Problem A
Another New Function

Input: Standard Input
Output: Standard Output
Time Limit: 4 Second

The depth of phi value of a number is denoted by the number of steps required before it reaches 1. An example will make it very clear.

Φ(13)=12 …… step 1
Φ(12)=4 …… step 2
Φ(4)=2 …… step 3
Φ(2)=1 …… step 4

So the depth of phi(13) is 4. We name this function as depthphi. So we can write depthphi(13)=4. The sum of depthphi function (SODF) takes two integers as parameter and its definition is given below:

$$\mathrm{SODF(m,n)} = \sum_{i=m}^{n} depthphi(i), \quad m \le n$$

Given the value of **m** and **n** your job is to find the value of **SODF(m,n)**.

Input

The first line of the input file contains an integer **N (0<N<2001)** which indicates how many sets of inputs are there. Each of the next **N** lines contains two integers **m** and **n (2 ≤ m ≤ n ≤ 2000000)**.

Output

For each line of input produce one line of output. This line contains an integer **S**, which actually denotes the value of **SODF(m,n)**.

Sample Input	Output for Sample Input
2 2 10 100000 200000	22 1495105

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The following paragraph is extracted from Mathworld to inform you about phi function.

The totient function $\phi(n)$ or phi(n), also called Euler's totient function, is defined as the number of positive integers $\le n$ that are relatively prime to (i.e., do not contain any factor in common with) n, where 1 is counted as being relatively prime to all numbers. Since a number less than or equal to and relatively prime to a given number is called a totative, the totient function $\phi(n)$ can be simply defined as the number of totatives of n. For example, there are eight totatives of 24 (1, 5, 7, 11, 13, 17, 19, and 23), so $\phi(24) = 8$. The totient function is implemented in *Mathematica* as `EulerPhi[n]`.