecutive natural numbers is called a "*stapled interval*" if there is no number in it that is coprime to all other numbers in the set.

Given a range **[A, B]**, we would like to count the number of stapled intervals completely contained in it. I.e., we want to know how many different pairs **(a, b)** exist such that **A ≤ a < b ≤ B** and the set **{a, a+1, ..., b}** is a stapled interval.

Input

The first line contains an integer **P** representing the number of questions you should answer (**1 ≤ P ≤ 1000**). Each of the following **P** lines describes a question, and contains two integer numbers **A** and **B** representing the borders of the range **[A, B]** in which we want to count stapled intervals (**1 ≤ A ≤ B ≤ 10^7**).

Output

Print **P** lines, each with a single integer number. For **i = 1, 2, ..., P** the number in the **i**-th line represents the number of stapled intervals completely contained in the range **[A, B]** corresponding to the **i**-th question.

Example

Input:
4
2184 2200
2185 2200
2184 2199
1 100000

Output:
1
0
0
13